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Giuseppe M. Cuscito

SHABBETAY DONNOLO

A Reappraisal

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DIRETTO DA GIANCARLO LACERENZA

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In loving memory
of my parents Antonio and Donata

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FOREWORD

Shabbetay bar Abraham, also known as Donnolo, was a Jewish physician and philosopher who lived in Southern Italy in the 10th century. Little is known about his life, but his importance to the study of early medieval Judaism is paramount, since he is one of very few known Jewish authors from this area and time whose work has to some extent survived.

Several studies have been published about him in recent decades, mostly in Italian, with the three most notable exceptions being represented by Andrew Sharf's *The Universe of Shabbetai Donnolo* (1976), Lola Ferre's critical edition of his *Book of Mixtures* (2004) and Piergabriele Mancuso's critical edition of Donnolo's *Book of the Wise* (2010), all in English.

This monograph stems from a portion of my doctoral and post-doctoral research and aims to update international readers on the most recent developments in the research on Donnolo that have been published in Italian. It aims to reconsider some assumptions regarding his life and works that have been gradually taken for granted. For example, in regard to Donnolo's life, earlier scholarship relied too heavily on the *Life of Neilos the Younger*, a Christian hagiography that mentions him but reflects a strong anti-Jewish bias. This study builds on a recent scholarly trend which has begun to cast doubt on the reliability of this Christian source. Moreover, several texts, both medical and astronomical, have been attributed to Donnolo in recent decades. This book challenges these attributions, demonstrating that they lack sufficient supporting evidence or, worse, disregard indications that point to other, anonymous authors.

This reassessment will hopefully provide a clearer picture of a transfer of knowledge across the Mediterranean in which Donnolo played a prominent role. Moreover, distinguishing between authentic and spurious works can help us discern the actual impact of his thought on European culture, both inside and outside Judaism. Similarly, a closer scrutiny of the sources mentioning him warns us not to take them at face value, since they may have had their own agendas, as was very often the case.

Hopefully this study will spark further research, in both directions: firstly on Donnolo's sources and secondly on the reception of his work. On one hand, further study is needed to clarify the relationship between Jewish thought and non-Jewish astronomy and cosmology in the first millennium. On the other hand, future research will better determine the true extent of Donnolo's influence on later medics, astronomers and qabbalists.

This work has been written both for Jewish studies scholars and science historians, thus explanations will be provided both for basic astronomy and

Jewish studies concepts respectively, in order to enable specialists from the two fields to follow the arguments presented hereby. For readers unfamiliar with Jewish studies, a simplified transliteration from Hebrew has been used and Bible references are written in full, instead of employing abbreviations. The names of the Hebrew books referred to have also been translated into English: to give one notable example, *Sefer Yetsirah* is referred to here as *Book of Formation*. The first chapter is intended for scholars outside the field of Jewish studies and serves as an introduction to Jewish history up to the 10th century and to concepts that will be referred to in the following pages.

My heartfelt thanks go to the CSE (Centre for Jewish Studies) of University of Naples "L'Orientale", in particular to Giancarlo Lacerenza, for giving me the opportunity to publish this work and to Mariano Cinque for his invaluable technical support. I am also grateful to Simone Cristoforetti and Massimiliano Borroni for their help on Persian cosmology and Arabic terms, respectively.

1. A HISTORICAL OVERVIEW

Historical sources for the Early Middle Ages

After almost a millennium since the destruction of the Second Temple in 70 CE, Jewish communities had flourished all over Eurasia and in Northern Africa, in many major coastal cities and along communication routes such as roads and rivers. The Diaspora even reached the Pacific coasts of Eastern Asia: in the 9th century, Jews were trading goods from Western Europe to India and China and vice versa, both by land and by sea (Gilbert 2023: 25).

The period spanning from the fall of the Western Roman Empire to the 11th century is notably characterized by a scarcity of sources. At least in Latin Western Europe, this phenomenon is, at least in part, attributed to the drastic reduction in literacy that occurred following the continuous upheavals in the region during the second half of the 1st millennium CE. The most significant source for Italian history from the end of Antiquity to the Early Middle Ages is considered to be Gregory the Great's *Registrum epistularum*, which proves invaluable for the reconstruction of Jewish history in Italy as well (Laham Cohen 2013: 214).

Similarly, in the specific context of Jewish history, historiography pertaining to that period suffered from an almost total lack of sources until the second half of the 19th century. It was during this time that, at Ben Ezra Synagogue in the medieval quarter of al-Fustat (the oldest nucleus of present-day Cairo), its *genizah*[1] was discovered. It contained a stash of approximately 300,000 fragments, belonging to texts of various kinds, from private letters to sacred books to contracts, and more. These documents, dating from the 9th to the 19th century, prove invaluable for reconstructing the history and daily life of Jews in North Africa and the Eastern Mediterranean. Despite this significant contribution, however, little or nothing is still known about Jewish communities in the period that spans from the destruction of the Second Temple until approximately the 9th century. The only documents attributable to that timespan, albeit surviving in copies from a later

[1] A *genizah* is a synagogue repository destined for older manuscripts that could not be destroyed for religious reasons. A pioneering and fundamentally important reconstruction of the life of these Jewish communities based on the documents found in the Cairo genizah was carried out by Shlomo Goitein (Goitein 1967). An abridged version of the first edition was published in 1999.

time, are rabbinic *responsa*, which lack precise names or temporal references (Rustow 2013, p. 95).

Judaism in the Middle Ages

Well before the destruction of the Temple in Jerusalem by the Roman emperor Titus in 70 CE and the subsequent uprisings that were violently suppressed, Jewish presence was not confined to the territory later called Palestine by the Romans. Indeed, significant Jewish communities had emerged well before the Diaspora proper, mainly in locations such as Antioch, Alexandria and Rome. Additionally, there were Jewish settlements in Mesopotamia, which were established forcibly during the Babylonian exile by Nebuchadnezzar in the 6th century BCE and which persisted long after the edict of Cyrus that decreed the end of the exile.

In Palestine

The destruction of the Temple and the Roman suppression of subsequent Jewish uprisings, the last of which was the Bar Kokhba revolt from 132–136 CE, had far-reaching impacts on Jewish culture and religion. In Judaea, Jewish presence became extremely scarce, and Jews were prohibited from entering Jerusalem, except for a group of penitents who visited the site where the Temple had stood, in order to commemorate it. The focal point of Jewish activity then shifted further north, specifically to Galilee, with major centres emerging in Usha, Bet Shearim, Tiberias, Sepphoris and Lod. Almost all the diverse currents into which Judaism was then divided disappeared. Among the ones that disappeared were the Sadducees, which were associated with the Temple cult and which denied the survival of the soul after death, and the Qumran community. Conversely, the Samaritans managed to escape Roman repressions that took place in Judaea, since their primary place of worship was located on Mount Gerizim, situated in the present-day West Bank. In addition to the Samaritans, who constituted a small minority, the other current that survived was that of the Pharisees, who followed an oral tradition that they believed had been revealed to Moses along with the written Torah. This oral tradition was later codified and committed to writing in the 2nd century CE in what came to be known as the Mishnah ("repetition"), which constitutes the core of the Talmud.

The Jewish population in the region experienced varying fates under the various emperors who succeeded one another, until conditions worsened dramatically with the advent of Christianity, particularly with the edict of Thes-

salonica in 380, which declared Christianity to be the official state religion. Following the Persian conquest in 614, the Jews were briefly allowed to govern Jerusalem until the arrival of Islam, approximately two decades later. With the Arabs, there was an increase in the Jewish presence in Jerusalem. The city, along with Tiberias, resumed its role as the preeminent cultural centre compared to other cities with large Jewish communities in the region, such as Ramleh, Gaza, Ascalon and Haifa. The revival of cultural activities in Jerusalem, however, was relatively short-lived. The city felt the impact of the shifting of the caliphate's capital from Damascus to Baghdad and of the subsequent conquests (Turkish, Byzantine and Arab once again) that followed in the region over a few decades. The decline of the Jewish presence in the Holy City became definitive at the end of the 11th century when the Crusades broke out.

In Mesopotamia

As mentioned earlier, the Jewish presence in Mesopotamia dates back to the exile by Nebuchadnezzar II. However, precise information about the conditions of the descendants of the deportees is not available until the first century BCE. At first, the primary centres of Babylonian Judaism in Late Antiquity were Nisibis and Nehardea, and later the cities of Sura and Pumbedita as well. These two cities became the seats of the principal rabbinic academies (*yeshivot*, singular *yeshivah*) in the Eastern Mediterranean, if not the most eminent overall, at least for a certain period. Two other centres among the most important were Machoza and Nehar Peqod.

Despite an initially challenging period due to the attempt to impose Zoroastrianism by the Sassanids, the conditions of Babylonian Jews improved under an atmosphere of increased tolerance that was established, albeit intermittently, from the second half of the 3rd century onwards. During this period, especially in centres with a Jewish majority, such as those already mentioned, Jews were allowed to play various roles in society. Additionally, cultural activity flourished significantly, and the revision of the initial compilation of the Talmud in the 5th century is indicative of this thriving intellectual atmosphere.

However, with the Arab conquest, the fortunes of the Jews in Babylon underwent significant changes, particularly in the legal realm. According to Islam, those regarded as "People of the Book" (Arabic: *'ahl al-kitab*), i.e. the recipients of divine revelation before Muhammad, were granted a special status. They were subject to the simple payment of a tax, instead of facing forced conversion or execution, which applied to those who did not believe in the one God and the Final Judgment.

The Arab domination also led to a drastic reduction in the range of activities permitted for Jews, resulting in a mass migration from ancient centres

that not only lost their former splendor but, in many cases, disappeared altogether. The Jewish migratory wave headed partly westward, toward other cities such as Damascus, and partly southward, to Kufa, Basra, Mosul and the newly founded city of Baghdad, where many rabbis from the now-abandoned academies of Sura and Pumbedita converged. The city became the seat of the House of Wisdom, a cultural hub founded by Harun al-Rashid which, from the 9th century onward, brought together intellectuals and texts from different cultures.

In this fertile cultural environment, Greek science underwent an extensive translation effort from Greek to Arabic, both directly and through mediation of Syriac language. Thus, Greek science reached the Muslim world, which drew extensively from it, making substantial strides in fields such as medicine (with the rediscovery of the works of Hippocrates and Galen), astronomy (critical for navigation and determining the direction toward Mecca during prayer), optics, mathematics and so forth. Not only were what we would now call "exact sciences" subject to this translation, but also philosophical works, such as those of Plato and Aristotle, which proved essential for the development of theology. Moreover, the focus of translation activities extended beyond Greek works. Initially, attention was directed primarily toward philosophical and theological works composed in Persian and Syriac.

Judaism also benefitted from the cultural richness brought about by this extensive translation effort. While Hellenic philosophy was rejected as pagan, discoveries in other theologically neutral disciplines such as astronomy or medicine were enthusiastically embraced and rapidly disseminated within the Jewish world. Meanwhile, the Jewish community had begun expressing itself in Arabic instead of Aramaic as it had done until then, although it continued to use the Hebrew alphabet in writing, which gave rise to the linguistic phenomenon known as Judeo-Arabic. The alphabet, therefore, became the cohesive element that kept Jewish communities across the Mediterranean united, arguably even more strongly than language or religion itself. While Hebrew was abandoned by many in favor of Arabic, and religion could manifest in various sects, doctrines or customs, the Hebrew alphabet remained the quintessential identifier in medieval Jewish culture, not only in religious or philosophical texts but also in commercial documents, letters and other private documents.

From East to West

With the decline of the Abbasid caliphate and the subsequent westward migrations of Jewish populations under new rule, the epicentre of Jewish culture shifted from Mesopotamia to Palestine, Syria, Egypt, North Africa

and the Iberian Peninsula, particularly in locations that thrived under the Fatimid caliphate, such as al-Fustat, Kairouan, Fez and Granada. In a gradual process that began in the second half of the 10th century and culminated at the end of the 11th century with the closure of the last academies, Mesopotamia gradually ceased to be the reference point to which members of the Jewish world turned for *responsa* from those considered the ultimate authorities in matters of religious legislation.

However, the cities on the western and southern shores of the Mediterranean were not the only Jewish cultural centres. Another axis facilitated the circulation of people and ideas across the Great Sea, i.e. an ideal route connecting the land of Israel on one side and Southern Italy on the other.

Jews under Byzantine rule

In the Eastern Christian world, which considered itself the true Israel and viewed its rulers as the ideal continuators of biblical monarchy and priesthood, the Jewish presence occasionally led to hostilities, and moments of tension were not uncommon (Troianos 2012). Four episodes of mass forced conversions are recorded under Heraclius, Leo III, Basil I and Romanos I Lekapenos (Bonfil 2012: 4). However, conflicts seem to have been forced from above, i.e. by the rulers, while the everyday situation was likely different. Despite these difficulties, Byzantine Jewry thrived thanks to trade and cultural exchanges facilitated by the network of contacts that Jewish communities had established between each other. This network proved essential for their survival.

The Byzantine milieu remained fundamental in the transmission, in Greek, of deuterocanonical and apocryphal texts. The latter were also read in Jewish circles, as evidenced, for example, in the chronicle known as *Book of Yosippon* (*Sefer Yosippon*), which cites biblical passages such as the one concerning Bel and the Dragon, which belongs to the Alexandrian (i.e. Greek) canon and not to the Hebrew one. This and other passages that will be examined later must have reached Jewish authors in Southern Italy through the Greek version of the Septuagint, indicating the presence of cultural exchanges between Greek-speaking Christians and Jews, or at the very least, that religious traditions were not totally isolated from each other.

Jews in Southern Italy

What was mentioned generally for the entirety of Byzantine Jews is also applicable to the subset consisting of Jews living in medieval Southern Italy. Once again, the scarcity of sources does not allow us to precisely outline

their history until the 10th century, a time when the region found itself contested, albeit at different times, by various powers, such as the Byzantine, the Saracen and the Lombard. Moreover, similar to the general case of Byzantine Jewry, the Jewish communities in Southern Italy, when their presence was not contested by local authorities, had established a network of contacts and exchanges. Given their favorable geographical position, Jews in Southern Italy maintained relations with their coreligionists in the Near and Middle East, as attested by both the *Scroll of Genealogies* (examined later) and the material found in the Cairo *genizah*, which shows a close connection between Jews in Apulia and their Egyptian counterparts.

The presence of Jews in Southern Italy is attested by various epigraphic evidence and documentary sources, although the latter are not abundant. In epigraphy, inscriptions dating from the 4th century onwards are found in Jewish cemeteries in Venosa, Bari, Tarent and Otranto.[2] Josephus Flavius (*Jewish Antiquities* 17,12), briefly refers to a Jewish presence in Dicearchia (modern-day Pozzuoli) during the time of Herod.

Among the Jewish works composed in Southern Italy that have survived, two have already been mentioned: the *Book of Yosippon*, composed in 953 (Tamani 2004: 175; Börner-Klein and Zuber 2010: 2) and the *Scroll of Genealogies*, written about a century later. The former, also known as *Josippon*, has been published in several editions, the first printed in Mantua in 1476 (see also Flusser 1981) and translated in several languages including Yiddish and Arabic, while the latter has been translated into Italian (Colafemmina 2001) and later edited in a critical edition with a commented English translation (Bonfil 2009). The *Yosippon* presents itself as the ideal continuation of the works of Josephus Flavius, of which it uses solely the Latin translation. It also cites apocryphal and deuterocanonical works such as Maccabees in the Vulgate version, along with Egesippus and other Latin texts from the High Middle Ages (Stemberger 1995: 465). Its widespread success is evident in the numerous versions that have survived, often enriched with various expansions, among which are noteworthy additions from the *Alexander Romance* in the version attributed to Callisthenes. Its popularity is linked not only to its reputation as a reliable reference for Jewish history but also to the opportunity it provided to add anecdotes and stories. The flowing narrative style and the peculiarity of the anecdotes reported also contributed to its success.

[2] Ascoli 1880. For the most recent research on Venosa see Lacerenza 2020c and bibliography.

The other chronicle produced in Southern Italy is the text known as *Scroll* (or *Book*) *of Genealogies* (*Megillat* or *Sefer yuhasin*) or *Scroll of Ahimaaz* (*Megillat Ahimaaz*). In this work, composed in 1054, its author Ahimaaz ben Paltiel recounts, with a great deal of fantastic embellishment, how his ancestors came from Babylon to Southern Italy. Among other anecdotes, the author narrates how a certain rabbi Aharon arrived in Oria from Babylon, bringing with him knowledge of magic acquired there. According to the text, he was exiled from Babylon as a punishment for using magic to bind a lion to a millstone in place of the donkey that was supposed to be there, and which the beast had devoured (Bonfil 2009: 240). The chronicle is also notable for containing the first known attestation of the idea of a body animated through the magical use of the Divine Name, which would later develop into the concept of the golem. Moreover, it serves as evidence of the paradigm shift that occurred in Judaism around the year 1000, when the Babylonian Talmud began to assume the prominence it would maintain until today. This "new" Jewish culture would then spread to northern Italy and from there to Provence and Central Europe, in the Rhineland region, where these ideas would find welcome and further development among the movement called *Hasidei Ashkenaz*, or "German Pietists" (Bonfil 2009: 57).

In addition to these two sources, there are various poetic compositions of different kinds and legal works that have been produced by Jews in Southern Italy. Their importance in the overall Jewish cultural landscape of the time can be inferred from the Legend of the Four Captives (David 2007): according to the book known as *Book of Tradition* (*Sefer ha-Qabbalah*),[3] four Jewish sages from Bari were abducted by the Saracens. After their release, each one ended up in a different city (including al-Fustat, Kairouan and Cordova), and each of them became the head of the local rabbinic academy. This is considered to be a foundation myth but one historical fact can still be derived from it: the learned Jews of Bari (or Apulia in general) must have been renowned for their knowledge of the Bible and the Talmud, otherwise this legend would not have circulated so widely.

[3] Written by Abraham ibn Daud between 1160 and 1161 CE. It should not be confused with the book with the same name composed by Abraham Zacuto, which narrates Jewish history up until the expulsion from the Kingdom of Spain (Gutwirth 2008: 57).

Jewish culture in the first millennium

Few events mark the end of one era and the beginning of another as significantly as the destruction of symbolic buildings. The period between two destructions, namely that of the Temple in Jerusalem on one side and the last great rabbinic academy in 1040 on the other, witnessed the rise and formation of what has been aptly termed by Günter Stemberger as "Classical Judaism".

Over this nearly millennium-long timespan, the phenomenon that would become perhaps the most characteristic aspect of Judaism emerged and strengthened, namely the Rabbinate, which derives directly from Pharisaism. Based on the form and purpose, Rabbinic texts can be classified into two categories: *halakhah* and *haggadah*. The former refers to texts containing rules of conduct, i.e. everything pertaining not only to religious rituals strictly speaking, but also to regulations concerning any other activity, such as dietary practices, for instance. On the other hand, while generally comprising stories and anecdotes, the term *haggadah* lacks a clear-cut definition, to the extent that it could be referred to as anything that is not *halakhah*. In addition to the Talmud, the rabbis developed a literary genre called *midrash* (pl. *midrashim*), that includes explanatory and interpretative writings aimed to explain the biblical text. There are halakic (i.e. legalistic) and haggadic (narrative or homiletic) *midrashim*, encompassing a range of style and forms.

The rabbinic tradition, while constituting the most substantial current within Judaism, does not represent its entirety. From around the 8th century, a rival movement to rabbinic Judaism emerged, called Karaism. It rejected the interpretation of the Bible provided by the rabbinic tradition, seeking instead a closer adherence to the biblical text. Although traditionally attributed to Anan ben David (8th century), he was actually the founder of another movement that took his name and eventually merged into Karaism itself. The origins of this movement remain unknown at present, despite recent data emerging from the study of fragments found in the Cairo *genizah*. There seem to be doctrinal points of contact with the Qumran sect and the Sadducees, not only regarding the exclusive importance given to the written Torah but also concerning the resurrection of the dead. Reliable information about them begins to appear only in Mesopotamia, starting from the 10th century, with the westward migration of Babylonian Jews. In that time, the main Karaite communities ended up establishing themselves in places such as al-Fustat and Jerusalem in particular.

To summarise, Donnolo's life unfolded in a complex and dynamic world, characterised by substantial movements of people and subsequent cultural exchange.

2. SHABBETAY DONNOLO'S LIFE

Three sources can be used to reconstruct Shabbetay Donnolo's life. The most substantial (albeit not very long) of these is the introduction to his *Book of the Wise*, while further biographical details can be inferred from a couple of brief passages in his *Book of Mixtures* and from the *Life of Saint Neilos of Rossano*, written in the first half of the 11th century. Other possible mentions or references will be discussed briefly.

Autobiographical passages from his work

In a short autobiographical section in the introduction to his *Book of the Wise*,[4] he introduces himself as «Shabbetay Bar Abraham, also known as Donnolo[5] the physician» and mentions that he is originally from city of Oria, which lies roughly halfway between the two ports of Tarent and Brindisi, in the south-eastern Italian region of Apulia. Donnolo writes that the Saracens pillaged his city, killing and deporting many members of its large and flourishing Jewish community, including his own family. He adds that his parents were deported to Palermo first and then to Africa, probably Tunisia, and that he himself escaped this fate when a relative from Tarent paid a ransom for him when he was twelve years old. He remained in the «region that was under Roman [i.e. Byzantine] rule» and never saw his family again. He dates the Saracen attack to the 9th of Tammuz of the year 4685 of the Hebrew calendar, which corresponds to 9th July 925 CE, although it seems that Oria was pillaged on 4th July that same year (Lacerenza 2020a: 138). Donnolo recounts that, after being freed, he worked a number of jobs before deciding to devote his life to acquiring knowledge and wisdom.

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[4] Mancuso 2010: 224–235 // 137–139. Further citations from the Hebrew text of *Book of the Wise* will refer to the page numbers of Mancuso's edition, both for the Hebrew text and for the English translation.

[5] Generally believed to derive from Latin *domnulus*, "little lord", Greek Δόμνουλος, the name Donnolo was also a given name among the Jews, as is attested, for example, in the bilingual (Hebrew and Latin) epitaph of Donnolo son of Donnolo, found in Taranto and dated between the 7th and the 8th century (Colafemmina 1977: 118–119; Noy 1995: 167–168; Colafemmina 2005: 37–38). In Arabic-speaking lands, the name Donnolo was rendered as Dunash: «The name Donnolo is Greek [*sic*] in origin but is common among Jews in its Arabic form "Dunash"» (*Encyclopaedia Judaica, Second Edition*, vol. 5, p. 750, s.v. *Donnolo, Shabbetai*).

In his *Book of Mixtures*, Donnolo mentions two places where bees produce the best honey, thanks to the herbs and flowers that grow there. One is his native city of Oria and the other a place he calls "Martis" (*mrtys*) described as near the city of Rossano (now Corigliano Rossano), on the Ionian coast of the south-western Italian region of Calabria. There are two places, both very close to Rossano, with similar names: one is Mirto, a hamlet near the town of Crosia, and the other is Martucci. The latter toponym refers to a noble family that arrived in the region in the late Middle Ages, i.e. centuries after Donnolo's death, however, so this previously suggested identification (Cuscito 2014: 99, note 31) should be ruled out, leaving the name "Martis" to be associated either with Mirto (Fiaccadori 1992) or with another, unidentified location. In the former case, the difference in vocalisation could potentially be explained by a transcription error that might have rendered an original *mrtws* (מרטוס) as *mrtys* (מרטיס), inadvertently shortening the second-to-last waw into a yod. The first vowel is not written, so the first syllable could be read either *ma* or *mi*.

The book is presented as the result of a forty-year medical career (Ferre 2004: 12), from which we can infer that Donnolo did not study astronomy only but first and foremost medicine. As a doctor, and a renowned one, he is mentioned in a work written decades after his death, namely *Life of Neilos the Younger*.

Mentions of Donnolo in the *Life of Saint Neilos the Younger*

Saint Neilos the Younger, a monk and abbot contemporary with Donnolo, was originally from Rossano. Later in life, he moved to Grottaferrata, a few kilometers southeast of Rome, where he founded an abbey, where, to this day, Catholic Mass is celebrated according to the Greek rite. Neilos' hagiography, entitled *The Life and Conduct of Our Venerable Father Neilos the Younger* (Βίος καὶ πολιτεία τοῦ ὁσίου πατρὸς ἡμῶν Νείλου τοῦ Νέου), was written in Greek and by an anonymous disciple of his, probably Bartolomeo (d. 1050), the third hegumen of Grottaferrata abbey.[6] The hagiography has been translated into Latin, Italian, modern Greek and English.[7]

Its recurrent anti-Jewish tone notwithstanding, the hagiography portrays Donnolo as a good doctor. As we will see, it might be argued that the prestige the hagiography accords Donnolo could have been functional to its apologetic agenda. The Jewish physician is referred to on three separate

[6] Luzzi 2004: 177–179. See also the discussion in Sansterre 1985: 517, ff.

[7] Quotes from the *Life of Saint Neilos the Younger* are taken from the English edition (Capra *et al.* 2018).

occasions: in the first (§50) he offers his services to Neilos, to ease the pain resulting from his ascetic practices, but the latter declines; in the second (§51) together with an another, unidentified Jew, Donnolo asks Neilos to talk about God; in the third passage (§56), Donnolo testifies to Neilos' conversion of a local Byzantine governor called Eupraxios.

Two further passages in the *Life of Saint Neilos* mention the Jews in general. The first (§35) tells us that a Jewish merchant was robbed and killed in the Calabrian city of Bisignano. When the perpetrator was about to be sentenced to death, a monk arrived with a letter from Neilos arguing that, should the perpetrator be executed, six further Jews would need to be crucified, since the life of a Christian is worth the life of seven Jews. The second passage in which the Jews as a whole are mentioned appears in a later section (§77) in which Neilos discusses whether it is appropriate to fast during the Sabbath. Here, using an antisemitic motif commonplace until very recent times, the Jews are called «wretched», «God-killing» and «impious». Whether or not Neilos actually uttered these words, the hagiography's strong bias against the Jews and the Jewish religion is evident, since it promotes the thesis of Christianity's superiority to Judaism, which is treated as an obsolete religion, as was usual in Christian apologetic texts. The three passages of the *Life* in which Donnolo appears constitute clear examples of this attitude, as we will see below.

§50 marks Donnolo's first appearance in the *Life of Saint Neilos the Younger*:

> On the next day as the holy man departed from there and entered the city, a Jew by the name of Domnoulos came up to him. Neilos had known him since his youth as someone very learned in the law and adept at medical science. He began to speak to the blessed man as follows: "I have heard about your asceticism and intensive abstinence, and knowing the temperament of your body, I am amazed that you have not fallen victim to epilepsy. But from now on, if you agree, I can administer a medicine appropriate to your bodily temperament, so that with its help you will not feel threatened by any disease for the rest of your life."
> The great one said to him, "One of your Jews said to us, *'It is better to trust in the Lord, than to trust in man.'* So, having placed trust in our physician, that is, our God and Lord Jesus Christ, we have no need of the medicines prepared by you. You will not be able to mock the pure Christians in any other way than by boasting that you administered your medicines to Neilos." The physician heard this, but made no response to the holy man.

As we will discuss in depth later on, modern scholars have seen this passage as evidence that Donnolo and Neilos had been friends since their youth. Yet, the text might also mean that Neilos had simply heard about

Donnolo and knew of him. In other words, the hagiographer might simply have meant that Donnolo was famous in the Rossano area and that news of his fame as a doctor had reached Neilos, without necessarily implying that he knew him personally. The detail about Donnolo being well versed in the Law (νομομαθῆ) probably means that he was familiar with the Torah, which is not surprising, given his commentary on Genesis in his *Book of the Wise*, which predated the hagiography.

Another element which has led scholars to believe that the two were long-term friends is Donnolo's claim that he knew Neilos's "bodily temperament" (γιγνώσκων τὴν κρᾶσιν τοῦ σώματὸς σου). While such an interpretation is possible, Donnolo might also have been making a diagnosis formulated simply by observing Neilos' complexion at that moment, without implying that the two had been acquainted for some time.

The following paragraph (§51) recounts a further episode which seems to have occurred right after the one described above. Donnolo and an unnamed Jew ask Neilos about God. Neilos deems the two Jews unfit for this kind of revelation, unless they spend forty days leading his same way of life. The two refuse, fearing excommunication and subsequent stoning by the local Jewish community, to which the monk replies by reprimanding them, as Jesus did with his contemporaries:

> Another man had come with Domnoulos, and he said to Neilos, "Tell us something about God, for we desire to hear your words." The father said to him, "Your words, O Jew, are like a man ordering an infant to grab a tall tree with his hand and bend it to the ground. If you wish to hear something brief about God, take your prophets along with the law, and go to the wilderness where also I live in spiritual tranquility, and there devote yourself to reading for as many days as Moses spent on the mountain. After that you may ask me questions, and I shall respond, *'Be still and know that I am God.'* For if I should speak to you now about God, I would be writing on water and sowing seeds in the sea."
> The two men responded, "We cannot do so, since we will be cast out of the synagogue and stoned by our own people." The father said, "Thus did your fathers die in their lack of belief. As the evangelist said, *'Many of the authorities believed in Jesus, but for fear of the Jews they did not confess it, lest they should be put out of the synagogue, for they loved the praise of men more than the praise of God.'"* With these words, Neilos left them and returned to his cell in the monastery, to devote himself to contemplation and the study of the divine Scripture.

The third mention of Donnolo appears in §56, where he is described as attending the miraculous healing of Byzantine judge Eupraxios following

his conversion due to Neilos. Eupraxios had been described earlier (§53) as a sinner and as having fallen ill (§54) with a venereal disease «for the unrestrained violations he had made against the law of nature»:

> Also in attendance as a physician was the Jew Domnoulos, whom I mentioned earlier, who carefully observed the entire ceremony; upon leaving he marveled at what had happened and told those present, "Today I saw amazing deeds, such as I have heard happened long ago. Now I have seen the prophet Daniel taming the lions. For who could ever place his hand upon this lion? This new Daniel both cut off its hair and placed the monastic hood upon it." And this is what the Jew said.

Donnolo's presence in this scene seems to be designed to testify to the greatness of the hagiography's protagonist. Donnolo was attending to Eupraxios' care and may have helped relieve some of his physical suffering, but only Neilos could heal his soul. Once again, the Hebrew Bible is used in a way that conveys the message that Christianity represents the true fulfillment of the Jewish Scriptures: Neilos is the new Daniel, even a Jew acknowledges that. What is worth noting, though, is that the passage does not quote the Bible itself, since it makes no mention of Daniel taming the lions, but rather a later tradition present in Christian sources and in the *Book of Yosippon* (Flusser 1981: 30) as well. The latter probably cites this variation of the story from Christian sources, as it does elsewhere (Flusser 1981: 29). In fact, «legends about saints being spared by ferocious beasts are very common in Christian literature, but extremely rare with the Jews» (Ginzberg 2003, vol. 2: 1116, n. 13).

These three episodes share a single theme, namely disparaging Judaism and affirming the superiority of Christianity in its interpretation of the Bible, presented as the correct and ultimate one. Furthermore, the first episode, in which Neilos refuses Donnolo's treatments, would seem to reprise the classic Byzantine theme of God as the only true physician (Kazhdan 1984: 45–46; Garzya 2006: 12). This is a common theme in early medieval hagiographies (Sharf 1976: 115; Aulisa 2009: 285), with one significant difference: in works such as a homily (*Oratio* VIII.5) by John Chrysostom[8] (4th–5th centuries) and the *Life of Saint Simeon Stylites the Younger*,[9] Jewish medicine

[8] Migne, *Patrologia Graeca* XLVIII, col. 937: ἀλλ΄ ἄν μικρά τις γένηται νόσος, εὐθέως ἀποπηδᾷς αὐτοῦ τῆς δεσποτείας, καὶ ἐπὶ τοὺς δαίμονας τρέχεις, καὶ πρὸς τὰς συναγωγὰς αὐτομολεις.

[9] *Vitae capita selecta* § 208 (Delehaye 1923: 267): Αγατόντες γὰρ οὗτοι Τιμόθεόν τινα τῆς τῶν Ἑβραίων μὲν θρησκείας ὑπάρχοντα, ἰατρικὴν δὲ ἐπαγγελλόμενον

is portrayed as demonic in nature. Here it is indeed dismissed and regarded as inferior, but there are no explicit references to diabolical influences and its efficacy does not seem to be questioned.

The few passages in the *Life of Saint Neilos the Younger* that mention Donnolo have been interpreted in various ways by scholars in recent decades.

Donnolo in the *Life of Neilos*: A critical review of secondary literature

The curator or the Italian edition of the *Life*, namely Germano Giovanelli (hieromonk of Grottaferrata Abbey), reads §50, in which Neilos is interpreted as having known Donnolo for some time, in the light of §2, which recounts that Neilos:

> both hated and loathed all superstitions, and mocked the so-called amulets and supposed exorcisms, though he himself did not lack knowledge of books on such subjects, due to his sharpness of mind and eagerness to know everything.

From this passage, Giovanelli infers that it is «very likely» («molto probabile»: Giovanelli 1973: 123, note 10) that Neilos acquired this kind of knowledge from the conversations that he had with Donnolo, who allegedly let him read some of his books when they were young. Following the commentary to the bilingual (Greek–Latin) edition of the *Life*, which refers to «astronomical and mathematical observations and tables» («observationibus tabulisve astronomics aut mathematicis», Migne, *Patrologia Graeca* CXX, col. 20, note 3), he identifies the «so-called amulets and supposed exorcisms» with astronomy and astrology. Giovanelli justifies the association of these two disciplines with what he calls «magical and diabolical arts» («arti magiche e diaboliche»), connecting them with a late 11th century controversy involving Cardinal Bennone (also known as Beno or Benno), on one side, and popes Gregory VII and Benedict IV, on the other. In the context of a dispute which was part of the much wider Investiture Controversy, the cardinal accused the two popes he called

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τέχνην, τὸ δ' ἀληθέστερον εἰπεῖν ἐχθρὸν τοῦ υἱοῦ τοῦ Θεοῦ ὄντα — ἦν γὰρ οὗτος καὶ δαιμόνων θεραπευτής, γοητείαις ἐνασχολούμενος ἀεί· — τοῦτον ὡς δόκιμον ἐμήνυσαν Σοφίᾳ τῇ βασιλίδι: ἥτις περὶ τῆς νόσου τοῦ βασιλέως ἀναθεμένη τῷ κακοδαίμονι ἐκείνῳ, πολλῷ πλέον ἠπατήθη. Incidentally, the older testimonies of this work are coeval to the *Life of Saint Neilos the Younger* (Delehaye 1923: LXI–LXII).

«princes of evil spells» («principem maleficiorum») of being involved with «de mathesi», i.e. astrology. This is apparently seen by Giovanelli as proof that for Neilos' hagiographer

> the purpose of these words [*scil.* «amulets» and «exorcisms»] was to hint at mathematical and astronomical disciplines which, in those dark, ignorant times, were regarded by common folk as superstitious and cabalistic sciences, to the extent that their practitioners gained a reputation as "necromancers", since some of them, like false masters and exploiters of people's ignorance, misled them by pretending to know and predict the future from the motion of the stars.[10]

Giovanelli's interpretation of this passage is based on a number of logical leaps and assumptions that can be disproved with the following arguments. First of all, his words show a prejudice against the Middle Ages which is now criticised as failing to consider the constant longing for rationality that appears in several authors such as the Scholastics, for instance. Secondly, we do not know what ordinary people in the Middle Ages actually thought, since we lack extensive documentation on the subject, and it is thus entirely possible that there might have existed both sceptics and believers in various doctrines and worldviews. Moreover, such a conflation of what the author calls "cabalistic sciences" with necromancy and astrology seems to be based on his own bias, which he tries to corroborate with a polemical text, that obviously cannot be treated as an impartial source. Furthermore, astronomy and astrology were not necessarily considered one and the same, as Giovanelli seems to do: for example, Claudius Ptolemy, considered the main authority in astronomy and astrology throughout the Middle Ages, dealt with the two disciplines in two separate texts, namely *Great Syntaxis* (more widely known as *Almagest*) and *Tetrabiblos,* respectively. Thirdly, there is no evidence that Donnolo permitted Neilos to read his books, nor that Neilos' knowledge of amulets and exorcisms was influenced by the Jewish physician in any way.

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[10] «Non crediamo pertanto avventato il supporre che l'agiografo, con quelle parole, volesse alludere appunto alle discipline matematiche ed astronomiche, le quali, in quei tempi oscuri e d'ignoranza, venivano riguardate dal volgo come scienze superstiziose e cabalistiche, tanto che ai loro cultori era data la nomea di 'negromanti', poiché alcuni di essi, falsi maestri e speculatori dell'ignoranza del popolino, se ne servivano male per la pretesa di conoscere e di predire il futuro dal corso degli astri» (Giovanelli 1973: 123, note 10).

Furthermore, in the 10th century, shortly before the *Life* was written, Pope Sylvester II (Gerbert of Aurillac, 946–1003) engaged extensively with astronomy. Around the same time, another abbey was constructed in the northern Piedmont region, featuring a portal adorned with images of both zodiacal and non-zodiacal constellations (Paladino 2013: 51). This suggests that, at least in the 10th century, the Church did not universally regard astronomy as a diabolical art. Understanding the cycles of nature and the seasons was not only valuable for agriculture and taxation, but also essential for determining the dates of religious holidays, such as Easter. This holiday's timing relied on astronomical observations or calculations of the first full Moon following the Spring equinox. Astrology, by contrast, has almost always been a target of criticism and attacks from the Church. Nonetheless, ordinary people often turned to astrologers, who were certainly not regarded as necromancers.

Conflating astronomy with astrology and both with Qabbalah and necromancy would appear to be an oversimplification of Giovanelli's, who also seems to have vastly overestimated the role of astrology in Donnolo's work. In this latter regard, Giovanelli was perhaps following medieval authors and modern scholars in attributing certain astronomy and astrology works to Donnolo, although their actual paternity is not certain, as will be discussed in the next chapter. In any case, none of these texts contains anything pertaining to magic or other occult arts. Donnolo did, in fact, learn some astrology from his master Bagdat (as we will see in the next chapter) but did not make extensive use of it in his work. Most of all, as we have already seen, nothing in §2 of the *Life of Neilos* is about Donnolo: the passage in question does not mention him at all, so Giovanelli's assumptions are not confirmed by the text. His intention would seem to be to depict the founder of his own abbey as holy as possible and blame Donnolo for having tried to contaminate Neilos' soul with knowledge interpreted as "diabolical".

Giovanelli further attributes to Donnolo a cunning scheme designed to publicise himself with notables and the general public, as if he were attempting to exploit Neilos' fame for his own gain. In Giovanelli's view, Neilos, «very intelligent as he was», was aware of what the Jew was trying to accomplish and thus refused his help, while also astonishing him with a quote from one of Donnolo's most famous kinsfolk, namely King David (Giovanelli 1973: 166, note 138). Nothing of this is there in the text, so it must be ascribed to speculation by Giovanelli, which shows, to say the least, an unwarranted prejudice against the Jewish physician. Even the source, which in itself is not exactly benevolent towards Donnolo, does not cast doubt on his good will, but Giovanelli takes it a step further. Conversely,

when commenting on §82, Giovanelli adds nothing of his own, simply stating that Donnolo was so impressed by Neilos' miracle that he compared the monk to the prophet Daniel, without further commenting on Donnolo's remark.

Giovanelli's overinterpretation of §2 could have been influenced by similar episodes in other sources. As we have seen, Andrew Sharf has noted some parallels in earlier and coeval Byzantine texts. However, Sharf points out a substantial difference between these two sources and Neilos' hagiography: as already stated, both in John Chrysostom's *Homily* and in *Life of Simeon Stylites*, Jewish medicine is explicitly linked to the work of demons, while Neilos' answer seems to imply that Donnolo's craft is somehow effective. According to Sharf (1976: 115):

> [Neilos] casts no doubt on the propriety of the treatment proferred to him. Quite the contrary. His fear is that Donnolo might delude Christians into becoming his patients not beguiled by useless fancies or by demons, but because he has been treating a monk: presumably, therefore, with some success.

In this view, §56 would show further proof of Donnolo's skills as a medic and of his social importance in Rossano, since he is present at the deathbed of a man as important as Eupraxios. In Sharf's words (1976: 116):

> The position enjoyed by [Neilos] increases the value of his testimony, while the ambiguities and paradoxes of that position, by emphasising the ambiguity of his relations with Donnolo, emphasise his recognition of Donnolo's qualities…

Sharf seems to conclude that these passages are historically accurate, seeing a difference in the way Jewish physicians are treated in the *Life of Neilos* as compared to the two other hagiographical sources he cites. This difference, together with Donnolo's presence at Eupraxios' deathbed, allows him to consider these passages as credible testimony to Donnolo's proficiency in the medical arts.

Yet, these three passages in the *Life* can still be read in connection with the antisemitism of the two other passages referring to the Jews in general. In other words, Sharf's premises can be used to reach a different conclusion that requires one fewer assumption, i.e. that the hagiography can be fully trusted. It might be speculated that the Eupraxios episode, like the others, fulfils an apologetic rather than a historical purpose.

Eupraxios' sudden recovery takes place right after his repentance thanks to Neilos, when the latter strips the former of his civilian clothes and dresses

him in a monk's robe. Moreover, the nobleman's illness had a severe impact on his genital organs, and this detail is explicitly presented in the source as a symbol of his dissolute life. Messages of this sort were commonplace in Byzantine sources, which saw a strong correlation between sin and sickness, especially regarding venereal diseases which were seen as signs of divine punishment for promiscuity (Garzya 2006: II). If read through this lens, then the episode tells the story of the perdition and redemption of a once wicked man who is converted by a saint who makes him see the error of his ways, thus saving him from eternal damnation. In all of this, the Jewish doctor plays no role at all except to testify to the saint's greatness.

Thus, in contrast to Sharf's interpretation of this passage as proof of Donnolo's skills, it can also be read to mean the opposite: Donnolo's medicine, and thus Jewish medicine in general, is considered totally useless, and true healing and salvation comes from Neilos, i.e. Christianity, alone. If this interpretation is correct, then the *Life of Neilos* does not seem to be much different from John Chrysostom's homily or Simeon Stylites' hagiography. It is true that the devil is not mentioned here, but it is still implied that Donnolo could do nothing, since he was already at Eupraxios' deathbed when Neilos arrived and the nobleman was still sick. Jewish medicine is not presented as diabolical but as useless at best.

Another parallel between this episode and the one recounted in §50 consists of their citation of a biblical passage which, in both cases, is used to depict the present situation. In §50, Neilos quotes the Psalms to underline his faith in God and distrust of human, or perhaps just Jewish, medicine. In §56, the Bible is quoted by Donnolo in recognition of the greatness of the Christian monk. In both cases the hagiographer uses the Hebrew Scriptures to glorify his master and, consequently, Christianity, while belittling Judaism, personified by Donnolo. Whilst in §50 Christianity is presented as the true interpretation of the Hebrew scriptures, in §56 the Christian is presented as the new Daniel. In the hagiographer's view, which was shared by the vast majority of Christian apologists, Judaism was rendered obsolete by the coming of Christ.

It was Cesare Colafemmina, the pioneer of research on Southern Italian Jewry, who initiated the recent scholarly trend that highlights the antisemitic undertones in the *Life of Neilos*: «Neilos knows and observes the Jews in his land. He just sees them through the veil of prejudice that Christian theology had woven through the centuries».[11] He comes to this conclusion after

[11] «Nilo conosce e osserva gli ebrei della sua terra. Solo che egli li vede attraverso il velo dei pregiudizi che la teologia cristiana aveva intessuto attraverso i secoli» (Colafemmina 1996: 10).

quoting a number of derogatory terms appearing in §77, namely «miserable» (ταπεινοὶ) in one passage[12] and «deicide» (θεοκτόνους) and «infidel» (ἀσεβέσιν) in another,[13] which are common epithets in Christian anti-Jewish polemics. Still, Colafemmina deems «rather neutral» the sobriquets «miserable» and «infidel» while assigning an antisemitic connotation to «deicide» only.

Regarding the Bisignano episode (§35), it has already been demonstrated that it does not reflect the real historical situation (Vivacqua 1994: 257) for several reasons. The most notable anachronism is the reference to crucifixion, which was prohibited centuries earlier (Colafemmina 1996: 8), leading Colafemmina to deem the whole episode a complete fabrication. Moreover, Neilos' verdict according to which the judges were to kill six more Jews to fully compensate for the life of one Christian, would seem to be a further reworking of a biblical episode with a specific purpose, in this case Genesis 4:15, in which Cain's death was to be avenged sevenfold (Colafemmina 1996: 8–9). This reference to seven Jewish lives making up for the loss of one Christian life is unfounded, both historically and legally, and the whole passage would thus seem a pretext for an antisemitic use of the Hebrew Bible. Further proof of the antisemitic intentions of this passage is provided by the fact that the focus is shifted from punishment for the robbery and murder of the Jewish merchant to the mercy that the perpetrator, a Christian, is believed to deserve (Lacerenza 2018: 233).

Colafemmina does not believe in the historicity of the alleged conversation between Neilos, Donnolo and the anonymous Jew described in §51, because it seems to reflect merely apologetic intentions by the hagiographer. The repeated references to the Christian Scriptures, comprising both explicit quotes and mere hints (e.g. to John 9:22 and 12:42; Acts 7:59), give the impression that «the whole dialogue between Neilos and Donnolo is an artificial reconstruction, in order to present the Christians with a behavioural paradigm for their relationship with the Jews».[14] Yet, Colafemmina does not

[12] Εἴθε δὲ καὶ οἱ ταπεινοὶ Ἰουδαῖοι προσεκύνουν τὸν ἐσταυρωμένον Δεσπότην καί, εἰ ἐνήστευον καὶ αὐτὰς τὰς Κυριακάς, οὐδέν μοι ἔμελεν περὶ τούτου (Capra *et al.* 2018: 234).

[13] [Ο]ὐ σχολάζομεν δὲ πάλιν ἀπὸ τῶν ἔργων, ἵνα μὴ ἐξομοιωθῶμεν τοῖς θεοκτόνοις καὶ ἀσεβέσιν Ἰουδαίοις, καὶ ὑμεῖς ἀναγκαίως νηστεύετε, προκαθαίροντες ἑαυτούς τῇ ἀναστασίμῳ καὶ ἁγιᾳ ἡμέρᾳ (*ibid.*: 236).

[14] «[L]'intero dialogo di Nilo con Donnolo più che la relazione fedele di un fatto storico ne sia la ricostruzione artificiosa, al fine di offrire ai cristiani un paradigma di comportamento nei loro rapporti con i giudei» (Colafemmina 1996: 6).

seem to apply the same criterion to §50 and §56, which he seems to consider historically accurate. For instance, this is how he comments on the latter:

> His fame brought Donnolo to imperial judge Eupraxios' deathbed […] Donnolo witnessed the encounter between the stern monk and the humbled judge. The Jew was amazed by the transformation that had taken place in Eupraxios and his views on the event were duly noted. Coming from a Jew, who was incidentally famous physician Donnolo, this was exceedingly honourable for Neilos.[15]

Thus, Colafemmina does not seem to cast doubt on the truthfulness of the account, in spite of the fact that, as we have already noted, there are parallels in it with the very same passage he believed to be an ideological narrative designed to show that true healing, both physical and spiritual, can happen only within Christianity. This episode, too, contains biblical echoes, as does the account of the dialogue between Neilos and the two Jews. Whilst implicit and explicit references to the Bible cast doubt on the authenticity of §51, Colafemmina does not seem to consider them as valid reasons for scepticism regarding the account of Eupraxios' healing. The episode narrated in §50 similarly does not seem to pose particular problems for Colafemmina:

> Neilos had known Donnolo since his youth as a great Jewish expert in the law and skilled in the medical arts. Neilos was not unknown to Donnolo either and he was struck by the Christian monk's ascetic rigour. His professional sensibilities led him to offer [Neilos] his medical services […] Neilos' amazed hagiographer reports his master's response to the offer […] Faced with this answer, which cast theological and polemical light on a gesture of human and professional care, Donnolo did not persist. He did want to respond to the provocation implied in Neilos' identification of the Lord of the Jewish Scriptures with Jesus Christ.[16]

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[15] «La fama della sua arte portò Donnolo al capezzale del giudice imperiale Euprassio […] Donnolo fu spettatore dell'incontro tra il rigido monaco e l'umiliato giudice. L'ebreo stupì della trasformazione che si era operata in Euprassio, e il suo giudizio sulla vicenda fu diligentemente annotato. Esso, infatti, pronunciato da un giudeo, che era poi il famoso medico Donnolo, era oltremodo onorevole per Nilo.» (Colafemmina 1996: 2).

[16] «Nilo conosceva Donnolo fin dalla sua giovinezza per essere il giudeo assai esperto nella Legge e valente nell'arte medica. Anche Nilo però non era sconosciuto a Donnolo, che era rimasto colpito dal rigore ascetico del monaco cristiano. La sua sensibilità professionale lo portò così a offrirgli i servigi della sua arte […] il biografo

What these two quotes state can be viewed differently, in order to suggest a reinterpretation of §50 in an exclusively ideological way, using the very same arguments that Colafemmina applies to §51: if the latter cannot be considered historically valid on the grounds of its clearly apologetic purpose, the same can be said of the former, in which Neilos is presented as more effective in healing Eupraxios and more knowledgeable about the scriptures than Donnolo, thus hinting at the superiority of Christianity over Judaism in both theory and practice.

Francesca Luzzati Laganà has dealt with the theme of references to Donnolo in the *Life of Neilos* in two different essays (1996 and 2004). In the former, she points out that the historical data is closely intertwined with elements that clearly betray the work's underlying ideology,[17] an element she finds very clear (Luzzati Laganà 1996: 710). In her view the Bisignano episode is an *exemplum* (i.e. a short story with a moral meaning) containing a nucleus of local chronicle (Luzzati Laganà 1996: 715), following Colafemmina and von Falkenhausen (see below) in their scepticism regarding this account.

Luzzati Laganà connects the hagiographer's insistent anti-Jewish polemic with a trial in which a group of Jews were accused of having desecrated certain sacred images (Luzzati Laganà 1996: 718). This trial took place in Rome in 1020–21 and was thus close both in place and time to the writing of *Life of Neilos*. In her view, the hagiographer could have been influenced by this event and added anti-Jewish elements to his work, adopting several themes common to earlier and contemporary literature, thereby sacrificing historical accuracy, which probably was not a priority (Luzzati Laganà 1996: 721). Regarding references to Donnolo's presence at Eupraxios's deathbed, this is interpreted by Luzzati Laganà as a reluctant admission of Donnolo's skill (Luzzati Laganà 1996: 723).

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di Nilo, riferisce ammirato la risposta del suo Maestro all'offerta […] Dinanzi a questa risposta, che buttava sul teologico e sul polemico un gesto di attenzione umana e professionale, Donnolo non insistette. Non volle neppure cogliere la provocazione implicita nell'identificazione operata da Nilo del Signore delle Scritture ebraiche con Gesù Cristo» (Colafemmina 1996: 3).

[17] «La storicità del racconto, presentato in una cornice di dati esteriori attendibili, si combina con una caratterizzazione tipologica del fenomeno della santità nei termini incarnati da Nilo. Mentre è impossibile distinguere in senso stretto l'agiografo dal santo, cospicui elementi formali di natura retorica si rivelano strumenti di un'operazione volta a modellare la materia in senso paradigmatico e filtrano la *Weltanschauung* che li sottende» (Luzzati Laganà 1996: 709).

In her more recent article on Donnolo's depiction in *Life of Neilos*, after a historical contextualisation of the work and the facts recounted in it and emphasising its underlying antisemitism (Luzzati Laganà 2004: 81), Luzzati Laganà poses the question of the degree of acquaintanceship between Donnolo and Neilos. She remarks that the terms used in §50 are ambiguous enough to leave the reader wondering whether the two had known each other personally since their youth or each had simply heard of the other's fame (Luzzati Laganà 2004: 82). She is convinced of the historical plausibility of the episode recounted in §50, at least in two fundamental points: a) the two knew each other personally; b) they met for the first time at a younger age (Luzzati Laganà 2004: 83). Luzzati Laganà seems adamant on point b) in particular, but as we have already seen and will be explained further later on, there are reasons to doubt this part as well.

A recent study by Filippo Burgarella regarding references to Donnolo in *Life of Neilos* continues the trend in recent scholarship to emphasise the hagiography's anti-Jewish sentiment. Burgarella points out that, in the pages regarding Donnolo and the Jews living in Rossano and its surroundings, the hagiographer employs themes that are recurrent in Byzantine apologetic literature. The aim of *Life of Neilos* is to proclaim the superiority of Christianity on Judaism, which makes those passages something comparable to an antisemitic pamphlet (Burgarella 2013: 50).

Regarding the supposed friendship between Neilos and Donnolo, Burgarella points out that it is likely that the two shared a common cultural background, but this does not imply that they studied together or from the same books, but that there must have been «affinities, contiguity and contaminations [in their respective educations] especially since Donnolo explicitly refers to knowledge, techniques and works that can easily been ascribed to the *tà legòmena phylaktà kaì toùs legoménous exorkismoùs* that were prohibited by the Greek Church and the Byzantine state» (Burgarella 2013: 53, my translation).

Yet, as has already been pointed out (Pertusi 1983: 21), the hagiographer uses the term *phylakta* (φυλακτά) instead of *phylakteria* (φυλακτήρια). The latter term was employed elsewhere in *Life of Neilos* (§63) to describe a phylactery carried by Neilos which contained passages from the New Testament and which he used to heal a wound. Further proof that *phylakta* are different from *phylakteria* is provided by §2 which notes that Neilos despised *phylakta*, while he obviously had no qualms about using a phylactery in an episode (§63) that the hagiographer narrates without casting a negative light on it. It might be speculated that the term *phylakta* indicates some generic, non-sacred amulets, meaning that they were not related to the Scriptures or had no particular religious significance. Since the term appears to be

present mainly in medical texts (see Alexander of Aphrodisias' *On Fevers* 22.1 for example), this might constitute further proof of the idea of a very close connection between bodily health and salvation of the soul, which is a recurring (if not the main) theme in *Life of Neilos*. In any event, it shows how hazy the border between what we now consider religion and what we would call superstition was, or at least different from modern perspectives (Pertusi 1983: 19; Guillou 1983: 51–53).

Beside a common background in Aristotelian physics and Neoplatonic spirituality, which were part and parcel of medieval learning, Donnolo and Neilos also shared a knowledge of the Scriptures, of course. It is noteworthy, though, that Donnolo quotes from the *Book of Wisdom* (Mancuso 2010: 287, note 31), which does not appear in the Hebrew Bible, since it was written in Greek by a Hellenised Jew. Moreover, Donnolo seems acquainted with the idea of *reditus* (i.e. conversion or return to God) of the Church Fathers (Mancuso 2010: 38–39), although it cannot be said for certain that he had actually read their works (Sermoneta 1980: 896–898). The presence of these doctrinal elements in his work do not necessarily prove that Donnolo learned about them directly through Neilos, but it does show that the two shared a common cultural background at least. Although the exact extent of this common ground cannot be ascertained, what *Life of Neilos* and Donnolo's *Book of the Wise* do show beyond doubt is that, in 10th-century Southern Italy, Jewish and Christian cultures did not stagnate in separate compartments, but benefitted from mutual influences.

Life of Neilos as a source for Donnolo's biography

We have already seen that, albeit with increasing scepticism, *Life of Saint Neilos the Younger* has been considered historically accurate, at least from certain points of view. The problem lies in determining which aspects of it can be considered credible evidence. It has already been recognised that several of the people mentioned, especially up to and including §40, play a symbolic role in the story of the protagonist's conversion: «all, or almost all, the characters appearing [are] symbolic representations of an ascetic journey» (Luzzi 2004: 181, my translation). Neilos' fever in §3 can equally be interpreted symbolically. According to the hagiographer, the «all-seeing Providence of God» (Ἡ δὲ τοῦ Θεοῦ παντέφορος πρόνοια), after having given him visions of the «unending torment of future punishments», «permitted him to struggle with incessant shivering and a violent fever, so that every day Neilos saw before his eyes death, which snatches away humankind» (Garzya *et al.* 2018: 11). The fever disappeared, according to §4, only after Neilos crossed a river while following a monk to a monastery, which strongly inspired him to embrace a

monastic life. It is difficult not to see a two-layered meaning in the account of this episode (Luzzi 2004: 181, note 30), since the text itself shows a very clear connection between sickness and sin, on one hand, and healing and ascetism, on the other. The fact that the river healed Neilos and that his crossing coincided with the sight of the monastery means that it would be hard not to read it as an allegory of baptism and his decision to be a monk as a new birth.

With these premises, we can now reread one more time the episode of Donnolo offering his services to Neilos, hypothesising a further subtext in which both sickness and health are considered as deriving from God. In this view, the use of a physician's skills, especially if he is not a Christian, might be considered an act of weakness or lack of faith, or even a challenge to divine Providence. The sickness Donnolo offers to cure in §50 is not simply an accidental infirmity, but it represents the effects of Neilos' ascetism on his body, meaning that his ailments are very likely to have come from God. In the same paragraph, the hagiographer emphasises that Neilos was resisting these very harsh conditions in a surprising, even miraculous, fashion. Elsewhere (§ 23) sickness is said to result from diabolical activity, but in the end it is still depicted as depending on divine permission, not only because evil happens only when God allows it to, but also because resisting this kind of disease heightens the ascetic's close relationship with God. If an ailment could be sent by the devil, *Life of Neilos* is adamant that supernatural healing always comes from God, contrary to the claims of other hagiographies. Regarding human medicine, Neilos' hagiographer explicitly claims (§ 23) that it is utterly useless when ailments and wounds are of supernatural origin: «All the while many people encouraged him to seek medical care, though Neilos never agreed to this, knowing that demonic affliction could not be cured by human hands» (Garzya *et al.* 2018: 81). This is not to say, obviously, that whenever ailments or wounds are totally natural in origin one cannot ask God for healing, as Neilos himself does through his phylactery (§63).

Currently, the only way to judge the reliability of the hagiography regarding references to Donnolo is to compare those passages with what he himself writes in his own works. In the autobiographical introduction to the *Book of the Wise* he says that he wandered in the «lands of the Romans», meaning the Byzantine empire, and in his *Book of Mixtures* he mentions the city of Rossano in a way that shows that he had first-hand knowledge of its surroundings, as we have seen. Yet, whereas we can be reasonably certain that Donnolo was indeed in Rossano, the same cannot be said regarding his acquaintance, let alone close friendship, with Neilos.

In this regard, it is difficult to imagine that a learned man such as Donnolo would not have become acquainted with the scion of a noble family such

as Neilos before he became a monk (Pertusi 1983: 22; Lacerenza 2018: 232). It still remains to be ascertained whether this encounter actually took place and, if it did, how close the relationship was, i.e. whether it was a simple acquaintanceship or an actual friendship. The hagiography is silent on the closeness of the association, while Donnolo makes no mention of Neilos at all, though he does mention the rabbis of Oria and the mentor who taught him practical astronomy. If the supposed friendship with Neilos did not deserve even a mention in his autobiography, then either Donnolo omitted it for some reason, deliberate or otherwise, or it never existed in the first place. If we take the episodes in the *Life of Neilos* in which Donnolo appears and read them in the context of both earlier hagiographic literature and the rest of the work itself, a sceptical view would assume that these episodes could represent mere embellishments designed to criticise Judaism in order to exalt Christianity and one would doubt that these encounters actually took place. A less radically sceptical view might posit that these encounters did happen, albeit not exactly as the *Life of Neilos* recounts them.

One fact that can be ascertained from reading between the lines of the sources discussed here is that cultural exchanges between Jews and Christians did take place. On the Jewish side, we have already seen that Donnolo quotes the apocryphal *Book of Wisdom* and seems to be acquainted with the idea of *reditus* as theorised by some of the Church Fathers. On the Christian side, in §56 of *Life of Neilos*, Donnolo is said to have compared Neilos converting Eupraxios with the prophet Daniel taming some lions (incidentally, this is the second time the hagiographer compares the two, the first being in §5 and §6). We have already seen that this version of the myth is present in the Jewish *Book of Yosippon*, written at the same time and in the same area in which Donnolo and Neilos lived. Even if the *Yosippon* itself took the theme of the saint taming wild beasts from Christian lore, that would still mean that the two religious traditions were not isolated from one another. It is easier to assume, though, that the hagiographer used a version of the story of Daniel that was taken directly from Christian sources.

Similarly to the approach to the Legend of the Four Captives that we have seen in Chapter 1, the scholarly consensus on references to Donnolo in *Life of Neilos* has been that, its openly anti-Jewish attitudes notwithstanding, he is still presented in it as a highly skilled physician. So, some, if not all, of the episodes he appears in could be considered historical facts, although there are grounds for an even more sceptical approach, as we have seen.

The *Life of Neilos* presents two fundamental traits typical of what might be defined a literary genre (Luzzi 2004: 175): the first is that the characters interacting with the protagonist have symbolic value; the second is that

bodily health is presented as strictly connected with the salvation of the soul: physical condition is the immediate visible manifestation of a spiritual state, so one can obtain true physical healing only within Christianity and not from Jewish physicians, who are always portrayed negatively in these sources. The secondary literature examined in this section has shown that a certain anti-Jewish discourse has been overlooked in the past, although it comes across quite clearly in each of the five passages regarding Jews.

Regarding *Life of Neilos*, Vera von Falkenhausen has rightly noted that not all the *Lives* of saint monks constitute valid sources, since their purpose is often a moralising one and they rely extensively on fixed models and canons which distort accounts of what actually happened (Von Falkenhausen 1989: 285).

What is true, then, about Donnolo in *Life of Neilos the Younger*? It is likely that he was indeed well known. What is true of the four captives of the legend was probably also true of Donnolo: if his character was used to convey a certain type of message, then it means that he must have been famous, otherwise the episodes in which he appears would have not been as effective. One might further speculate that his fame might have been the reason why Neilos' hagiographer did not indulge in the theme of the Jew that converted to Christianity (von Falkenhausen 2012: 279–280). If the hagiographer dared not write that Donnolo was converted by Neilos, it may have been because nobody would have believed such a story, so he resorted to a more believable (and less falsifiable) story, in which the Jew simply acknowledges the sanctity of the Christian.

We can be fairly certain that Donnolo did spend time around Rossano, but we have no evidence that he was a close friend of Neilos, or that he actually asked the monk about God, nor that he was actually present at Eupraxios' deathbed. As far as we know, these latter episodes may have been strongly embellished, even entirely made up, by Neilos' hagiographer. In his anti-Jewish attitude and in his use of characters as symbols for homiletic purposes, the hagiographer seems to be more interested in caricaturing Donnolo, rather than providing a historically accurate portrait of him.

Possible mentions or references in other sources

Another possible independent source of Donnolo references is the already mentioned *Scroll of Genealogies*, which mentions several ancestors, a couple of which were called Shabbetay. It has been suggested that one of these might have been Donnolo (Starr 1970: 116; Bonfil 2009: 67). Although there is no universal consensus around this hypothesis, mainly because of the lack of supporting documentation, other alternative explanations are equally unsupported by data, and an identification of this sort can thus not

be ruled out (Lacerenza 2020a: 145). Even if the Shabbetay mentioned in the *Scroll* cannot be identified as Donnolo, the source reveals no further details on his life, except that he might have been married and might have had a daughter named Esther.

Early scholarship on Donnolo hypothesised that he was one of the founders of the Salerno Medical School (Lat. *Schola Medica Salernitana*), which is regarded as the first school of medicine, at least in Western Europe. The origins of the school are not clearly defined historically, but they are referred to in a legend claiming that it was founded by four doctors from different origins: one "Latin" (i.e. from Western Europe), one "Greek" (i.e. from the Byzantine empire), one Arab and one Jew. This legend, probably intended as a way of showcasing the school's multiculturality, appeared in the anonymous *Chronica Elini*, a text of which the earliest extant manuscripts can be dated to the 16th century (Galdi 2004: 133). Although it has been suggested that Donnolo might have studied at the *Schola Medica Salernitana* (Carmoly 1844: 28–30), there is no evidence, not even a mention in his own writings, to back up this hypothesis.

3. HIS WORK

The *Book of Mixtures*

Two manuscripts of the short treatise known as the *Book of Mixtures* or *Precious Book* have survived, one of which is in Florence and the other in Jerusalem, both dating to several centuries after Donnolo's death.[18] The main differences between them are a different rendering of foreign (i.e. non-Hebrew) words and the quantity of aramaisms, which are far more abundant in the Florentine witness.

The *Book of Mixtures* is loosely structured into a brief introduction followed by twenty paragraphs which deal mainly with practical instructions on how to prepare electuaries, i.e. mixtures of medicinal herbs with honey, grease or oils. The instructions start with some advice on how to identify the kinds of honey best suited to electuaries, where to find the best honey and the precautions to take against fraud. The rest of the treatise explains how to prepare herbs and cook honey in order to make it last as long as possible. The author recommends setting a pot full of honey on glowing embers instead of on an open flame, so that its humidity evaporates slowly. When foam starts to form on top, the pot is to be removed from the embers and the foam skimmed off the top and then returned to the embers. This procedure is to be repeated until no more foam rises, meaning that all trace of humidity has evaporated and the honey is ready to be used for the electuary, which is guaranteed to preserve the herbs for years.

The importance of *Book of Mixtures* in the history of medicine is considerable, since it was the first original treatise written in Western Europe after the fall of Rome and medieval Europe's oldest medicine text (Tamani 1999: 547). One notable feature of this book, which stands out especially when it is compared to other treatises from the same period, is the absence of Arab influence, which is very rare for a medieval medicine text (Ferre 2004: 2). In fact, were it not written in Hebrew, it would look like a typical Byzantine medicine text.[19] For example, one clue on the absence of Arab influence is its reference

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[18] Jewish National and University Library of Jerusalem, FR.95 (13th–14th centuries), ff. 77v–80v; Biblioteca Medicea Laurenziana, Plut. 88.37, ff. 84b–85b (14th century). The text has been printed in four editions: one in German (Steinschneider 1867), one in English (Muntner 1949), the already mentioned critical edition with English translation (Ferre 2004) and then an Italian translation (Cuscito 2014).

[19] «Yet nothing specifically Jewish is found in the work, which appears to be simply a Hebrew version of a typical Greek pharmaceutical text» (Lieber 1984: 236).

to Hippocrates as *Ipoqrt* (איפוקרט) in the Florence witness (f. 76r) and *Ipoqrsh/ Ipoqrs* (אפוקרש) in the Jerusalem one (f. 84v). Incidentally, the latter can be explained either by a transcription error (ש being similar to ט) or by a reference to the Latin version *Ippocras* (Steinschneider 1893: 658). In any case, none of the known transliterations can be linked to the Arabic form *Abukrat*,[20] meaning that Donnolo must have read the sources directly in Greek, a language that he learnt and probably spoke during his upbringing in a Byzantine milieu, or possibly in Latin. It has been hypothesised that he might also have been able to read Arabic because of the presence of the term *kelekh* (כלך), which is used in the third paragraph of *Book of Mixtures* (Ferre 2004: 5) for a herb from the *ferula* genus. Although the term *klh* (كلخ) does exist in Arabic, it is attested in Hebrew as well.[21] For this reason, there is no need to assume that Donnolo knew Arabic, because he might simply have been using a word already available in his own mother tongue at the time. Moreover, when he does employ non-Hebrew (i.e. Latin or Greek) terms, he always translates them into Hebrew and often into Greek or Latin and, on a couple of occasions, into the local vernacular.[22] For example:

> Everywhere one can find the herb which in Hebrew is named calamint and in Greek *qalamin*[*t*]*a* and in Latin *nepeta* and one can find the herb pennyroyal, that is *polion*, and the herb oregano, that is *qolena*, and the herb rue, that is *ruta* and all kinds of aromatic herbs such as hyssop, that is *spiynon*…[23]

In the case of *kelekh*, contrary to his normal practice with foreign loanwords, Donnolo treats the term as if his Hebrew-speaking audience would have been

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[20] «Die Form *Ipocras* für Hippocrates weist auf occidentalische Quellen, im Gegensatz zum orientalischen *Abukrat*» (Steinschneider 1868: 122).

[21] Even-Shoshan 2009, vol. 3, p. 768, *s.v.* כֶּלֶךְ.

[22] For example, in § 19, the term *rdyql'* (רדיקלא), which is closer to the Southern Italian dialect term *radìchele* (and its variations) than the Latin *radiculum*. See Cuscito 2014: 105, n. 57; cmp. Ferre 2004: 18, n. 28.

[23] Ferre 2004: 13. In §4 Donnolo uses both a word for oregano which is closer to the Italian "origano" (אוריגנון) and the form *kolena* (קולינא) of which there is evidence of several variations (*cunila*, *conila*, *cònele* etc., see Rohlfs 1956: 159) in the local Apulian vernacular still spoken today. It is worth noting that the first undisputed written text in vernacular Italian in the peninsula, namely the *Placiti Cassinesi*, written from 960 to 963, were composed in the same area (Southern Italy) and and roughly in the same years in which Donnolo wrote this treatise. That could further prove that in that time and place vernacular was already replacing Latin in written documents.

familiar with it and feels no need to clarify or translate it, meaning that he probably assumed that it was self-explanatory. Even if Donnolo was the first to introduce it, one Arabic word alone would still not necessarily mean that he knew the language as a whole. In fact, as we shall see in the next section, texts written in Arabic are not listed among the sources he claims to have read in the original language, implying that he must have read them in translation, just as he did with the Indian and Babylonian (i.e. Persian) texts. It is thus probably safer to assume that Donnolo did not know Arabic, which is consistent with the absence of discernible Arab influences on his medical work.[24]

Most of the treatise consists of as a set of instructions for Jewish physicians (§1) wanting to prepare electuaries, and it is written mostly in the third person: «He should inquire» (§2), «When the physician wants to infuse the beverage with the honey, he should do it after he crushes the spices» (§5), «When a physician wants to mix a compound for massage» (§8), «If the physician wants to use» (§10), etc. Two exceptions are represented by a couple of passages that are present in both witnesses and are written in the second person: «put it together with spices […], do not hurry to sift but wait […] then sift…» (§8), «when you hear a noise […] then you will know […] then you take […] then squeeze […] while you are emptying the cauldron…» (§17). In both cases, right after the quoted passages, the text abruptly returns to the third person. This may mean either that Donnolo's use of grammatical was inconsistent or that the text was modified by later scribes. This latter case would imply either that one of the two extant witnesses is the source for the other or that they are both based on a common, no longer extant archetype. In any case, Donnolo is explicitly mentioned as the author of the treatise.

What makes it likely that Donnolo was indeed the author of the *Book of Mixtures* is the casual mention in §4 of two cities that he actually knew, namely Oria and Rossano. In the hypothesis that this passage, or even the whole treatise, is spurious, it seems unlikely that an author pretending to be Donnolo would mention such details in passing instead of emphasising them. This hypothesis would also imply that the details of Donnolo's life were so well known to the general public at the time that a quick reference would have sufficed.

All things considered, we can be reasonably certain that the *Book of Mixtures* is authentic in most of its parts, with perhaps very few scribal interventions.

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[24] Even if we consider texts such as *Practica* and *Book of Constellations* to have been written by Donnolo, there are too few Arabic terms in them to make a case for Donnolo's knowledge of Arabic (Mancuso 2010: 35). Since both of these attributions are arguably spurious (see below), this further strenghtens the point that he makes no use of Arabic words.

The *Book of the Wise*

One text whose attribution is certain is Donnolo's *magnum opus*, a treatise on the ties between God, human beings and the cosmos. As already stated, the work mentions the year 4742, i.e. 982 CE, which can thus be assumed to be the date of its composition, although it contains ephemerides for an earlier date, namely the month of Elul 4706 «from the Creation of the World», i.e. roughly September 946 CE (Mancuso 2010: 140–141 // 236–237). The ephemerides shown in the treatise hint to the fact that the text was probably written about 19° west of Alexandria, which is compatible with the areas of Italy in which Donnolo lived (Mancuso and Stern 2007: 30–31).

Its title can be translated either as *Wise Book* or *Book of the Wise*. If the author intended the latter meaning, then it might have been a pun on his own name: Shabbetay is the Hebrew name for the planet Saturn, that was also known as *Hakhmon* (חכמון) and which, in late Antiquity and the early Middle Ages, was apparently associated with wisdom (Chwolsohn 1856, II: 672). This association is obvious in Hebrew as the name *Hakhmon* comes from the root *h-kh-m* which refers to wisdom (*hokhmah*). In any case, wisdom and the search for it are indeed the main theme in Donnolo's autobiography, and this choice of title thus seems fitting.

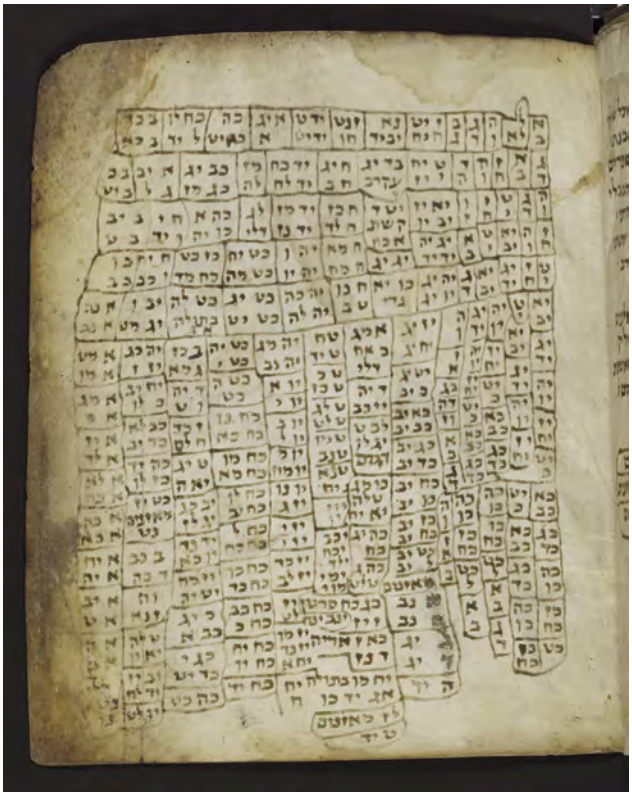
The treatise is written in elegant prose, with two rhyming poems showing mastery of the Hebrew language (Schirmann 1969: 196). Both poems are acrostics (i.e. the first letter of each verse forms a phrase or a short sentence) with the author's name functioning as a sort of watermark. The first acrostic, at the very beginning of the work, forms the sentence «Shabbetay bar Abraham, strong, born in Oria, strong» (Mancuso 2010: 137 // 221–223), while the second spells out «Shabbetay bar Abraham acquires wisdom» (Mancuso 2010: 141 // 240–241). The introduction also curses those copying his work without crediting him for it.

In *Book of the Wise* the author merges his in-depth knowledge of the human body with what he has learned about celestial mechanics. This synthesis of medicine and astronomy is made possible by the Neoplatonic idea of the human body as an image of the cosmos endowed with a soul and an intellect coming from God (*Timaeus* 30b). Donnolo does not explicitly mention Plato, though, and this was not necessary, because the idea of a correspondence between microcosm and macrocosm was so common in late Antiquity and the Middle Ages that Festugière has deemed it the most widespread idea in pre-modern philosophy (Festugière 1949: 92).

Donnolo's treatise is made up of three parts (also called "books"): an introduction, a commentary on *Genesis* 1:26, and a commentary on the *Book of Formation*. As we have seen, the introduction contains a short autobiography, a couple of acrostic poems designed to underline his authorship of the treatise and a table of ephemerides.

In the commentary to the biblical verse, the author shows the physical resemblance between certain elements of the cosmos with parts of the human body, while stressing that similarities between God and human beings are on the spiritual level alone. In other words, the Bible clearly says that Adam's body was created from the soil, while his spirit came directly from God, who breathed it into Adam's nostrils. For this reason, Donnolo argues that when the Bible says that man is made in God's image, it does not mean that God possesses physical attributes similar to man's, but that the latter possesses spiritual attributes similar to God's, albeit in a limited and imperfect fashion. While God can simply create things *ex nihilo*, man can only transform what is already there. For example, in order to create vapour (i.e. the air element), man needs to use two other elements, i.e. fire and water.

The third part of Donnolo's treatise deals with the correspondences between microcosm and macrocosm set out in the *Book of Formation*, which will be examined more closely in the next chapter.



Ephemerid table from Donnolo's *Book of the Wise*, Oxford, Bodleian Library, Ms. Heb. E. 26, f. 3r (11th-12th century)

Style and lexicon of his work

Before we look at other texts for which Donnolo's authorship is matter of debate, a stylistic and lexical analysis of the two works that can be certainly attributed to him is needed in order to identify his style and thus to facilitate a comparison with the other texts.

First and foremost, Donnolo generally refers to himself in the first person. He does so throughout the whole introduction to his *Book of the Wise* (Mancuso 2010: 137–144 // 222–235), with exceptions to be found in his *Book of Mixtures* (§1; §7; §19) in which he refers to himself in the third person, assuming that these are not the work of a later scribe.

An emphatic use of chains of nouns or verbs belonging to the same semantic field is characteristic of his prose: «to know, investigate, and research»,[25] «they studied and researched and knew»,[26] «closed, sealed, and profound»,[27] «strength, power, and greatness»,[28] «eyes fixed, still, and immobile to look and see»,[29] «the great, awesome, formidable, strong and powerful in this strength and power»,[30] «in his word, in his elocution, and in his commands»,[31] «to know, to recognise, and to know deeply»,[32] «there is no limit, there is no end, there is no boundary, there is no measurement».[33] This rhetorical device is used in his *Book of Mixtures* as well: «they understand and know», «pure and without adulteration or addition», «the sellers swindle and deceive» (§1), «fused, melted, or liquid» (§ 6), «crush, grind, mix and blend»(§ 7), «tested and examined» (§19).

As for his use of the sources, he never cites them, except for the *Barayta of Samuel* and the *Book of Formation*. He claims to have read several books, like the ones that supposedly mention two dragons in the sky (see Chapter 4), but he does not inform his readers regarding their titles. Similarly, except for his teacher Bagdat, he does not mention the people he has met, including

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[25] Mancuso 2010: 138 (229: «to know, to search and to seek it»).

[26] Mancuso 2010: 142 (243: «used to expound, investigate and know»).

[27] Mancuso 2010: 143 (244: «profound, inaccessible and recondite»).

[28] Mancuso 2010: 151 (258: «power, might and greatness»).

[29] Mancuso 2010: 164 (280: «he holds his gaze in a fixed position, to observe and look intensely»).

[30] Mancuso 2010: 165 (282: «great, awesome and wondrous Name, strong and vigorous by [virtue of its] power and might»).

[31] Mancuso 2010: 165 (282: «His word, His utterance and His command»).

[32] Mancuso 2010: 167 (286: «can know, understand and delve»).

[33] Mancuso 2010: 184 (313: «there is no end, no limit, and no measure»).

Neilos of Rossano, assuming that he actually knew him. Names he does mention are those of the rabbis killed during the Saracen attack on Oria, using the expression «of blessed memory» and its equivalents,[34] but he does not do the same when he mentions r. Samuel, the alleged author of the *Barayta*. In other words, generally speaking, Donnolo tends to reserve the phrase «of blessed memory» for people he knew personally and not for authors.

Regarding the use of non-Hebrew words, we have already seen that in his *Book of Mixtures* Donnolo normally uses Greek and Latin terms for plants and herbs alongside their Hebrew names so that Hebrew-speaking readers living in Greek- or Latin-speaking milieux can identify these. For this reason, its small size notwithstanding, the medical treatise is full of Greek and Latin terms, whereas the much longer *Book of the Wise* contains only four non-Hebrew words:[35] *stwmkws* (סטומכוס) for "stomach" (Greek στόμαχος, Latin *stomachus*), *ysqh* (איסקה) for "spurge" (Greek ἴσκα, late Latin *esca*), *mwly'ryn* (מוליארין) for a kind of copper vessel (Greek μιλιάριον, Latin *milliarium*), and *trtrwn* (טרטרון) for "sedimentation" (Greek τάρταρον, medieval Latin *tartarum*). All of these are Greek in origin but were used in Latin as well. In addition to this, since the Hebrew letter *waw* is used to transliterate both *omega* and *omicron* in Greek and both *o* and *u* in Latin, it is not always clear which language the author had in mind when writing these terms in the Hebrew alphabet. For the two latter names, since the last consonant used is a *nun* and not a *mem*, it can be assumed that he was referring to the Greek names, but the same cannot be said of the first two. The absence of Arabic terms in *Book of the Wise* as well seems to confirm what has already been said about the absence of Arab influences in his medical treatise.

All these considerations are based on two texts at most, which is definitely not sufficient to establish a pattern and thus to claim, for example, that Donnolo would have never written a certain word or phrase. Yet, in the context of the debate over Donnolo's authorship of other texts, while these considerations cannot be considered proof that he did not compose those works, they can indeed be used to show a lack of evidence for such attributions, as we will now see.

Other works attributed to Donnolo

Since modern scholarly rediscovery of Donnolo, a few medical and astronomical texts have been attributed to him, although not incontrovertibly

[34] Mancuso 2010: 138 (225–226).

[35] Mancuso 2010: 31.

(Mancuso 2010: 22). As will be demonstrated, these attributions are at least questionable, if not downright spurious.

Practica

The text of this medical treatise is incomplete in both its known manuscripts[36] which are included in two miscellaneous *materia medica* codices, one of which (namely the Florentine witness) also contains Donnolo's *Book of Mixtures*. The text was published by Muntner, in an edition that only takes the Florentine manuscript into account (Muntner 1949a: 109–144). The fact that *Practica* appears in one of the manuscripts containing work by Donnolo is probably one of the reasons behind Muntner's decision to attribute this treatise to him, although with some reservations, e.g. that Donnolo might simply have written out the work (Muntner 1949a: 109–111). Moreover, further confusion regarding these codices apparently led early scholars to believe, mistakenly, that the Munich manuscript is the one containing the other witness of Donnolo's *Book of Mixtures* (Lacerenza 2010: 166, n. 17; id., 2020b: 161–162) while the other copy is in Jerusalem, as we have seen.

The book describes the main diseases and their cures with a list that proceeds, to use a Latin phrase, *a capite ad calcem*, i.e. from head to toe.

As Kottek[37] has pointed out, the fact that Donnolo's name does not appear on this work is reason on its own to doubt, at the very least, that he wrote it. Moreover, a stylistic analysis of the text shows significant differences between it and Donnolo's work. For example, the Hebrew in *Practica* is much less elegant than Donnolo's (Lacerenza 2010: 166). Furthermore, numerous errors in Greek loanwords and an abundance of vernacular Latin terms place the text in Southern Italy but not in an area of Byzantine influence, thus ruling out Donnolo's authorship (Lacerenza 2020b: 163), as his command of Greek was significantly better and he only used vernacular Latin on very few occasions, as we have seen.

Antidotarium

As with the *Practica*, the basis for attributing the *Antidotarium* to Donnolo was solely that it appears in the same codex as one of the two medical man-

[36] Munich, Bayerische Staatsbibliothek, Cod. hebr. 231, ff. 258b–275a (13th century); Firenze, Biblioteca Medicea Laurenziana, plut. 88 nr. 37, ff. 26a–30d.

[37] Kottek 2004: 23: «En effet dans ses autres ouvrages Donnolo a pris soin de mettre son nom en exergue, voire de se présenter».

uscripts. Moreover, the *Book of Mixtures* only mentions the *Antidotarium* at the very end (§20): «I found no other book like this about diseases and this was written above in the *Antidotarium* in the number 208».

The number 208 itself, which appears in both testimonies of the *Book of Mixtures*, has sparked several hypotheses. It cannot be a year because, as Ferre rightly pointed out, «it would not fit with the two classic chronologies, the destruction of the Second Temple […] or the Era of the creation» (Ferre 2004: 1). It is slightly more likely that it might point to a folio or quire from a hypothetical lost copy from which the two known manuscripts derive. The weakness of this explanation lies not only in the fact that it is based on a further assumption but also in the fact that Jewish scribes only rarely used page references (Beit-Arié 1981: 60–68). Despite its weaknesses, this explanation seems to be the least unlikely hypothesis. In any case, the sentence's phrasing and abrupt change of style would imply that it was written by a later scribe (Fiaccadori 1992). Ultimately, there are no positive elements enabling us to attribute the *Antidotarium* to Donnolo.

The Hebrew translation of Hippocrates' Aphorisms

Collector and scholar Moses Gaster (1856–1939) has argued that Donnolo was the translator into Hebrew of Hippocrates' *Aphorisms* found in a manuscript that he himself owned prior to its acquisition by the British Library.[38] Muntner (1969) agreed with this attribution, also hypothesising that it might have been penned by Shabbetay Donnolo and supposed disciples, of whom, incidentally, no evidence exists, not even a brief mention in his works.

Incidentally, the Hebrew translation of Hippocrates' *Aphorisms* is not simply a translation of the Greek original, but also shares some material with the more famous *Book of Asaph*,[39] the oldest known Jewish medical text. Also known as *Book of Remedies* (*Sefer ha-refuot*), the *Book of Asaph* is a textbook covering a wide variety of medical topics ranging from theory, mainly based on Galen's doctrine of the four elements and four qualities,[40] to healthy lifestyle guidelines and a collection of medical recipes from various traditions, such as Greek, Persian and Egyptian (Cosmacini 2001: 52). Notably, the text tries to harmonize foreign medicine with Jewish practices

[38] British Library, OR 12252.

[39] An essential bibliography on the source can be found in Yoeli-Tlalim 2018: 124, note 1.

[40] Venetianer 1915: 53; Cosmacini 2001: 50. Galen's influence on Asaph, though, has been downplayed in Lieber 1984: 238.

(Newmayer 1992; Cosmacini 2001: 51, 53). When and where it was written have been the subject of debate. Its large size notwithstanding, it contains no significant clues as to whether it was written in the 6th (Muntner 1951: 104; Cosmacini 2000: 50) or the 10th (Yoeli-Tlalim 2018: 129) century, or some time in between. Similarly, the fact that sources written in Greek, Syriac and other languages were used makes it even more difficult to establish a precise location for it. On occasion, its author has been identified as Vezir ben Salomon (Cosmacini 2001: 51), but other interpretations consider the name Asaph as a Hebrew version of the name Aesop or Aesculapius (Muntner 1951: 103) and thus fictitious (Lieber 1984: 246; Yoeli-Tlalim 2018: 129). An Asaph ben Berechiah appears in the Bible (1 Chronicles 6:24) and could have been used by the text's writer as the archetype of the wise man, not to mention legendary Asif ibn Barkhiya of Arab and Persian lore (Yoeli-Tlalim 2018: 130) who is almost always associated with Solomon (*ibid.*: 131).

Returning to the Hebrew translation of Hippocrates' *Aphorisms*, its attribution to Donnolo can easily be disproved with a couple of arguments, the first of which is the description of the manuscript itself,[41] which quotes a letter from David Goldstein pointing out that:

> Marginal note on f. 32r referring to R. Shabtai as 'my teacher' is from the 15th–16th century; thus it is unlikely that R. Shabtai would be Shabtai Donolo (10th c.), since the phrase "my teacher" etc. always refers... to one's own immediate teacher and not to a figure in the distant past.

A further reason to cast doubt on the attribution is the fact that the first name and patronymic Abraham ben Shabbetay (אברהם בן שבתי) in the colophon (f. 47r) are inverted as compared to Donnolo's.

A wedding song

A *pizmon* (i.e. a non-liturgical song sung at religious rituals and festivities) of unknown date and place of composition has been published in two editions, both printed in Constantinople in the 16th century.[42] Its first verse begins with the phrase "The ornament of my bridegroom", while the first letters of the remaining eleven verses make up the phrase "Shabbetay the physician, strong", which has led several scholars to attribute it to Donnolo

[41] http://www.bl.uk/manuscripts/FullDisplay.aspx?index=0&ref=Or_12252.

[42] English translation in Weinberger 2000: 427 and in Mancuso 2007: 44.

(e.g. Muntner 2007: 751; Fiaccadori 1992; Putzu 2004: 55). As Mancuso has already pointed out (Mancuso 2007: 39–40), Weinberger has convincingly shown that the poem was edited following on from an intra-religious argument between Rabbanites, i.e. those recognising the authority of the rabbis and the Talmud, and Karaites, i.e. those who did not (Weinberger 2000: 427–428). As Weinberger showed, the same *pizmon* appears in a Karaite prayer book with the first three verses arranged in such a way that their first letters form the name Tishby (תשבי), a Karaite doctor who was famous at the time. The editor of the other two Rabbanite editions of the work changed the order of the first three verses, so that their first letters form the name Shabbetay (שבתי), in order to avoid mentioning a Karaite name: «the sleight of hand is achieved by reversing the order of strophes two to four» (Weinberger 2000: 427). Although, in theory, it could have been the other way around (i.e. the name in the original version was Shabbetay, later changed into Tishby), Weinberger's thesis is further confirmed by two pieces of evidence that he presents: the first is that the term used for "physician" generally does not appear in Rabbanite *pizmonim*, but is common in Karaite ones; the second, no less important, is that a version of this same *pizmon* with an acrostic forming the name Tishby, rather than Shabbetay, appears in the Rabbanite collection *Shirim u-zemirot* (Constantinople 1545): if the name Tishby appears even in a Rabbanite collection, then it is more likely that it is the original version and that the mention of a Shabbetay is the result of a surreptitious alteration of the text. For these reasons, it can be safely concluded that Donnolo was not the author of this *pizmon*.

The *Barayta of the Constellations*

The *Barayta*[43] *of the Constellations* (*Barayta de-mazzalot,* hereafter BdM) consists of an astronomy-astrology treatise whose earliest and longest manuscript, dating to the 12th century (Leicht 2006: 85), was found in the Cairo *genizah*. Other versions have been found in several manuscripts[44] dating to the 14th and 15th centuries (*ibid.*). One citation from this treatise is to be

[43] The Aramaic term *barayta* is a generic name for any rabbinical treatise from the first centuries CE that is not included in the Mishnah, a 3rd-century collection of rabbinical traditions which constitutes the oldest core of the Talmud.

[44] Basel, Universitätsbibliothek, R IV 2, fol. 30b–34a. Oxford, Bodleian Library, Opp. 588 (Neubauer 1345), fol. 231a/19–231b/29. Firenze, Biblioteca Medicea Laurenziana, Plut. 88.58, fol. 92a/20–25.

found in a manuscript from the Bodleian Library[45] which has been dated to the 13th–15th century (Sarfatti 1965: 56, note 5). The *Barayta* was edited by Wertheimer in his collection of *midrashim* (Wertheimer 1953: 7–37) and translated into Italian with a commentary (Cuscito 2021b). In the past, the text was considered a commentary on the *Barayta of Samuel* (which will be discussed in the next chapter) since they share several identical paragraphs, some even verbatim (Sarfatti 1965: 73–75). Based on Wartheimer, Sarfatti believed that BdM was written prior to the 11th century (Sarfatti 1965: 71) but there is currently no evidence to support that hypothesis. Sarfatti also believed he had found several parallels between BdM and Donnolo's *Book of the Wise*, showing a synopsis of several passages (Sarfatti 1965: 80–81) and noting that the two texts' common traits include references to seven heavens (Sarfatti 1965: 78–79). This latter element, though, can hardly be used to show a direct dependence between the two, since it is present in the source they both share, namely *Barayta of Samuel*. Moreover, the correspondences between BdM and Donnolo's *Book of the Wise* are certainly not as close as those between BdM and *Barayta of Samuel*, although they certainly match in content terms, namely the attribution of certain qualities and influences on human affairs to the seven planets: for instance, Saturn is connected with poverty, sickness and death, Jupiter with peace, good and joy, Mars with war, and so on. As with the sevenfold division of the heavens, this, too, cannot be used as proof of direct dependency, since it was basic astrological knowledge that constituted the common ground for virtually any text on the astral sciences written in the Middle Ages in Europe, North Africa and Western Asia. Thus, the first two arguments presented by Sarfatti as proof of Donnolo's authorship of BdM on the grounds that the latter contains material found in Donnolo's work can be dismissed.

Another reason Sarfatti (Sarfatti 2004: 145) attributes BdM to Donnolo is that an 11th-century text called *Good Lesson* or *Good Teaching* (לקח טוב) cites certain passages attributed to Donnolo regarding the distances between the seven heavens. A passage of this sort is indeed present in BdM and Sarfatti thus concluded that the latter is Donnolo's commentary on the *Barayta of Samuel* mentioned in the *Good Lesson*. In other words, he seems to imply that, since the *Good Lesson* quotes Donnolo on the distances between the heavens and since this passage does not appear in Donnolo's *Book of the Wise* but is present in BdM, then the latter must have been penned by Donnolo. There are several problems in this hypothesis, which had, incidentally, al-

[45] Ms. Reggio 42 (Neubauer 2244), fol. 3.

ready been put forward by the editor of the *Good Lesson*: one of these is that there is a similar passage in *Barayta of Samuel*, so it is not to be attributed necessarily to BdM, which, as we have already seen, would seem to be later that the *Good Lesson*; the second problem with this hypothesis is that it appears to assume that all the texts were preserved unchanged and that both citation and attribution are correct.

We have already seen that the opposite was the case, however, regarding the texts attributed to Donnolo. Contrary to the implications of Sarfatti's hypothesis, it was common practice to collect texts dealing with a common topic and attribute them to a famous figure, often legendary or semi-legendary. A similar argument can be used for the other purportedly lost commentaries attributed to Donnolo to which Sarfatti refers (Sarfatti 2004: 144) and are supposedly quoted in sources such as the *Book of the Angel Raziel* (*Sefer Raziel ha-malak*, prior to the 17th century) and one of Ravyah's responsa (12th–13th centuries). Regarding these quotes attributed to Donnolo, according to Sarfatti some are present in the *Barayta of Samuel*, others are actually in his *Book of the Wise*, while others are not present in any known text. In his view (Sarfatti 2004: 144) either Donnolo must have written other now lost books, such as a commentary on the *Barayta of Samuel* and BdM, or they could all refer to his *Book of the Wise*, which might have contained chapters commenting on the *Barayta of Samuel* and BdM.

We will see later why the possibility that Donnolo wrote other books besides those we already know can probably be ruled out as can the hypothesis that the *Book of the Wise* contained two chapters commenting on the two astronomy books, since its structure and content appear to be coherent and consistent as is. As things stand, it is probably safer to assume that these quotations are spurious, as is often the case in texts from this era and later. Since the unreliability of the sources means that we cannot prove Donnolo's authorship of BdM, it cannot be ruled out on these grounds alone, but further proof is required.

Andrew Sharf did not consider Donnolo to have written BdM for two reasons (Sharf 1976: 187). The first of these was that a cosmic element called *tly* (which will be discussed in depth later) appears in BdM as a dragon which was held responsible for eclipses, whereas in the *Book of the Wise* it is described as an *axis mundi.* The second reason for Sharf's scepticism on the attribution of BdM to Donnolo is that there are no explicit references to him in the text at all. If it was important to Donnolo that his authorship of his work be recognised, as it was in the *Book of Mixtures* and the *Book of the Wise*, then the fact that he did not do the same with this text seems inconsistent with his usual practice of including his name in his works. Although

Sharf's interpretation of the *tly* is debatable, since the *tly* is not exactly described as the *axis mundi* (as we will see later), both arguments appear to be sound. Whilst they do not fully disprove Donnolo's authorship of BdM hypothesis, they certainly weaken it by showing the lack of evidence for it.

Piergabriele Mancuso, on the other hand, seems to be certain that Donnolo wrote BdM (Mancuso 2010: 22 and *passim*; Mancuso 2015: 109, note 10). He deems Sharf's arguments weak and he adds as further proof that Donnolo says that he commented on the other Barayta, namely the *Barayta of Samuel*, of which BdM is a commentary. In other words, since Donnolo claims to have commented the *Barayta of Samuel* and since BdM is considered a commentary to the *Barayta of Samuel*, for Mancuso there can be no doubt that its author was Donnolo (*ibid.*). For Mancuso, Sharf's argument that the *tly* was treated differently in BdM and the *Book of the Wise* is contradicted by the fact that the term *tly* means two different things, since the two different instances of the word appear in commentaries to two different sections of the *Barayta of Samuel*, referring to two different cosmological elements. While the *tly* is indeed described ambiguously, with characteristics potentially referring to different cosmic elements, as we will see in the next chapter, Mancuso's argument can be used to explain the contradictions in the description of the *tly* but it does not necessarily prove that Donnolo wrote BdM. The lack of references to Donnolo in this text, as pointed out by Sharf, is in stark contrast to the two texts undoubtedly written by him. That remains a fact that would require explanation if we were to assume that BdM was written by our author.

Moreover, the arguments presented thus far seem to be based on the implicit assumption that BdM is an actual commentary to the *Barayta of Samuel*, but this could just as well not be the case, since it might also be considered simply to contain the same source material. This fact proves neither that one is necessarily a commentary to the other, nor that both were written by the same author, as Sarfatti implied. We cannot be sure that Donnolo was the one and only commentator on the *Barayta of Samuel*. He was certainly not the only Jew in his day with a knowledge of astronomy, as some evidence that will be discussed later makes clear. For now, it is sufficient to note that the physician and philosopher could have written a now lost commentary to *Barayta of Samuel* and the authorship of BdM should be attributed to others. In other words, as Sharf pointed out, there are no grounds for attributing BdM to Donnolo.

As Sarfatti has shown (Sarfatti 1965: 61), BdM was written in the style of the Mishnah, one notable example being the way it presents lists of elements. For instance, it introduces the constellations and the planetary heavens with

phrases such as «twelve are the constellations» or «seven are the heavens», respectively, and concludes such lists with the formula «and these are the constellations» or «this is their [*scil.* of the heavens] order» (*ibid.*). This stylistic trait, frequent in the *Barayta*, never appears in Donnolo's work. Another difference consists in the terms used for the heavenly hosts. The term *tsava* (i.e. "army", "host") appears several times in the Bible, often (but not always) explicitly referring to the stars (e.g. Genesis 2:1, Deuteronomy 4:19, Isaiah 40:26), while the Babylonian Talmud (Berachot 32b) further expands on this and mentions the ranks the heavenly hosts were divided up into, using names deriving from the Roman army, such as *castra*, *legio* and other less easily recognizable terms (Sarfatti 1968: 48). BdM reprises a long tradition in which, after mentioning an individual constellation of the Zodiac or all of them together, the phrase «in their hosts, in their legions, and in their brigades» (בצבאותיהן וגדודיהן וחילותהן) is specified. The phrase appears fourteen times in the first three paragraphs (Wertheimer 1953: 13–16) of BdM, but never in Donnolo's *Book of the Wise*. Donnolo does use the term *tsava* (צבא) and its plural *tsevaot* (צבאות) both for the angels (Mancuso 2010: 242) and for the stars (Mancuso 2010: 241, 244, 322, 327) and he also, occasionally and only in the section commenting the *Book of Formation*, uses the term "armies" (חיילות), both alone (Mancuso 2010: 323) and together with *tsevaot* (Mancuso 2010: 322), but he never uses the expression «in their hosts, in their legions, and in their brigades» which is so systematically used in the *Barayta*. Moreover, both Sarfatti (1968: 56) and Mancuso (2010: 330, note 132) have remarked that the same term (גובה) has different meanings in the *Barayta* and in the *Book of the Wise* ("exaltation" and "height", respectively) and the easiest way to explain this discrepancy is to assume that the two works were written by different authors.

It has already been noted (Sarfatti 1965: 71) that BdM presents several Greek terms, all of them pertaining to mathematics and Ptolemaic astronomy. In some cases these replace terms that already existed in Hebrew, for instance: "triangle" as *trygwn* (טריגון from τρίγωνον), instead of *meshulash* (משולש), *sterygmos* as *styrygmws* (סטיריגמוס, from στηριγμός),[46] instead of *amidah* (עמידה); "diameter" as *dyamytrwn* (דיאמיטרון, from διάμετρος) instead of *qoter* (קוטר). Other

[46] In §10 of the BdM (Wertheimer 1953: 24) the term appears transliterated as סטוריגמוס as well. In Ptolemaic astronomy, *sterygmos* was the name used for an apparent phenomenon, according to which the five planets (thus excluding the Sun and the Moon, as the BdM rightfully specifies) appear to be stationary, and sometimes even to move backwards slightly for several nights, before reprising their regular course.

technical terms are rendered with literal calques from Greek, so we have "house" rendered literally as *bayt* (בית, cmp. Gr. οἶκος), "territory" as *gvwl* (גבול, cmp. Gr. ὅριον) etc. This shows that BdM used Greek sources and this, together with the total absence of Arabic loanwords, makes it very likely that it was written in a Byzantine milieu. This use of non-Hebrew terms, though, is different from Donnolo's usage of loanwords. As we have seen, the whole *Book of the Wise*, which is much longer than BdM, contains only four Greek terms and in all cases these are employed in the absence of, and not instead of, Hebrew terms. As already shown, whenever Donnolo uses foreign words in his *Book of Mixtures*, he also translates them into Hebrew, which is not the case with BdM. To put it briefly, in BdM the Greek terms are used even when a Hebrew equivalent is available, whereas in the two texts certainly attributed to Donnolo, Greek is only used either when a Hebrew equivalent is lacking or to serve a didactic or explanatory function.

Lastly, the *Book of the Wise* lacks explicit references to many of the astrological ideas present in BdM. As we have already seen, the similarities between the latter and Donnolo's work can easily be attributed to their common source, namely the *Barayta of Samuel* and, more generally, to Hellenistic astronomy and astrology, from which virtually all the other cultures around the Mediterranean borrowed extensively. Although this does not rule out the possibility that Donnolo wrote BdM, it does pose the question: on what grounds can we conclude or even hypothesise that the *Barayta of Constellations* was written by him?

As we have seen, several hypotheses have been proposed to accord authorship of the work to Donnolo, but all of them are inconclusive. Furthermore a comparison of their lexicon, style and content shows significant differences between BdM and the two texts certainly written by Donnolo. Unless later additions are hypothesised (which would, of course, need to be proved) and unless further evidence is discovered, all the currently available evidence leads us to the conclusion that it is safer to assume that Donnolo did not write BdM, which is likely to have been written by another, anonymous Jewish astronomer and astrologer who lived in a Byzantine milieu, not necessarily at the same time as Donnolo, but even a century or two later as well.

The *Book of the Constellations*

Another work that has been attributed to Shabbetay Donnolo is known by the hypothetical title of *Book of Constellations* (*Sefer ha-mazzalot*, henceforth SM). The supposed surviving text consists of a quote in the commentary to the Book of Job written by 11th–12th-century Yosef Qara (Ahrend

1978: 2).[47] There are other shorter quotes, with some variations, that appear in qabbalistic and mystical texts such as, for instance, the already mentioned *Book of Raziel* and a number of excerpts from the 12th–13th-century writings of Elazar ben Yehudah Qalonymos from Worms (Mancuso 2015: 116–117). As we saw in the previous section, SM seems to be a commentary to the first paragraph of the *Barayta of Samuel*. Since the latter was explicitly cited by Donnolo, scholars such as Sarfatti and Mancuso have assumed that this commentary, together with the *Barayta of the Constellations,* was part of a larger, now lost commentary. The editor of its *editio princeps* (Luzzatto 1843) considered it a standalone text, as did the editor of its Italian translation with commentary (Mancuso 2015), which regards Donnolo as its author.

The author of the text that includes SM introduces his quotes with formulaic phrases: «I saw in the book of rabbi Shabbetay in which he comments on the *Barayta of Samuel*»,[48] «I saw in the *Book of Constellations* on which rabbi Shabbetay, of blessed memory, commented»,[49] «I saw in the book of rabbi Shabbetay, righteous of blessed memory, which comments on the *Barayta of Samuel*»[50] and «I saw in the book of rabbi Shabbetay, righteous of blessed memory, in which he comments on the *Barayta of Samuel*».[51] The first problem these quotes raise is that we do not know where they end and where Qara's commentary begins again. The editor of the Italian edition emphasised quotes from the *Barayta of Samuel* in bold, thus separating them from the rest of the commentary, while apparently assuming that everything else was Donnolo's work (Mancuso 2009: 295, note 312). Yet, the frequency of the introductory formula for a quote should at least cast some doubt on the integrity of the *textus receptus*.

As Mancuso himself points out (*ibid.*), the term used in BoC to refer to some points of the ecliptic is *qeren* (קרן), perhaps because it is more similar to the Greek technical term γωνία. This differs from the term *pinah* (פנה), that Donnolo uses in his *Book of the Wise* (Mancuso 2010: 193). The latter is probably borrowed from the *Barayta of Samuel*, as other citations from BoC show as well (e.g. SM 119,8). If the text was actually written by Donnolo, then it is difficult to understand why he would have used a different wording

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[47] The present study is based on the Hebrew text reconstructed in its first edition (Mancuso 2015). Here the quotes are made up of page number (119–126) and row.

[48] «ראיתי בספר ר׳ שבתי שמפרש בו ברייתא דשמואל» (SM 119, 1).

[49] «וראיתי בספר המזלות שפירש ר׳ שבתי זצ״ל» (SM 119, 12–13).

[50] «וראיתי בספר ר׳ שבתי זצ״ל שמפרש ברייתא דשמואל» (SM 120, 12–13).

[51] «וראיתי בספר ר׳ שבתי זצ״ל שמפרש בו ברייתא דשמואל» (SM 122,19 – 123,1).

in each text. The similarities between the BoC and Donnolo's *Book of the Wise* are more a question of contents than style or terminology: in both cases, they describe the *tly* in the sky as having a head and a tail and being tied to the constellations, and both texts refer to *thema mundi*, i.e. the position of the celestial bodies when the world was created. All of this can also be explained with the hypothesis that what is called *Book of Constellations* could simply be a series of citations that Qara took from the *Book of the Wise*, without assuming that it was a standalone text. In other words, as we have already seen, the *Book of the Wise* contains astronomical ideas taken from the *Barayta of Samuel*, and thus it is possible that «the book of constellations in which rabbi Shabbetay comments on the *Barayta of Samuel*» is to be identified with the *Book of the Wise* itself. Incidentally, the term for "book", namely *sefer*, can also simply mean part of a work. In the *Book of the Wise*, for example, the section in which the *Book of Formation* is commented on is divided up into several "books" (Mancuso 2010: 167, 180, 196), using the same wording of the *Book for Formation* itself, in which the enigmatic phrase «*be-sefer we-sefer we-sefer*» (בספר וספר וספר) appears. Incidentally, the phrase appears with variations in vocalisation (among which, for example, «*be-sefer we-sippar we-sippur*») in all the *Book of Formation* witnesses and has been variously interpreted through the centuries. Even if this is not the case, that is even if Qara did not use an idiosyncratic meaning of the word *sefer*, the issue of which parts constitute an actual quote and which are part of Qara's commentary remains.

Moreover, what follows the formulas introducing a citation from Donnolo is almost always material from his *Book of the Wise*. The only exception in this regard is the citation at the very beginning of BoC corresponding to the *incipit* to the *Barayta of Samuel* that is quoted elsewhere (SM 123, 3–11), which means that Qara knew it directly. Even if we accept all the current hypotheses regarding this work, i.e. assuming that what is known as the *Book of Constellations* is a standalone text and that all the passages in Qara's commentary are citations from that text, concluding that Donnolo was its author remains unsupported by sufficient evidence. It is possible that a commentary to the *Barayta of Samuel* existed and was read and quoted by Qara, who wrongly attributed it to Donnolo, either as his own mistake or that of a hypothetical source of his. In any event, authorship by Donnolo requires more substantial proof than a simple attribution in a later source, especially as the source itself seems to contain clues to other possibilities.

For example, on a stylistic level, the dry prose used in the *Book of Constellations* contrasts with Donnolo's elegant literary style in works definitely attributed to him. On a lexical level, it presents further dissonant elements

contrasting with Donnolo's work: there are citations from Arabic terms,[52] the phrase «of blessed memory» is used when mentioning the sages of Israel[53] and rabbis such as Eliezer (SM 123, 20–21), Samuel (SM 125, 5) and others (SM 126, 12.17.21). This is not the case in Donnolo's work and thus each of these cases is itself unique. The first of these would be the only explicit mention of an Arabic term by Donnolo, while the use in the other two cases of the phrase «of blessed memory» would also constitute an exception, since it is found frequently in many other sources, but not in Donnolo's *Book of the Wise*. As we have seen, Donnolo generally reserves the phrase «of blessed memory» only for the wise men he knew personally, not for the sages of Israel in general or the authors whose books he has read. Similarly, Donnolo never quotes his sources precisely, whereas this is the norm in the *Book of Constellations*, as already noted (Mancuso 2015: 128, note 167). Rather than assuming that Donnolo made a series of significant exceptions to his usual style and lexicon in this work, it is probably safer to conclude that he did not write it.

The *Book of Constellations* diverges in various ways, not only from Donnolo's work, but also from the *Barayta of the Constellations* discussed earlier, particularly in those passages which describe the movements of the constellations. These parallel passages describe the constellations in pairs, remarking that when one arises in the East, the one opposite to it in the Zodiac wheel sets. In its characteristic repetitive style, *Barayta of the Constellations* describes the movements of the stars as follows (translated from Wertheimer 1953: 13–14):

> Aries and Libra: at the time in which Aries rises from the East, Libra sets in the West. A star rises in Aries, a star sets in Libra. Aries rises with all its hosts, its legions, and its brigades and Libra sets all its hosts, its legions, and its brigades. At the time in which Libra rises from the East, Aries sets in the West.
>
> At the time in which Taurus rises in the East, Scorpio sets in the West. A star rises in Taurus, a star sets in Scorpio. Taurus rises with all its hosts, its legions, and its brigades and Scorpio sets with all its hosts, its legions, and its brigades. In the time in which Scorpio rises from the East, Taurus sets in the West.
>
> Thus Gemini and Sagittarius rise and set and [so does] every constellation: a star rises in the East, a star, the seventh one, sets in the West.

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[52] «כימה נקראת בלשון ישמעאל ראס איתאור» (SM 132, 17).

[53] «וכן למדנו מחכמי ישראל זכרונם לברכה» (SM 123, 19); «הישמעאלים קורין אותם בנתנעש» (SM 124, 13).

This is the *Book of Constellations* text in its characteristically concise, direct prose:

> Let us see how Aries and Libra [move]: in the time in which Aries starts to rise, Libra starts to set. Taurus and Scorpio: when Taurus starts to rise, Scorpio starts to set. Thus Gemini and Sagittarius. Thus Cancer and Capricorn. Thus Leo and Aquarius. Thus Virgo and Pisces.

These stylistic differences make it difficult to argue that the two passages quoted were penned by the same person, let alone Donnolo, and doing so would require explaining these discrepancies. For instance, we might hypothesise later additions by a scribe, perhaps Yosef Qara in the case of *Book of Constellations,* but this would require asking ourselves once again what the extent and nature of Qara's changes might have been. In other words, we should be asking ourselves where the quotes end and where Qara's work begins. Once again, rather than assuming that the so-called *Book of Constellations* is part of a hypothetical now lost source, it seems more likely that what is believed to be a standalone text is actually, and more simply, part of a commentary by Qara which used astronomical sources such as *Barayta of the Constellations*.[54] This supposed *Book of Constellations* fits perfectly into a context in which Qara comments on passages from the Book of Job in which the Orion constellation and the asterism of the Pleiades are mentioned (Job 38:31). It contains numerous references to Job (SM 122, 7; 125, 11; 123, 15), showing that Qara either modified the supposed source material of BoC a great deal or this was simply an integral part of his commentary to Job. Since the first of these options poses the two significant problems already addressed, the latter hypothesis would seem more likely.

Returning to stylistic comparisons between the *Book of Constellations* and the *Barayta of the Constellations* discussed earlier, it seems unlikely that they were written by the same author, as we have seen. It might thus be hypothesised that Donnolo was the author of either of these, but not both. Moreover, if we compare their style with his *Book of the Wise* and *Book of Mixtures*, these are similar to each other, but different from both of the others. Regarding these two astronomical texts, it might be easier to either rule out Donnolo's authorship or, at the very least, to cast serious doubt on such an attribution.

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[54] Incidentally, the idea of the simultaneous rise and fall of the constellations on opposite sides of the zodiac wheel is elementary and there is thus no need to assume that it was taken from a specific source in the first place.

Assuming that the *Book of Constellations* was a standalone text, the only element connecting it to Donnolo is a series of references to him by Qara, who supposedly incorporated it into his commentary on Job. Though, all this could simply mean that Qara *believed* that the source was written by Donnolo. There is abundant evidence that texts in the Middle Ages were frequently misattributed. For instance, 11th–12th-century Iberian poet Yehudah Halevi cites a work called *Chapters of rabbi Eliezer* (*Pirqe de-rabbi Eliezer*) written in the 7th century (Keim 2017: 40–43), saying that it describes the measure of «the whole Earth, of all the [celestial] spheres, the signs of the Zodiac […] their good and bad influences, their ascents and descents, their height and declination and the duration of their motions».[55] The problem with this quote is that it does not appear in any of the extant manuscripts of the *Chapters of Rabbi Eliezer*, although such matters are discussed in the *Barayta of Samuel*, which is more or less coeval and shares similar astronomical material (Sarfatti 1968: 53; Leicht 2006: 83), although not specifically this passage. This could lead us to two hypotheses, which are not mutually exclusive: either Yehudah Halevi conflated two different sources, namely the *Barayta* and the *Chapters*, or he encountered a different, now lost, version of the *Chapters*. Certainly this does not necessarily prove that attributing the *Book of Constellations* to Donnolo is spurious but it does, at least, show the need for caution in trusting medieval texts regarding citations from other sources.

As matters stand, there is no basis for concluding unequivocally that the *Book of Constellations* was ever a standalone text, let alone that Shabbetay Donnolo wrote it. It might just as well be an astronomical and astrological digression in which Qara cites the *Barayta of Samuel* and Donnolo's *Book of the Wise* in order to comment on one of the very few biblical passages in which constellations are mentioned. Even if this is not the case, i.e. even if the text is indeed a separate source incorporated into Qara's commentary, not only is there nothing to prove that Donnolo is its author but there is also some positive proof which seems to exclude it, or at the very least to cast serious doubt on it.

The World Was Created in Nisan

The manuscript Vat. Ebr. 214 of the Vatican Library is a 14th-century anthology of astronomy and astrology texts written in Hebrew[56] containing a section (16v–53v) featuring a long excerpt from Donnolo's *Book of the Wise* into which another short treatise (23v–30v) has been inserted. This

[55] Translated from Piattelli 1960: 137.

[56] https://opac.vatlib.it/mss/detail/197369 (consulted on 1st February 2025).

excerpt introduces the basics of astrology and a *thema mundi* and has been called after its first words, *The World Was Created in Nisan* (בניסן נברא העולם), which in turn are a quote from the Babylonian Talmud (Rosh ha-shanah 11a). The editor of its Italian edition[57] hypothesises that this insertion, too, comes from a lost work by Donnolo, on the strength of three elements: first of all, linguistic affinities; secondly its commentary on passages from the *Barayta of Samuel* that are not commented on in the *Book of Constellations*; and lastly, the exegetical techniques used here in order to comment on the *Barayta of Samuel* which are, for Mancuso, the same as those used by Donnolo in his commentary on the *Book of Formation*. Mancuso himself concedes that none of these points demonstrate Donnolo's authorship of the text per se, but states that a hypothesis of this sort does not appear completely improbable if we evaluate all of these points together (Mancuso 2013b: 210). Let us now examine each of three points separately.

As an example of linguistic affinities, the editor presents excerpts mentioning the Chaldean and Babylonian, as well as Greek and Egyptian sages (Mancuso 2013b: 209). Although it is true that the phrase «the sages of…» followed by «Babylonia», «Greece», etc. appears in the *Book of the Wise* (138:12), it was not exclusive to Donnolo. In addition to that, he uses different wordings. For instance, in reference to the sages of Babylon, in the *Book of the Wise* we read «חכמת בני בבל» («the wisdom of the Babylonians», BW 138:17) and «חכמי בבל» (BW 138: 19), while in WCN we read «כלדיים ובבליים» («Chaldeans and Babylonians») and another example is the phrase «the sages of the gentiles» that Donnolo writes as «חכמי הגוים» instead of «חכמי גוים» as it is appears in WCN. Although this does not prove unequivocally that Donnolo was not the author of this excerpt, it does weaken the opposite hypothesis, which fails to explain these differences.

Mancuso's second argument for Donnolo's authorship of WCN is based on the fact that the latter comments on different passages of the *Barayta of Samuel* from those commented on in the *Book of Constellations*. Since Mancuso, as we have seen, believes that Donnolo was also the author of the latter, he concludes that both could have been parts of a single commentary. This argument, though, is weakened by what we have noted above, i.e. that Donnolo's authorship of the *Book of Constellations* is doubtful.

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[57] Mancuso 2013b. This study is based on the Hebrew text reconstructed in that edition. Henceforth, the title of the work will be abbreviated in WCN and the citations from the Hebrew text are composed by the abbreviation followed by the number of page and row of Mancuso's edition.

The basis of the third argument is stylistic: Mancuso sees certain similarities in the way the WCN comments on the *Barayta of Samuel* and the way Donnolo comments on the *Book of Formation*. In both cases, the comments consist in quoting passages from the texts commented on not in the order in which they appear, but according to their respective themes. It remains to be demonstrated, though, that this method was used exclusively by Donnolo. Moreover, we do not know how the *Book of Formation* was originally written, or whether there was an *Urtext* in the first place, and the same is true of the *Barayta of Samuel*.

Ultimately there seems to be no solid basis for the three arguments for Donnolo's authorship of the text. In fact, even taken together, they do not prove the hypothesis they are meant to corroborate. Moreover, some arguments can be presented that disprove the thesis of Donnolo's authorship of WCN. For example, the following excerpt from the text (translated from WCN 215,16, ff.; folio 25r of the ms.) enumerates the planets and constellations in a very dry style:

> One is called Saturn, one [is called] Jupiter, one is called Mars, one is called Venus, one is called Mercury. The constellations: one is called Aries, the second Taurus, the third Gemini, the fourth Cancer, the fifth Leo, the sixth Virgo, the seventh Libra, the eighth Scorpio, the ninth Sagittarius, the tenth Capricorn, the eleventh Aquarius and the 12th[58] Pisces.

The text continues, in this monotonous style, to list the various aspects of the constellations and other astronomical concepts. In the texts certainly attributed to Donnolo, lists are not compiled in this way and thus, if this text is Donnolo's, then it represents an exception. Again, in order to claim Donnolo's authorship of this excerpt, if not the whole WCN, it is necessary to explain the reason for this abrupt stylistic change.

A further argument against Mancuso's attribution is provided by an element which he himself points out, namely a series of inaccuracies present in WCN that shows either that its author had no familiarity with astronomical ideas or that he used sources not extant elsewhere. In Mancuso's words (my translation from Mancuso 2013b: 232, note 70):

> From this point on, all the correlations between the constellations and the months of the Hebrew calendar do not apparently conform to any known model (neither

[58] This inconsistent notation follows the original, which writes the numerals in full, except for the last one.

to the classic Ptolemaic one, nor, for example, to the correspondences between months and constellations existing in *Book of Formation* which Donnolo comments extensively in his *Book of the Wise*) and it is also difficult to find a general criterion, since the associations do not accord with the order of the months.

It seems unlikely that whoever wrote WCN it is the same person who wrote the precise ephemerides table presented in the introduction to the *Book of the Wise*. The latter features a discrepancy of one month from what we would expect of a rabbinic calendar (Mancuso and Stern 2007: 26–37) but this can be explained by the difference in results obtained by comparing mathematical calculations with actual observations of the Moon's first appearance at the beginning of the month. Mancuso and Stern have hypothesised that in his ephemerides table Donnolo used a calendar differing from the rabbinic calendar, which probably had not yet spread across the whole Diaspora. If on one hand this discrepancy in the *Book of the Wise* is easy to explain, the same cannot be said of those pointed out by Mancuso in WCN, which can be hardly be attributed to the same author that composed an ephemerides table that has been described as «sophisticated» (Mancuso and Stern 2007: 36). So, either we accept Donnolo's authorship of the latter and deny his authorship of WCN or we consider the latter authentic and the former spurious. Since the ephemerides table was present in the earliest manuscripts of the *Book of the Wise* (Mancuso 2010: 80) and in the same section containing Donnolo's signature poem and autobiography, it seems more likely that the ephemerides table is authentic and that WCN is not.

Moreover, WCN deals with topics, such as water salinity, that Donnolo never mentioned. The text also includes the «of blessed memory» formula (WCN 218, 26) used by the author of the *Barayta of Samuel*, but we have already seen that Donnolo does not tend to use this expression in this context. Although these last two arguments are *ex silentio* and thus do not constitute proof that Donnolo did not write WCN, they do cast further doubt on the opposite thesis, showing that nothing links WCN directly to Donnolo.

Reassessing the evidence

In addition to the considerations made thus far in this work, a number of observations can be made on each of the three texts examined.

First of all, none of them contain first person references by Donnolo himself, as is the case of the two works attributed to him. Especially for the two latter texts, this discrepancy might be explained by hypothesising later additions, but this would, in any case, constitute one less reason to attribute these to him.

Secondly, none of the texts examined here show stylistic elements typical of Donnolo, consisting of adding somewhat verbose emphasis, as the section on his style shows. As with the previous point, even if we hypothesise that this kind of phrasing was removed by later scribes, we still have no positive evidence linking these texts to Donnolo.

As a third argument, it should be pointed out that attributing all the texts discussed here to Donnolo seems to imply that he was the only possible Jewish author of astronomical and astrological material. Certain works have been considered as written by him purely on the grounds that these contain material also present in his *Book of the Wise*. One notable example of this is his reference to the *tly*. Yet, we know that this material was in no way exclusive to Donnolo, given its presence in multiple astronomical texts authored during earlier or contemporaneous periods. That he was not the only Jewish author writing about astronomy in his day is proved by the 10th century text known as *Quicumque* which is part of the *corpus* known as *Alchandraeana*. This text refers to «*hebraeorum mathematici*» (9,11, see Juste 2007: 497), i.e. Jewish astronomers, showing that there were other works circulating at the time and which were known in the Iberian peninsula where the text was written (Juste 2007: 221). Moreover, whilst plagiarism was very common at the time, it was equally common to attribute one's work to a more authoritative figure. In some cases, such pseudoattributions may have been honest mistakes in good faith. Lastly, the very fact that these works were written in Hebrew shows that there was some interest in astronomy in Jewish communities. Donnolo was certainly not the only Jew interested in astronomy, so there is no compelling reason to attribute every medieval Hebrew text on the stars to him.

As a fourth additional argument against attributing the three texts examined here to Donnolo, let us note what Donnolo himself tells us regarding his astronomical work, i.e. that he collected all the «wisdom on the planets and the constellations» he had acquired and put it into his *Book of the Wise* (Mancuso 2010: 50), without mentioning other works. Since the *Book of the Wise* dates to 982, it was written when Donnolo was around seventy years old. If Donnolo did indeed write any of the texts discussed here, then we have two options. The first is assuming that Donnolo wrote them prior to this date, but we would then need to explain why he did not mention this in his autobiographical introduction to the *Book of the Wise*. The second is that if he wrote any of them after finishing his *magnum opus* this would imply that his style and lexicon suddenly changed. Neither option seems credible and both contradict what we already know with relative certainty. On one hand, it is true that he claims to have written many books but, on the other,

he does not specify their topic. All of this assumes that by "writing" he did not intend simply "copying" as he does elsewhere (Mancuso 2010: 138). This does not necessarily exclude that he might have written other astronomy and astrology works after the *Book of the Wise*, but it does mean that, if he did, then these three texts were probably not among them.

As a fifth and last argument, it should be pointed out that, ultimately, Donnolo does not show a particularly strong interest in astrology. His *Book of Mixtures*, for example, is purely technical in nature and makes no reference to astrology whatsoever. For instance, he does not specify ideal moments at which to cut herbs, prepare mixtures or consume or apply these, as was the case in other similar works. The astrological component of his *Book of the Wise* is similarly limited to the influence of constellations on body parts and planetary influxes, all explained in terms of classical Aristotelian physics (i.e. hot, cold, dry and wet) rather than through spiritual or metaphysical categories. While the role played by the connection between celestial and human bodies in *Book of the Wise* cannot be denied, we should bear in mind that Donnolo does not pay much attention to typically astrological questions. This goes against Sharf's view (Sharf 1976: 12) that it would have been «highly unlikely» that Donnolo's interest was mainly astronomical rather than astrological (*ibid.*: 13). As already stated and as will be discussed more thoroughly later, the skills Donnolo claims to have learned from his teacher Bagdat are almost exclusively technical in nature, e.g. recognising the constellations, calculating their positions and using the gnomon. Such skills are of use in practical needs, such as for measuring time, while only a few lines are dedicated to astrological ideas such as the good or evil effects of the stars. By the standalone term "astrology", Sharf may have meant what he elsewhere (Sharf 1976: 14) calls "natural" astrology, which he defines as the mere calculation of the position of the stars, in contrast to what he calls "judicial" astrology, which consists of making horoscopes, to which Donnolo makes no reference whatsoever. In any case, it is not clear why Sharf considers it highly unlikely that Donnolo would not have been interested in matters which he effectively accorded very little space, compared to others.

In conclusion, there are several reasons to doubt, if not rule out entirely, that the *Barayta of the Constellations*, the *Book of the Constellations* and *The World Was Created in Nisan* were written by Shabbetay Donnolo. If we are to find a bond between them and the author, what can be said is that they probably shared some common material with the sources that he used (which will be examined in the next chapter) and this might explain some similarities with the content of his works.

Moreover, the sources he mentions explicitly, namely the *Barayta of Samuel* and the *Book of Formation*, are the result of a juxtaposition of heterogeneous material, which means that they included excerpts and fragments from freely circulating cosmological texts variously incorporated into the texts. These might have been "open works", like the already mentioned *Yosippon*. Decades ago, Peter Schäfer coined the term "macroforms" for mystical texts known as *Hekhalot* (i.e. celestial palaces) literature, to underline the fact that textual units related to this corpus do not appear to have been conceived as separate and autonomous entities. Perhaps we should start applying the same criterion to cosmological texts as well, which incidentally show a close continuity with mystical texts (Busi 2020: 132–148).

4. DONNOLO'S SOURCES

The *Book of Formation*

The *Book of Formation* is especially enigmatic in terms of style, contents and textual history. A wide range of possible dates for it have been suggested, spanning from the middle of the 1st (Liebes 2000: 229) to the 9th century (Wasserstrom 1993: 2), although more recent scholarship (e.g. Hermann 2008: 204; Weiss 2018: 75) tends to date it to the 7th century. What can be said for certain is that its earliest available manuscripts were written at the beginning of the 10th century (Hayman 2004: 12–14) and this is when its first commentaries, including Donnolo's, appeared. For these reasons, the latest possible date will be assumed here, i.e. the end of the 9th or the beginning of the 10th century, when the text appeared in three different recensions, namely a short one, a long one and Saadya's recension. The latter is named after its earliest known commentator, Saadya Gaon (9th–10th centuries), who noted that the *Book of Formation* was already circulating in different versions at his time (Hayman 2004: 1). Due to these difficulties in reconstructing an *Urtext*, in his critical edition of the small treatise, Hayman reconstructed what he called «the earliest recoverable text» of the *Book of Formation* (Hayman 2004: 49–51).

The text deals with the formation of the cosmos through what it calls the «thirty-two paths of wisdom» (§1), namely the ten *sefirot* and the twenty-two letters of the Hebrew alphabet. These two categories of elements are indicated not by single words but by two phrases: *otyot yesod* ("letters of foundation") and *sefirot belimah*, which has been variously interpreted by rabbis and scholars. The term *sefirot* (sing. *sefirah*) may derive from the Hebrew root *sfr* which is related to counting or even to sapphire, or from Greek *sphaira*, as Scholem suggested (Scholem 1995: 206). *Belimah*, on the other hand, could be roughly translated as "without determination" (בלי־מה), although this interpretation has not received universal consensus among scholars and commentators. The *sefirot* are not intended to be ten attributes or emanations of the Deity, as they are considered in later Qabbalah, but here the name indicates a category comprising four fundamental elements (spirit, air, water, fire) and six spatial directions (up, down, east, west, north, south). Regarding the first four *sefirot*, it is worth noting that the four elements do not correspond with the four classic ones theorised by Empedocles, as spirit (*ruakh*) replaces earth.

Regarding the letters, besides being grouped according to the place in the vocal apparatus where their respective sounds are articulated, they are divided

into three categories of three "mother",[59] seven "double" and twelve "simple" letters (§12). Each letter in each category is linked to one element in the cosmos, one in the year and one in the human body, always in this sequence. There is also one extra correspondence between other three elements in these three realms of space, time and human body, but this correspondence is not linked to any letter of the alphabet and will be examined later on.

The first category includes the three letters alef, mem and shin, called "mothers" because each corresponds to one of the three fundamental elements; with these letters, the three parts of the world (air, earth and sky), the three (*sic*) seasons of the year and the three sections of the body (head, chest and abdomen) in humans were created (§13; §§28–36). The text distinguishes what it considers the three fundamental elements (wind, water and fire) from the three different realms of creation (air, earth and sky). Contrary to classical theory, earth is not considered by the author of the *Book of Formation* as one of the fundamental elements of creation, but the result of condensation from the third *sefirah*, that of water. The three "mother" letters thus contribute to the first manifestation of the creative act on the physical plane, the formation from an elementary and indefinite state to one with a form. The text provides various reasons for associating specific letters with the elements to which they are made to correspond. The first reason is phonetic: the sound corresponding to alef is obtained from the closing and reopening of the glottis, meaning that the articulation of this consonant is comparable to a sudden breath of wind; the sound of mem is likened likened to that of the sea, to which the letter corresponds; finally, the sibilant shin recalls the sound of a burning fire. Another noteworthy phonetic consideration is that the Hebrew word for "air" (*awir*) begins with alef, the word for "water" (*maym*) with mem and the word for "fire" (*esh*) contains the consonant shin. Moreover, the *Book of Formation* repeatedly insists on the position of the three elements in the cosmos: water is between air and fire, just as the corresponding letter is in the middle of the other two, which are the first and penultimate of the alphabet. Finally, the association may have been intended graphically, with a bit of imagination, the shapes of alef, mem and shin resemble a puff of vapor, a wavy sea and a flame with three tongues extending upward, respectively.

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[59] "Mother" is the literal translation of the term used in the text, which can, in this context, be interpreted in its broader sense of "primary" or "root", in line with both medieval commentators and modern scholars as well (Hayman 2004: 64, note 14).

The second group consists of the seven letters called "double" (bet, gimel, dalet, kaf, peh, resh, taw), so named because each of them is supposed to represent two different sounds in Hebrew.[60] With these letters, the seven planets, the seven firmaments and the seven lands in the world were created. They also correspond to the days of the week in the year and what the text calls the "gates" in the human head, namely the seven orifices that preside over the senses (§§37–39; 43a). Except for the mouth, these orifices are double, just like the letters with which they were created. Additionally, as a commentary which is present in all versions of the text, a paragraph on the seven double letters (§37) lists a series of seven pairs of opposing qualities: life and death, peace and war, wisdom and folly, wealth and poverty, prosperity and desolation, beauty and ugliness, authority and servitude. Although not explicitly related to the elements of the cosmos, of the year or of the human body, the juxtaposition of this list of opposites with the discussion of the letters with a double sound seems to hint at an implicit correspondence between each pair of opposites and the pair of sounds represented by each letter. The same applies to the subsequent list of seven "cardinal points" in a broad sense, namely the six directions of space plus the central point occupied by the Temple. Unlike the planets or the days of the week, which, according to the *Book of Formation*, were formed through the seven letters, the six directions (plus the Centre) are simply listed after specifying that the "double" letters are «seven and not six, seven and not eight», because that is the number of directions. A connection, therefore, exists, but it seems to be only numerical and numerological. If the author had in mind references to deeper symbolic relationships, they are only hinted at and not explicitly stated.

The third and final family consists of the twelve "simple" letters (he, waw, zayn, khet, tet, yod, lamed, nun, samekh, ayin, tsade, qoph), corresponding to the twelve zodiacal constellations, the twelve months of the year, as well as various internal organs and parts of the body (§§45–48), as indicated in Table 1. Immediately following the presentation of the twelve simple letters, there is a list of twelve "boundaries" between one direction and another, likened to the edges of an imaginary cube representing the cosmos. As in the case of the seven "double" letters, here too, any potential connection between these elements and the letters is not explicitly stated but is hinted at by emphasizing that they are «twelve and not eleven, twelve and not thirteen», as that is the number of "boundaries". This series of elements

[60] This does not correspond with how modern Hebrew is pronounced, because the letters gimel, dalet and taw do not each represent two different sounds.

is paralleled with the twelve simple letters, just as the seven directions are with the seven "double" letters, and the fact that they are not treated together with the elements formed through the letters, might suggest a later addition; however, both passages are present in the oldest witnesses of the text. Given the current state of knowledge, it is not possible to determine whether these passages were part of the original text. However, what matters for the present study is to examine their reception. In the final chapter, a hypothesis will be proposed regarding the function of these lists, irrespective of their potential presence in the original text.

The text does not provide clear elements with which to discern the criteria by which certain organs have been chosen while others, such as the lungs, have been left out and why hands and feet are treated separately instead of in pairs, like most medicine and astrology texts. Similarly, the reasons for associating specific letters with specific parts of the body are not clear. On one hand, the association between the three mothers and the three main sections of the body appears to be clear, since it accords with alphabetic order and natural place. On the other hand, no reason is given as to why individual constellations have been associated with one organ or limb rather than another. In other words, while the correspondences between the twelve "simple" letters and the months and the constellations follow the order of the elements involved, the list of body parts follows no recognisable sequence. Even the correspondence between the luminaries and the planets, on one hand, and openings in the human head, on the other, had been used elsewhere, but not in this order. Specifically, the eyes were usually associated with the luminaries, whereas the five planets were variously assigned to the nostrils, ears and mouth, but the *Book of Formation*, counterintuitively, assigns the right nostril and the left ear to the Sun and Moon, respectively, without explaination.

The formation of the cosmos is described as the result of different permutations of the letters of the alphabet (§35). The six spatial directions are said to be "sealed" by six different permutations of the three letters, yod, waw and he, that form God's ineffable name (§15). Permutations play an essential role in the *Book of Formation*, which describes two concentric wheels of letters forming two hundred and twenty-one unique pairs (§§18–19), which are enumerated in full in some manuscripts (§21). In the longer versions of the text, the letters are associated not only with parts of the human body, but also with moral qualities as well (§ 25).

Letter	World	Year	Body
"Mothers"			
א aleph	Air	wet	head
מ mem	Water	cold	thorax
ש shin	Fire	hot	abdomen
"Double"			
ב bet	Saturn	Shabbat	mouth
ג gimel	Jupiter	First	right eye
ד dalet	Mars	Second	left eye
כ kaf	Sun	Third	right nostril
פ peh	Venus	Fourth	left nostril
ר resh	Mercury	Fifth	right ear
ת taw	Moon	Sixth	left ear
"Simple"			
ה he	Aries	Nisan	liver
ו waw	Taurus	Iyar	gall
ז zayn	Gemini	Sivan	spleen
ח khet	Cancer	Tammuz	stomach
ט tet	Leo	Av	right kidney
י yod	Virgo	Elul	left kidney
ל lamed	Libra	Tishri	intestines
נ nun	Scorpio	Markheshvan	esophagus
ס samekh	Sagittarius	Kislev	right hand
ע ayin	Capricorn	Tevet	left hand
צ tsade	Aquarius	Shevat	right foot
ק qoph	Pisces	Adar	left foot

Table 1. The correspondences between the letters and the elements in the cosmos, year and human body according to the *Book of Formation*.

The *Barayta of Samuel*

The only other written source explicitly mentioned in *Book of the Wise* is the *Barayta of Samuel*, which is treated by Donnolo as a touchstone for astronomical knowledge that he wanted to test, whether it came from other texts or from living people, such as his teacher Bagdat (Mancuso 2010: 230). The *Barayta* is an astronomy and astrology work that, as the *Book of Formation*, raises interpretative difficulties, as we will see. Incidentally, Donnolo himself says that its style is obscure and not easy to understand, which is another trait shared with his other source, the *Book of Formation*.

Often quoted in medieval astronomy manuscripts,[61] it was believed lost until a first printed edition was published in Thessaloniki in 1861 by Nathan Amram, followed by two others.[62] The manuscript Amram's edition is based on seems to have been lost once again. A large fragment from the Cairo *genizah*[63] is believed to be a manuscript of the work, but its contents do not match the printed version.

This short treatise can be divided up as follows: 1. cosmological introduction; 2. calculations of the first day of the month; 3. Sun movements and seasonal changes; 4. determining the beginning of the seasons; 5. a) more on calculating the seasons; b) planets and constellations; 6. more on planets and constellations; 7. the seven heavens and their measurements; 8. rise and fall of planets; 9. characteristics and dominion of the planets.

After a short cosmological introduction, sections 1 to 4 briefly explain seasonal changeovers and the Sun's movements throughout the year and are mainly concerned with measuring time and calendrical calculations. Sections 5b to 9 show the measurements of the seven heavens and set out basic astrological theory. Sarfatti (1965: 18, ff.) has suggested that the text is made up of two or three different sources juxtaposed together: a cosmology/astronomy one (§§1–4), an insertion dealing with calendrics (§5a) and an astrology section (§§5b–9). The latter section is present, with minor variations, in the *Barayta of Constellations*. §5a contains a reference to the year 4536, corresponding to years 775–776[64] CE.

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[61] For example in the Plut. 88.58, f. 92a, rows 20–25, dated to the 15th or 16th century (Leicht 2006: 84).

[62] Frankfurt 1863 and Jerusalem 1932. The Barayta appears also as part of Eisenstein's collection *Otsar midrashim* (New York 1915, vol. 2, pp. 542–546). The present study is based on Amram's *editio princeps*.

[63] The Jewish Theological Seminary of America, New York, NY, USA Ms. 5252.

[64] Or one year later, depending on which reckoning was used (Stern 1996: 119).

In the first chapter, the world is imagined in the shape of a dome or tent, shaped as an exedra, featuring a closed and arched northern side and an open southern side. The text seems to consider the earth to be flat, as in biblical and Talmudic cosmographies. One clue in this sense might be the term used for the seven heavens, *maalot*,[65] which seems to point to a flat cosmos. The treatise also provides measurements for these seven levels. For each heaven, which corresponds to a planet or luminary, it specifies the distance between it and the one below, and between the lowest heaven and the earth. The distances are presented in a unit of measurement called "celestial rope", that corresponds to a number of "earthly ropes" which differs from heaven to heaven. Additionally, the distance between the earth and the uppermost heaven is calculated in a way that takes into account not only the equivalences between "earthly ropes" and "celestial ropes" given earlier in the text itself, but the measurement of the total height of the cosmos is also expressed in days of walking, namely in five hundred and fifty four and a half days.

In the *Barayta*, ropes are referenced not only as a unit of measurement, but also as cosmological elements that seem to bind together stars, planets and the *tly*, which is said to be stretched across the sky and held responsible for solar and lunar eclipses. According to the first chapter of the *Barayta*, the sky's motions is originated by what has been identified as the Great Bear, then is transmitted through a certain Yoke to the Orion constellation and the asterism of the Pleiades. Except for the Yoke, these groups of stars (namely, the Great Bear, Orion and the Pleiades) are in fact the only ones mentioned in the Bible and, regarding the latter two, they are indeed described as bound to the firmament in Job 38:31. Incidentally, the identification of the Yoke does not seem to correspond to any known constellation in the Hellenistic skyscape that was inherited in medieval astronomy. Although it is absent in the sky maps ultimately derived from Ptolemy's *Almagest*, references to a yoke in the sky are present in ancient Mesopotamian literature: "Yoke" is the name of a still unidentified star mentioned in some prayers from the first millennium BCE (Maul 2018: 27) and is also a secondary name for either Saturn, Jupiter or Mars in one of the *Prayers to the Gods of the Night* (Brown 2000: 71). How those ideas from ancient Mesopotamia could have reached a medieval Jewish text will be discussed later.

According to the *Barayta of Samuel*, the motion of the sky dome is then transmitted to the *tly*, which in turn moves the Zodiac wheel and the planets and luminaries crossing it. It is implied that this *tly* is invisible, because the

[65] "Stairs", but also "degrees". The term appears with both meanings in 2 Kings 20:10.

treatise shows how to predict eclipses by calculating the position of its head and tail, instead of how to spot them in the sky. "Head" and "tail" are the names of the two imaginary points of intersection between the lunar orbit and the ecliptic, which is the apparent orbit of the Sun in a geocentric view. In modern-day nomenclature, the two points are called the "ascending" and "descending node", respectively, and they are the two only points in which the eclipses, both lunar and solar, can take place. In the *Barayta*, the head is said to be connected with the Sun and the tail to the Moon, but this claim has no apparent astronomical significance.

Bagdat

We have already seen that, in the autobiographical introduction to his *Book of the Wise*, Donnolo states that, after reading astronomy books from various cultures, he resorted to the teaching of a learned man called Bagdat, who taught him practical aspects of astronomy and astrology (Mancuso 2010: 139 // 230–234), namely: how to calculate the position of the planets, lunar nodes and constellations for prediction purposes; how to identify the twelve constellations of the Zodiac and the five planets; how to identify the constellation that is rising (ascendant) and setting (descendant) and those that have reached their southernmost and northernmost points (*medium coeli* and *imum coeli*, respectively); how to know when the effects of a planet or constellation are positive or negative; how to measure the shadow of a gnomon «as it is written in the *Barayta of Samuel*» in order to tell the time.

Regarding the person who imparted this knowledge, Donnolo says little, except that he was well paid for his teachings, that he was not Jewish, that he came from Babylon and that his name was probably Bagdat (בגדט). The reconstruction of the name itself is not certain, both because the vowels are not present in the original Hebrew and because in some manuscripts the final consonant is *sh* (ש) instead of the emphatic *t* (ט). The confusion likely occurred at a certain point during the transmission due to the similar shape of the two letters. Following Mancuso (Mancuso 2010: 14, note 54) here the form ending with *t* has been adopted, since it is the one present in the oldest witnesses. Regardless, the first part of the name seems to be related with a well-known Persian root related to gods (Lacerenza 2004a: 60, note 65), the same root from which the name of the city of Bagdad derives and which appears in several other names as well.[66] The hypothesis according to which

[66] https://iranicaonline.org/articles/baga-an-old-iranian-term-for-god-sometimes-designating-a-specific-god, visited on 31st March 2025.

the name Bagdat was used by Donnolo as a toponomastic designation (Mancuso 2010: 14, note 54) is not convincing, since this would require explanation as to why the final *d* has been turned into a *t* (or *sh*) and, most of all, why Donnolo did not call him "ha-Bagdadi" (i.e. "the one from Bagdad").

In medieval Jewish literature, particularly in Southern Italy, the figure of a wise man from the East imparting knowledge of the laws of nature became almost a recurring literary motif. The most notable example is the story of Abu Aharon from Baghdad, which appears in the aforementioned *Scroll of Genealogies*. This text refers to a certain Aharon, or Abu Aharon, who was not part of the author's lineage, whose name later appears in German Pietist writings (Bonfil 2009: 57) and who was believed to possess occult knowledge.[67] It would be tempting to identify this Aharon (or Abu Aharon) from Baghdad with Donnolo's teacher Bagdat (Putzu 2004: 49, note 5), but this would pose several problems: not only does the *Scroll of Genealogies* place Aharon in the 8th century, but we would also need to explain why Donnolo did not call him by his full name. It has also been suggested that he might be identified with Abu Jafar ibn Ahmad ibn Ibrahim ibn Abi Khalid al-Jazzar (Fiaccadori 1992) but this latter hypothesis is equally problematic as the former: al-Jazzar lived one century earlier than Donnolo and never left his homeland (*ibid.*), which was not under Byzantine rule. Since Donnolo explicitly says that he did remain within the Byzantine empire, they would never have met.

The word Donnolo uses to describe his teacher is the generic word for non-Jew (*goy*) instead of the Hebrew word for "Muslim" (*ishmaeli*). This could mean that Bagdat might have belonged to a religious tradition other than Islam or Christianity (Lacerenza 2004a: 60). The fact that he possessed an advanced knowledge of astronomy and astrology might be a clue that he could have been a Sabean. The name Sabeans (also spelled Sabians or Sabaeans) has been used to indicate various real or fictitious groups, ethnic, religious or both. Its etymology is problematic as well and has been the subject of various medieval and contemporary speculation. It may derive from the Hebrew word *tsava* that in the Bible refers mainly to the heavenly hosts, i.e. the stars, or it may derive from an Arabic term referring to Eastern provenance or a Syriac term hinting at religious aspect.[68]

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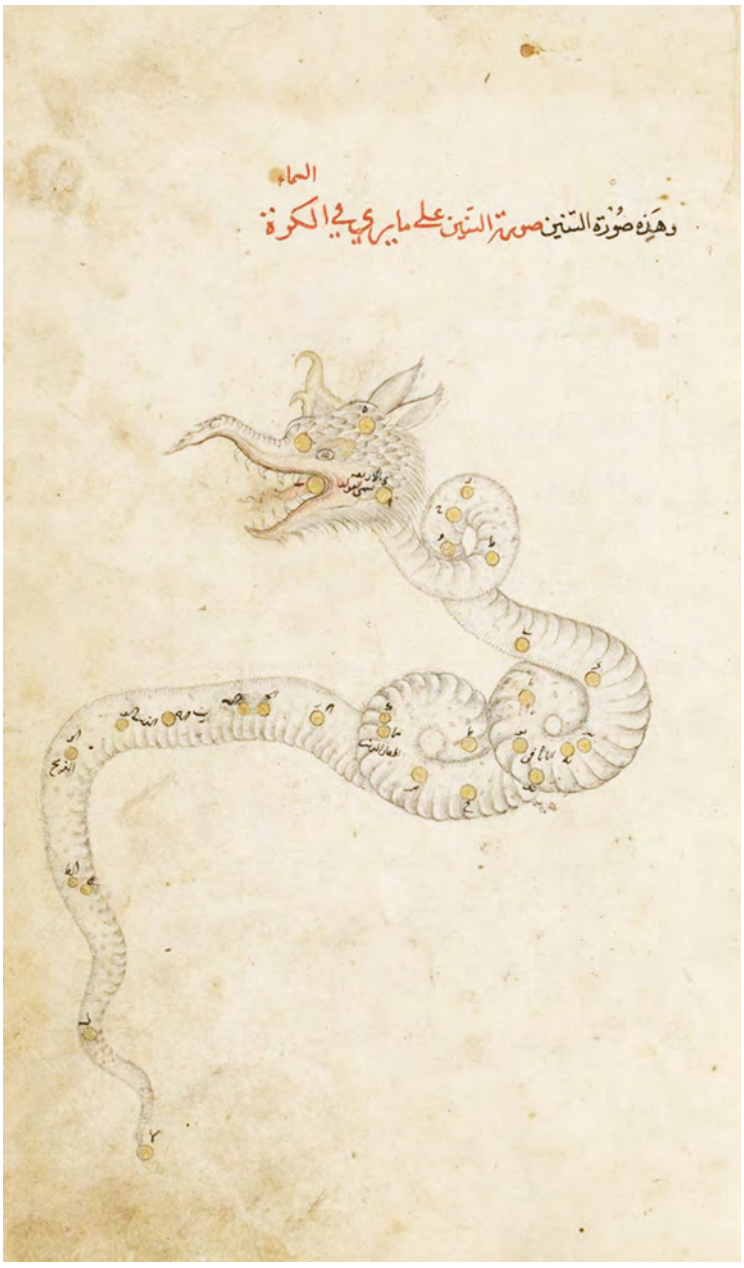
[67] It has been suggested that the texts of the German Pietists contain occult knowledge passed down by Abu Aharon to his disciples (Weinstock 1963 and 1965), but this view has been disputed (Scholem 1964).

[68] For a detailed study of all the etymologies and pseudoetymologies for the ethnonym that have been suggested since the 17th century to the half of the 19th century, see Chwolsohn 1865, I: 45, ff. and 144, ff. regarding the Sabeans of Harran



The Draco constellation, from *Kitāb ṣuwar al kawākib (Book of Star Illustrations)*, known as *Book of the Fixed Stars*, by Abd al-Rahman ibn Umar al-Sufi (Latin name Azophi), Washington, Library of Congress, Ms. 2484, f. 53 (10th century)

The Sabeans, along with Jews and Christians, are mentioned in the Quran in three similar passages that list those who, according to doctrine, will be spared and not condemned as pagans on the Last Day.[69] Elsewhere the Quran defines Jews and Christians as «People of the Book» (see Chapter 1). Although the Sabeans are never explicitly referred to as such, the fact that they are always mentioned together with Jews and Christians has led several Quranic commentators to attribute monotheistic beliefs to them (De Blois 1995: 40). Since the Middle Ages, the Sabeans have been identified with Mandaeans, Mazdaeans (i.e. Zoroastrians), Bardesanites[70] and several other ethnic or religious groups whose identification remains particularly problematic (Chwolsohn 1856; Stroumsa 2009: 84–107; Van Bladel 2017).

Beyond those mentioned in the Quran, from the 9th century onward, the name "Sabeans" was also applied to another group, said to be star worshippers, who settled primarily in the city of Harran. The encyclopaedia known as *Fihrist*, written in Arabic by Mohammed ben Ishaq al-Nadim (10th century) reprises and further embellishes a story that was already circulating (Chwolsohn 1856, I: 140, ff.). It recounts how the people in Harran took the name Sabeans in the 9th century, when Caliph al-Mamun (the founder of the city of Baghdad, among other things) arrived in Harran in order to conquer it. The Harranians tried to escape the forced conversion that was usually imposed on pagans by claiming to be the Sabeans mentioned by the Quran as belonging to the "People of the Book", to ensure that they were entitled to a better legal and social status.

Regarding the provenance of the inhabitants of Harran, the sources disagree. According to some (Chwolsohn 1856, I: 160 and II: 309 note 371), they were the descendants of a large group of Macedonians which had settled there at the time of Alexander the Great and preserved the memory of their Greek identity until the 10th century. According to other sources, such

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in particular. On these latter, further studies have been carried out (Green 1992 and Gündüz 1994) after Chwolson's, which still remain the most complete one (Van Bladel 2009: 67), although it presents some methodological imperfections (Green 1992: 104).

[69] The Quran 2: 62; 5: 69; 22: 17. In this latter case, the Persian Magi (i.e. Zoroastrians) are mentioned as well.

[70] Followers of a philosophical and religious movement founded by Bardaisan of Edessa (3rd–4th century CE), on whose doctrine there is disagreement in the heresiological sources (Camplani 2015: 264–267).

as *Nabataean Agriculture*,[71] for example, the inhabitants of Harran were Chaldeans preserving Babylonian customs and rituals, including their religion, which was based on star worship. Incidentally, Maimonides mentions the Sabeans several times in his *Guide of the Perplexed*, particularly in chapters 29–30 of its third book, where he claims that Abram grew up among them in Harran before leaving for the Promised Land, converting and changing his name to Abraham:

> It is well known that Abraham our Father, peace be on him, was brought up in the religious community of the Sabians, whose doctrine it is that there is no deity but the stars.[72]

This tradition, which Maimonides also found in Arabic sources, originates in the Bible. However, while the Bible describes Abraham settling in Harran during his journey to Canaan (Genesis 11:31), as did Isaac (Genesis 24:10) and Jacob after him (Genesis 27:43; 28:10), it does not suggest that Abraham was originally from there. This confusion may be the result of a medieval tradition according to which Abraham was the first astronomer, since God asked him to look at the stars in the sky and count them (Genesis 15:5). In any case, long before Maimonides, the biblical Harran was identified with the city of the Sabeans by Jewish, Christian and Islamic authors (Green 1992: 11).

Located in north-western Mesopotamia, not far from Edessa, the city is mentioned in sources that date as far back as the beginning of the 2nd millennium BCE or the end of the 3rd (Tonietti 2010: 58) and, in the 8th century CE, it was one of the cities particularly involved in the translation movement fostered by the Abbasid Caliphate (Green 1992: 75; Gutas 1998: 14). In the 12th century, the city is described by geographer al-Idrisi as a pleasant place in which rare trees grew and a hill stood, where the Sabeans had erected a place of worship (Chwolsohn 1856, II: 548). In the description

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[71] The *Nabataen Agriculture* consists of a treatise composed in Arabic that presents itself as a translation made by Ibn Wahshiya (d. 930–931, see. Häamen-Anttila 2006: 3) of an ancient Syriac original, but it might as well be an original work by Ibn Wahshiya himself. The treatise includes practical, magical and astrological advice on agriculture and a large quantity of popular and religious myths and traditions. It is considered a Hermetic treatise (Travaglia 2009: 73), although regarding the definition of Hermeticism and the difficulties that arise when trying to apply this category to Arab texts, see van Bladel 2009: 19, ff.

[72] Pines 1963: II, 514.

of Harran included in his *Geography*, Abulfeda (13th–14th centuries) quotes al-Idrisi, but specifies that, at the time of writing, the city had been destroyed (Chwolsohn 1856, II: 552). al-Idrisi mentions only one Sabean temple in the city, but according to other sources, such as al-Masudi (10th century) and al-Shahrastani (11th–12th centuries), the Sabeans had erected a temple to Reason, to the First Cause and other abstract entities and one to each of the seven planets and luminaries. According to al-Masudi and several later authors, each one of the temples was built in a different geometric shape (Chwolsohn 1856, II: 367), although the sources do not agree regarding their shapes. Since there is no archaeological evidence of such temples, attempts have been made to reconstruct their appearance (Chwolsohn 1856, II: 664–665) according to the often unclear descriptions found in the sources, which have proved unreliable, since they seem to contradict one other. Small structures similar to those described by al-Masudi have been found at Sumatar Harabesi, not far from Harran, on a worship site dedicated to a lunar deity (Green 1992: 57, ff.). Perhaps these small temples are the ones referred to in al-Masudi's work and subsequent sources reprising his description and wrongly conflated with Harran itself. This hypothesis might solve the contradiction between al-Idrisi's testimony mentioning only one Sabean temple in Harran whereas al-Masudi claimed that there was more than one: perhaps the latter was simply referring to something near, but not in, Harran.

To summarise, in the second half of the 1st millennium CE, the name Sabeans primarily referred to a non-Christian gnostic group whose beliefs were similar, if not identical, to those of Mandaeism, which settled in Mesopotamia during Late Antiquity. These are likely the Sabeans mentioned in the Quran. About two centuries after the Quran was written down, the uncertainties regarding the identity of this particular "People of the Book" mentioned in it had grown to such an extent that another group of pagans settling in Harran were able to adopt the name, in order to avoid forced conversion without raising too much suspicion. In later medieval Arab sources, the term "Sabean" ended up as a synonym of "pagan" or "idolater" or, in the case of the inhabitants of Harran, "star-worshiper" (Green 1992: 101).

In spite of several differences and contradictions in the descriptions of several aspects regarding the Sabeans of Harran, such as numbers, provenance, rituals and philosophy, one trait that recurs constantly is that theirs was a skygazing cult. Two of the most important astronomers of the Islamic world, namely al-Battani (9th century) and Thabith ibn Qurra (9th–early 10th century) were from Harran. The former was also known as "al-Harrani al-Sabi", i.e. "the Harranian, the Sabean", while the latter shared several characteristics with Donnolo, as a physician and philosopher and translator

of "scientific" texts. Ibn Qurra was also an original author of texts regarding both astronomy and mathematics (Rashed 2009a: 3) and at a certain point in his life he moved to Baghdad (Rashed 2009b: 15, ff.). So, even without taking into account the dubious and contradictory sources regarding the Sabeans, the presence of excellent astronomers from Harran not following a monotheistic religion is attested in the sources. Some of these Sabeans, including al-Battani, converted to Islam, but others, like ibn Qurra, kept up their customs for generations (Roberts 2017: 275).

In light of the above, it could be speculated that Bagdat, sufficiently well versed in astronomy and astrology as to be able to teach them, might have been a Sabean, especially if we use the term in its most generic meaning of "pagan expert in astronomy". In any case, the scant information about him available to us is compatible with what the sources unanimously tell us about the Sabeans. There is no reason to doubt Donnolo's testimony regarding the quality and content of Bagdat's teachings, such as how to identify the constellations for astrological purposes and how to use the gnomon to tell the time. The latter is presented by Herodotus as a typically Babylonian practice (*Histories* II, 109, 3) and, if we are to believe the *Epistles of the Brethren of Purity*,[73] it was considered a kind of secret knowledge exclusive to those who «establish the ephemerides» which is what Bagdat taught Donnolo. Incidentally, there is evidence of contacts between Jews and Sabeans in Raqqa, a city in Northern Mesopotamia not far from Harran, which also had a significant Sabean presence (Goitein 2005: 141).

There is no apparent reason to assume that the reference to Bagdat in the *Book of the Wise* was a mere literary tradition. If it was, then it was a quite realistic one. If Bagdat is not an imaginary character, on the other hand, then a twofold question arises about his encounter with Donnolo, i.e. where and how they met. As to the place of this supposed encounter, we have already seen that Donnolo writes that he never left the Byzantine empire in his quest for a teacher, so he could have met Bagdat anywhere from his native Southern Italy to Greece or Constantinople. As the only restriction

[73] Also known as *Encyclopaedia of the Brethrens of Purity*, *Epistles of the Brethren of Sincerity*, and other similar versions (a literal translation from Arabic *Rasail Ikhwan al-Safa* has been used here), it consists of a collection of treatises from the 10th century regarding topics ranging from natural science to magic, from ethics to politics. Although supposedly written down by a secret society, the book was actually widespread throughout the Fatimid Caliphate, which endorsed Ismailism, a Shia current that favoured Neoplatonic philosophy and esoteric disciplines.

on the site of this encounter is the Greek-speaking world, we can similarly restrict the options regarding the languages they are likely to have used. As shown in the previous chapter, it is very likely that Donnolo did not speak any Arabic and there is no reason to assume that Bagdat spoke Hebrew, which was not spoken even by Jews themselves at the time, except in Jerusalem, in a few other enclaves nearby and of course in Southern Italy. Unless Bagdat knew Latin, for which there is no evidence, their most likely *lingua franca* would have been Greek, which Donnolo knew and which was spoken by the Sabeans of Harran until Donnolo's times (Gutas 1998: 136, 179).

In conclusion, there is no reason to cast doubt on Donnolo's testimony regarding Bagdat and his teachings. If it was a fictional character, then Donnolo was especially convincing in his choice of a Persian-sounding name and in attributing him knowledge specific to a few selected people, as described in the *Epistles of the Brethren of Purity*, a text which he could not have read in its original language. Moreover, the use of the gnomon is described in the *Barayta of Samuel*, although obscurely, as Donnolo admits. If he had invented a fictitious teacher, a Jewish one would have been preferable, instead of specifying that he could find no Jewish teacher and that other Jews told him that no-one in their communities was familiar with astronomy. It is difficult to imagine an author, who considered a Jewish text, i.e. the *Barayta*, as a touchstone with which to verify the validity of astronomy theories, inventing a non-Jewish character to teach him how to make appropriate use of the doctrines present in it. It seems more likely that Bagdat did indeed exist and was able to explain the use of the gnomon, thereby indirectly helping Donnolo decipher the *Barayta of Samuel*, since this knowledge ultimately came from the same source, i.e. Babylonian astronomy and astrology.

Donnolo's use of the sources

The cosmology of The Book of the Wise

Donnolo's *Book of the Wise* juxtaposes various ouranographies which are not totally compatible with one another. First of all, he aims to retain biblical cosmology, by postulating the existence of a solid firmament that holds the "upper waters". Below it he places the seven planetary heavens and puts the stars in the first, lower heaven, together with the Moon, contrary to both Aristotelian-Ptolemaic and Persian cosmologies (Mancuso 2010: 320):

> The order of the abodes of these seven planets in the seven firmaments follows the order of S[aturn], J[upiter], M[ars], S[un], V[enus], M[ercury], M[oon]. How? In the uppermost firmament, which is above all the others, the seventh one [up], which

> carries the upper waters, is the abode of Saturn. In the second firmament down is the abode of Jupiter. Beneath it, in the third firmament down, is the abode of Mars. And in the fourth firmament down, which is the middle one, is the abode of the sun. [Beneath it], in the fifth firmament down, is the abode of Venus, and beneath it, in the sixth firmament down, is the abode of Mercury. In the seventh firmament down is the abode of the moon. If you count them from the bottom up, then the uppermost firmament is the seventh, while if you count them from the top down, the lowest firmament is the seventh. It is right to count them from the bottom up.

The last sentence, which Donnolo himself contradicts, since he lists the heavens starting from the top, refers to the different sequences in which the planets were usually listed. Earlier, while commenting on correspondences between the planets and openings in the human head (explained below), he follows planetary hour order, which will be discussed later.

Donnolo attempts to describe the cosmos as a whole, specifically in its twofold structure of macrocosm and microcosm, with the two being made up of the same matter and animated by the same spirit. In so doing, he indirectly follows Plato's extremely influential dialogue *Timaeus*, his only work that survived in Latin translation in western Europe after the fall of Rome. The idea of the human being as a microcosm became widespread in the Middle Ages and was quite popular with Church Fathers such as Gregory of Nazianzus (4th century),[74] John of Damascus (7th century),[75] Maximus the Confessor (7th century),[76] although it was not universally accepted. To give an example, Gregory of Nyssa (4th century) refused to accept that humans were made in the same way as mosquitoes and mice, at least in some respects.[77] Generally speaking, since human beings were considered to be made up of matter and spirit, their position in the cosmos was considered to be midway between the animals and the angels.

Although it has been argued that Donnolo's Neoplatonic worldview had a great deal in common with the theology of the Church Fathers,[78] in this case his cosmology can be derived directly from Genesis itself, in which it is said that in the beginning God's spirit hovered on the surface of uncreated matter and Adam was made from the soil vivified by the insufflation of

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[74] *Oratio* XXVIII (Migne, *Patrologia Græca* XXXVI, 57 A).

[75] *De fide* II, XII (*Patr. Gr.* XCIV, col. 925).

[76] Thunberg 1985: 17–18.

[77] *De opificio hominis* (*Patr. Gr.* XLIV, 177).

[78] Sermoneta 1980: 898; Mancuso 2010: 39.64–66.

God's breath/spirit in his nostrils. From this, Donnolo concludes that man resembles the world from a physical point of view, whereas in spiritual terms he is made in the image and likeness of God, from Whom he has inherited His attributes, albeit in limited and finite form. In his own words:

> Just as the world and everything within it, both below and above, are driven by the power of the spirit of the Holy One—blessed be He—so the entire human body, both its lower and upper, its internal and external parts, is driven by the power of the spirit of the breath of life that God blew into it.[79]

In addition to being made of spirit and matter and based on the same structure, the human body is similar to the world also in the sense that several of its features have parallels with the world's elements. In a long passage (Mancuso 2010: 154–158 // 262–270), Donnolo presents a detailed list, from head to toe, of the parts of the human body, while pointing out their similarities with the Earth's elements. For example, he likens the skull with the firmament, the eyes with the two luminaries (i.e. Sun and Moon), blood vessels with rivers, shoulders with mountains, teeth with rocks, and so on. Incidentally, this passage is reprised verbatim in the final chapter of the anonymous treatise on ethics called *Righteous Ways* (*Orkhot Tzaddiqim*, 15th century).

Regarding the comparison between the eyes and the luminaries in the second section of his *Book of the Wise*, Donnolo further elaborates by considering the right and left nostrils as corresponding to Mercury and Mars, respectively, the mouth to Jupiter and the right and left ears to Venus and Saturn. Later on, in the third section of his work in which he comments on the *Book of Formation* (Mancuso 2010: 317), he seems to refer to two other sets of correspondences between the seven planets and openings in the human head. An example is, whereas he associates Jupiter with the mouth when commenting on Genesis, in the section in which he comments on the *Book of Formation* he writes: «Even though Jupiter, Sunday, the right eye […] were created with the letter gimel, Jupiter governs only Thursday, the eve of Monday […] and the right ear». While the association between Jupiter and the right eye is present in the *Book of Formation* commented on in that section, the correspondence between the planet and the mouth referred to in the previous section is ignored in favour of this new correlation with the right ear, which had earlier been linked with Venus. This threefold dis-

[79] Mancuso 2010: 270.

crepancy was noted by Sharf (1976: 55) and Mancuso (2010: 264, note 40) and can only partially be explained. In section 2.1, it has been shown that the *Book of Formation* describes a series of correspondences between the elements in the three realms of the cosmos, the year and the human body, and that what makes this link possible are the letters of the Hebrew alphabet. The seven so-called "double" letters are each associated with an opening in the human head and that the twelve so-called "simple" letters were each associated with a constellation, a month and an organ.

Letter	**Constellation**	**In the *Book of Formation***	**Classic melothesia**
he	Aries	liver	head
waw	Taurus	gallbladder	neck
zayn	Gemini	spleen	arms
khet	Cancer	stomach	ribcage or heart
tet	Leo	right kidney	heart or solar plexus
yod	Virgo	left kidney	stomach
lamed	Libra	intestines	belly
nun	Scorpio	esophagus	genitalia
samekh	Sagittarius	right hand	thighs
ayin	Capricorn	left hand	knees
tsade	Aquarius	right foot	calves
qof	Pisces	left foot	feet

Table 2. Correspondences between the constellations and the human body in the *Book of Formation* and in classic melothesia.

Donnolo must have realised that the correspondences between the constellations and the human body described in the *Book of Formation* differ vastly from virtually all astrology and medicine texts dealing with melothesia (i.e. the set of alleged correspondences between the celestial bodies and the human body and the influence the former exert on the latter). These usually present a head to toe sequence and link a certain constellation to a part of the body according to their conventional and natural order, respectively: Aries is associated with the head, Taurus with the neck, Gemini with the arms, Cancer with the thorax or heart, Leo with the heart or the solar

plexus, Virgo with the stomach, Libra with the kidneys, Scorpio with the genitalia, Sagittarius with the thighs, Capricorn with the knees, Aquarius with the calves and, finally, Pisces with the feet. Often, these correspondences are explained through analogies or simple associations: Aries is made to correspond to the head, since rams are known for the use of their heads; Taurus corresponds to the neck, which is where the yoke is put; Gemini to the arms, since they are two like twins; Cancer to the ribcage, since its shape is reminiscent of a crab; Leo to the heart, and so on.

As Table 2 shows, this sequence has virtually nothing in common with the correspondences presented in the *Book of Formation*, according to which Aries is connected to the liver, Taurus with the gall bladder, Gemini with the spleen, Cancer with the stomach, Leo with the right kidney, Virgo with the left kidney, Libra with the intestines, Scorpio with the esophagus, Sagittarius with the right hand, Capricorn with the left hand, Aquarius with the right foot and Pisces with the left foot. The only similarity, namely the constellation of Pisces being associated with the feet in classic melothesia and with the left foot in the *Book of Formation*, appears to be merely accidental. Donnolo was thus faced by an obvious discrepancy which he solved in a rather elegant way, reconciling the two traditions and pointing out that the *Book of Formation* does not say, for example, that Aries has any influence on the liver, but only that Aries was created through the same letter of the alphabet, namely the letter he, through which the liver was created. It is similarly true that the same letter waw created the Taurus and the gall bladder, but the constellation of Taurus governs the neck, instead, and so on (Mancuso 2010: 339–341).

All this explains only some of the discrepancies, especially regarding the correspondences between the planets and openings in the human head. There is a third system of correspondences that appears briefly in Donnolo's commentary to the *Book of Formation*. To reprise the example presented earlier, we can explain why Jupiter can be associated with the right eye, since the *Book of Formation* does so, but it is still not clear why Donnolo associates this planet with the mouth, in one passage, and with the right ear, in a later section. He does the same with the other planets, except for the luminaries which remain associated with the eyes. He must have used two different sources for this, but he seems to use them indiscriminately. Contrary to zodiacal melothesia, which follows the same criterion from head to toe with only slight, occasional differences, planetary melothesia appears to have been more arbitrary in this regard (Hübner 2013: 28–29): whereas virtually all of the texts (except for the *Book of Formation*) assign the Sun and the Moon to eyes, the other orifices, namely mouth, nostrils and the ears are variously assigned to the five planets.

The tly

Both in the *Book of Formation* (§59; Hayman 2014: 176–177) and in Donnolo's commentary of it, one further set of correspondences is described, which seems to be an external addition and, at the same time, have a pivotal role nonetheless, i.e. the *tly* that is linked to the year and to the heart (in the *Book of Formation*) or to the spinal cord (in the *Book of the Wise*). This set of correspondences seems to include elements that were omitted from the system presented here. These three elements do not correspond to a letter of the alphabet, but at the same time they are essential: whether we consider the original in the *Book of Formation* that mentions the heart or Donnolo's version that considers the spinal cord, in both cases they are central organs in the microcosm of the human body. In both texts, the other two elements play a similar, central role: the *tly* in the macrocosm and year in the measurement of time.

What is the *tly* then? The word rendered by Mancuso as "Dragon" seems to indicate a celestial body described by Donnolo with contradictory features (Mancuso 2010: 343–346):

> Who is the Dragon? When God created this firmament, which is above us and which is divided into seven firmaments, He created the Dragon out of water and fire, in the likeness of a large sea monster, like a large writhing serpent. He made for it a head and a tail and set [literally, "stretched"] it in the fourth firmament, which is the middle one and the abode of the sun. He stretched it from end to end as an axis, like a writhing serpent, twisted half way along its length and stretched out in the shape of a circular ring. All the planets, the luminaries and the constellations are attached to it, as the threads of the warp and woof are attached to the weaver's loom. Likewise are attached to it all the planets in the seven firmaments, from the lowest to the uppermost one, as well as the two luminaries and the twelve constellations.
>
> It [the Dragon] was appointed king over them all, to guide them, either benignly or malignly. It darkens the light of the two luminaries and the five planets, it moves the luminaries forward and backward and the planets and the constellations from east to west and from west to east; it draws the planets back and holds them in one place, preventing them from straying either forwards or backwards. It conducts them in a straight path, and it comes from fire and water; its quality is like [the quality of] water, and it cannot be seen with the naked eye but rather it is by the study of the ancient texts transmitted to us that we gain knowledge of the Dragon and its quality, its dominion, its kingship, its creation, its beneficence and its malignity, the features of those who are born under it, the time it takes to move from constellation to constellation, when it reverses its course, how its

> head follows its tail, its ascent and descent and how the twelve constellations are attached to it, six to the south, six to the north.

As already stated, one of the things that Bagdat taught Donnolo was how to calculate the position of the *tly* in the sky and the results of these calculations are indeed present in the ephemerides table in the first part of *Book of the Wise* (Mancuso 2010: 140–141 // 236–237). These calculations show that the *tly* moved from 2° 24' to a little less than 1° during the month of Elul. There are gaps in the manuscript where the values for the last days of the month should be, so the only certain data on its position towards the end of the month, 1° 2', relates to day 26. The estimated value for its position at the end of the month, between 0° and 1°, can be extrapolated from the average decrease of 3' per day shown for the previous weeks.

These values correspond to the position of one of the two points in which the lunar orbit intersects the ecliptic, which are actually the only two points in which lunar or solar eclipses can take place. Their positions can be calculated with relative ease using the mathematics available in the Middle Ages and, in fact, the position of the *tly* in Donnolo's *Book of the Wise* corresponds to what was known as "ascending node" (Gr. ἀναβιβάζων [συνδεσμός]). The positions of the "descending node" (Gr. καταβιβάζων [συνδεσμός]) did not need to be written down since they were easily calculated by adding 180° to the position of the other one. The two nodes rotate along the ecliptic in such a way as to complete a whole rotation in approximately 18 and a half years, which means that they move at about 19° per year, or just over 1° a month, i.e. the equivalent of about 3' per day, which is the value found in Donnolo's ephemerides as well.

The lunar nodes had been considered astrologically significant since Late Antiquity (Bouché-Leclercq 1899: 121–122) and in Latin astrology texts the ascending and descending nodes were called *caput* and *cauda draconis* (i.e. "head" and "tail of the dragon") respectively. Finally, the 18.5 year cycle during which the lunar nodes circuit the Earth is still called "draconic year".

For all these reasons, it would seem clear that Donnolo considered the *tly* to be the dragon of the lunar nodes, something that is to be found, as we shall see, in sources from various cultures. Some of the *tly*'s features, though, are not compatible with the dragon of the lunar nodes:

> This sphere surrounds the firmament to the south, the north, the east and the west, and the Dragon stretches within it from end to end, like a cross-beam, as is claimed by those sages who say that there is only one Dragon, and that it is stretched out in the middle of the sphere, from the central mid eastern point to the central mid western point.

> The Wain […] which is set to the north of the Dragon, is close to it; the extremities of the Wain are attached to the ring of the Dragon, which is the twist, and the Wain turns to the north of the Dragon, where the six Southern constellations are located. It turns the Dragon, and the force of the Dragon's rotation drives the extremity of the Wain which is attached to the Dragon's ring—the twist; the sphere rotates, and the constellations set in it move south from east to west, and north from west to east, in perpetuity.

It has thus already been argued (Sharf 1976: 33–39; *id.* 1995: 182; Hayman 2007: 129–136) that Donnolo sometimes referred to a sort of *axis mundi*, but this description does not fully correspond to that of a straight pole. Moreover, it is partially based on the contradictory description of the *tly* given in the *Book of Constellations*, while assuming that it was written by Donnolo (Mancuso 2010: 71), although we have already seen that this is hardly the case.

In order to explain the contradictions in the *tly*'s description, it is necessary to widen the scope of this research to other dragons imagined in the sky. The first dragon close to Ursa Maior that springs to mind is the Draco constellation, which lies «in the middle of the [celestial] sphere». The North Pole of the ecliptic lies within it, i.e. the point at which the celestial sphere intersects the imaginary axis around which the Sun, the Moon and the five planets appear to rotate and which is different from the celestial North Pole. The fact that this imaginary point lies in the Draco constellation could explain why the dragon is believed to move the planets as well.

Donnolo also comments on a feature assigned to the *tly* in the *Book of Formation*, namely that it is said to be like a king sitting on a throne. The same metaphor is used in the *Barayta of Samuel* which states that (translated from Amram 1863: 6):

> In the North, the Chariot rotates and serves the *tly*, the *tly* [serves] the constellations and the constellations [serve] the Wheel. The constellations are like soldiers, the *tly* is like a king and the Chariot leads them all.

A reference to a dragon sitting on a throne in the sky is also present in the *Acts of Thomas*, a 3rd-century (Elliott 1994: 442) pseudographical gnostic work in which an unnaturally large snake replies to a question from the apostle regarding its identity and ancestry (Elliott 1994: 460):

> And he said to him, 'I am the offspring of the serpent, and the baleful son of a baleful father; I am a son of him who hurt and struck the four standing brothers.

> I am a son of him who sits on the throne which is under heaven, who takes his own from those who borrow; I am the son of him who encircles the globe; I am kinsman to him who is outside the ocean, whose tail lies in his mouth […]'

The serpent goes on to say that he had been the cause of many famous episodes in the past in which evil was at work, such as Eve's temptation, Abel's murder by his brother Cain, the fall of the angels and Pharaoh's refusal to let the Jews go. What is relevant here is that the serpent claims to belong to the offspring of several cosmic dragons: one believed to encircle the world, mentioned in other ancient sources such as the *Alexander Romance* (recensio A, II 21), and another described as an *ouroboros*, but also, most importantly, one which sits on its throne under the firmament, of which it is said, rather enigmatically, that it takes back what it lends. Another pseudepigraphical work from Late Antiquity called *Testament of Solomon* recounts the biblical king's conversations with demons which are often associated with constellations. One of them tells him that his own constellation is accompanied by a smaller one and is called "Bear" or "Snakefoot" (δρακοντόποδα) and whose throne is always in the sky (*Testament of Solomon* 5,4; Sparks 1984: 741; Greek: Mc Cown 1922: 21–22):

> My star lurks in heaven and men call me the Waggon [*sic*], others Snakefooted. For this reason smaller stars too take their position along with my star, for my father's dignity and throne is in heaven to this day.

It is likely that there is an overlap in this passage and the Great Bear (i.e. the Wagon) was somehow conflated with the Draco constellation, which could explain the reference to a snake in its nickname. Not only do the "smaller" (or "lesser") stars follow the movement of this constellation, but it is also referred to as being on a throne. Explaining this recurring theme of a constellation sitting on a throne does not require us to speculate that Donnolo had read these pseudepigrapha, since this idea had been common since Late Antiquity (Mastrocinque 2005: 160–172), due to the fact that, at Mediterranean latitudes, both the Great Bear and the Draco are always visible in the night sky throughout the year, as if they were sitting on a throne, ruling over the others.

The idea of a dragon sitting on a throne at the top of the celestial sphere is present in the *Book of Formation* as well, in which this feature has been transferred from the Draco constellation to the eclipse dragon: «The *tly* in the world is like a king on his throne» (§59, Hayman 2004: 176; Hayman 2007: 113–114).

The *Barayta of Samuel* specifies the points in the Zodiac in which the influence of the *tly*'s head and tail are strengthened (exaltation) or weakened (fall), as if they were planets in astrology terms: from 4° in Gemini to 3° in Sagittarius lie the fall of the *tly*'s head and the exaltation of its tail, while the head's exaltation and the tail's fall is from 4° in Sagittarius to 3° in Gemini (Amram 1863: 23). The *Barayta of Samuel*, in its typically cryptic style, does not explain why these two constellations in particular are considered to be associated with *the tly* and the same is true of the *Barayta of Constellations*, examined earlier, which similarly simply states the values of the exaltation and the fall of the *tly*'s head and tail (§14; Wertheimer 1953: 34–35; Cuscito 2021b: 172). In spite of the silence from the sources and the lack of an astronomical basis, the association between the *tly* and these two constellations in particular can be explained historically and philologically as the conflation of several celestial objects. In order to better understand how this conflation took place, we first need to analyse the history of the *tly* idea, how it developed and how it was transmitted from one culture to another through the centuries.

First of all, the name itself is only apparently linked to the Hebrew root *t-l-w/y* meaning "to hang", "to suspend" which somehow authorises its occasional translation as "hook" (e.g. Hayman 2004: 176 and *passim*). On the other hand, Assyrian and Babylonian texts use the term *attalu*, which is derived from Sumerian AN.TA.LU. and refers to the "darkening" of celestial bodies. Although Mesopotamian cosmology was not devoid of imaginary snakes or dragons, there is no evidence that the term *attalu* ever referred to the dragon of lunar nodes (Pirtea 2017: 537, note 6), especially since they had apparently not been theorised yet (Furlani 1948: 587; Rochberg 2003: 40–42).

In Syriac, the name *atalya* often refers to the eclipse dragon (called *gozihr* in Middle Persian and *jawzahr* in Arabic), although this is not always the case. The term was also used to indicate eclipses or, more generally, the darkening of celestial bodies, but not necessarily implying the presence of a dragon (Pirtea 2017: 537–538). A 14th-century manuscript held in the Vatican library (Vat. Sir. 217) contains three treatises on eclipses. The first of these, entitled *A treatise on* attalya *when it devours the Sun or on solar eclipses* (Furlani 1948: 569), lists the consequences of solar eclipses for each month. The second is similar to the first, but instead of saying that the celestial bodies are swallowed, it simply states that they are «obscured» (Furlani 1948: 572), thus it does not imply the existence of a dragon or other monsters in the sky. The third treatise deals with lunar eclipses, and these are believed to be caused by the same *attalya* dragon mentioned in the first text. A section of this same manuscript (f. 209v), called *The darkening of the Moon by* attalya, identifies the

latter with something with a «sort of body and which looks like a snake» and a note explains the Greek and Arabic terms for the ascending and descending nodes (Furlani 1948: 576). These are relatively recent uses of the lunar nodes in Syriac astrology, however, which tell us nothing about when they were used for the first time. Apparently, the first known attestation of the term *attalya* referring explicitely to a dragon appears in a work attributed[80] to Severus Sebokht (6th–7th centuries). Its author debates with an unidentified group of astrologers, criticising their belief in the existence of a dragon, the features of which can easily be identified as belonging to the eclipse dragon: its head and tail are diametrically opposite, its motion is retrograde at a velocity of 3' 11" per day, 1° 32' per month and 19° 20' per year and it completes a whole revolution in 18 years, 7 months and 16 days. What is particularly relevant here is that Severus (or the pseudo-Severus) describes the middle part of the dragon as being outside the Zodiac, tied to the North Pole, near the Chariot (Furlani 1948: 578). This is a source predating Donnolo's *Book of the Wise* that seems already to attribute to the eclipse dragon certain features actually belonging to the Draco constellation. The *Ginza*, one of the main texts of Mandaeism, written in Aramaic in the first three centuries CE, mentions a large dragon (*talya rabba*) whose identification as the eclipse dragon is not certain, although it cannot be ruled out (Furlani 1948: 288–590).

While the idea of the eclipse dragon seems not to have reached the Western Mediterranean prior to the Middle Ages (Pirtea 2019: 352), the association between the eclipses and a monster believed to devour the luminaries for a short time is in itself more ancient. In fact, in the *Veda* (12th–10th centuries BCE), the two lunar nodes were already considered planet-like in astrological terms (Yano 2004: 342). The ascending and descending lunar nodes were considered to be the head (Rahu) and body (Ketu) of the *asura* called Svarbhanu, who drank the *amrita*, i.e. a drink bestowing immortality, although he was not supposed to. Surya (the Sun) and Chandra (the Moon) informed Mohini, Vishnu's female avatar, who beheaded Svarbhanu, whose two parts Rahu and Ketu now orbit the Earth, influencing human actions and occasionally obscuring the two deities who caused his demise. David Pingree has argued that the lunar nodes made their first appearance in Persian astrology in the 9th-century text known as *Bundahishn* (Pingree 1997: 40):

> However, the Pahlavī adapter of this horoscope has made some additions, of which the main one is that the ascending and descending nodes of the Moon,

[80] Although not without some doubts (Pirtea 2017: 540).

> which are referred to as the Head and Tail of the Dragon Gočihr (the Indian Rāhu and Ketu), are placed in Gemini and Sagittarius respectively; these exaltations of the nodes do not occur either in Classical Greek or in Indian astrology, but represent a Sasanian innovation based on the Indians' inclusion of the two nodes among the planets, which then number nine: this inclusion occurred only in the late 4th of 5th century, after Mīnarāja wrote his *Vṛddhayavanajātaka* between 300 and 325.

In the Iranian *Bundahishn* (V, A, 5), the rotation of the head and tail of the monster, now seen as a dragon instead of an anthropomorphic demon like in the *Veda*, is said to last twenty years in total (i.e. ten years for a 180° inversion of the head and tail positions), instead of the more correct value of about eighteen years that we found in the earlier Syriac treatise attributed to Severus Sebokht. The *Bundahishn* reads (Agostini and Thorpe 2020: 39):

> Gōzihr stood in the middle of the sky like a snake, with its head in Gemini and its tail in Sagittarius. In this way, there are always six constellations between its head and its tail, and its fiendish movement is retrograde; every ten years, its tail returns to the place where its head was, and its head takes the place of its tail.

It has been hypothesised (MacKenzie 1964: 525) that, in the *Iranian Bundahishn*, an overlap occurred with another celestial object, namely the Milky Way, which spans across the sky and intersects the ecliptic precisely at the location of the constellations of Gemini and Sagittarius. This hypothesis seems plausible, because the Milky Way does indeed resemble a bright serpent in the sky and, more importantly, it would explain the connection with the constellations Gemini and Sagittarius, which would otherwise remain unexplained if we had in mind the eclipse dragon only.

To summarise: as described in the *Book of the Wise*, the *tly* appears to possess the features of three different celestial objects: the imaginary dragon believed by some to be responsible for the eclipses, the Draco constellation and the Milky Way. One way to reconcile all the apparent contradictions is to imagine the *tly* as an upside-down "U", with its middle part tied to the summit of the celestial sphere and its head and tail descending onto the ecliptic, apparently assuming the same shape as the Milky Way and linking its middle part to the celestial North Pole, from which it transmits rotary motion to the zodiacal constellations and the planets. This way, the head and tail are free to briefly eclipse the Sun or Moon when they are close to either. Donnolo and his two sources do not describe exactly how the *tly* is supposed to cause the eclipses, i.e. whether by temporarily swallowing the

luminaries, like in the original myth of Rahu and Ketu, or simply by hiding them behind its head and tail.

As we have already briefly seen, it has been suggested that Donnolo might have considered the *tly* as an *axis mundi*, since he describes it as something that transmits the rotatory motion from the Chariot to the planets and constellations. Moreover, it has been hypothesised a possible Byzantine origin for this cosmological element (Sharf 1976: 37; Schlüter 1982: 135), while remarking that Byzantine astronomy treatises did not regard the lunar nodes as having planet status (Sharf 1976: 42–43). When presenting examples from gnostic texts and from Aratus of Soli's *Phenomena* (4th–3rd century BCE), Sharf concludes that the eclipse dragon must have been conflated with the Draco constellation, although he erroneously attributes only four stars to the latter (Sharf 1976: 49), whereas there are at least thirteen visible ones or more, depending on the adopted conventions. In any case, there does not seem to be an *axis mundi* in the *Book of the Wise*. In fact, several differences have been found between Ptolemy's *axis mundi* and Donnolo's *tly* (Schlüter 1982: 135): whereas the former is a construct designed to describe a theory capable of explaining planetary motions, the latter is believed to be the cause of the motion itself. This fact alone supports the exclusion of any direct derivation from one to the other. Schlüter also remarks that other Hebrew works such as the *Chapters of Rabbi Eliezer* (as seen above) and the *Midrash Konen* present what she rightly defines as very vague analogies with Donnolo's *tly*. Schlüter concludes that in the Hebrew texts used by Donnolo different cosmological elements had already been conflated, thus the overlap between the Draco constellation and the *axis mundi* must have been the result of the merging of different traditions (Schlüter 1982: 137). Incidentally, regarding the *Chapters of Rabbi Eliezer*, it has already been noted (Sarfatti 1965: 73; Leicht 2006: 83) that its astronomy and astrology chapters (6–8) share material with both the *Barayta of Samuel* and the *Book of Formation*, with which Donnolo was familiar. Moreover, Schlüter remarks that the difficulties in identifying all these shared elements between these texts lie in the fact that the underlying cosmology was somehow taken for granted in the circles in which these texts were written. This may serve as the basis for further research regarding the provenance of Donnolo's sources, although it does not solve the problem of the Draco constellation in relation with the *axis mundi*, unless we look for answers in non-Byzantine traditions.

To summarise, earlier Syriac texts, together with Donnolo's two Hebrew sources, show that the features of ruling on a throne and being associated with Gemini and Sagittarius were attributed to the dragon of the lunar nodes prior to the 10th century. The main source from which Donnolo

seems to have drawn information regarding the *tly*, namely the *Barayta of Samuel*, seems to contain material that derived from Persian elaborations of some elements of Indian astral mythology. Specifically, as described in the *Barayta,* the *tly* seems to be a reworking of the Hindu myth of Rahu and Ketu, which probably travelled together with the same material ending up in the *Bundahishn*, which presents several rather strong analogies with the *Barayta* and the *Book of Formation*.

Moreover, other similarities are to be found in the Iranian *Bundahishn* (II, 7) with Ursa Maior believed to be tied with ropes (Panaino 1998: 71), as were the Sun, Moon, stars and planets (Panaino 1998: 72–73). In addition to being present in Manichaean texts as well (Boyce 1975: 60), the idea of cosmic bonds is probably related to Hindu cosmology's "wind ropes" or "bonds of air". In the ninth chapter of book two of the *Vishnu Purana*, (3rd–4th century) we read that the celestial North Pole (Dhruva) is tied to the stars and planets, to which it transmits the rotary motion through these "bonds of wind" (Taylor 2021: 185):

> Dhruva, turning, sets the moon, the sun and planets in motion. The constellations follow them, spinning like a wheel. The sun, moon, stars, constellations and planets are all tied to Dhruva with bonds of wind.

And again in chapter 12 of the same book (Taylor 2021: 192):

> At times, this demon, also known as Rāhu, leaves the sun to hide the moon, then from the moon he blocks the sun again to bring eclipses. Likewise, the carriage of the shadow-planet Ketu is drawn by horses, eight in number, swift as wind and dark as the smoke of burning straw, or red as cochineal. I've described to you the chariots of nine planets, lucky sage, all bound to Dhruva by bonds of air. The planets, mansions and constellations, all tied to Dhruva, circle in their proper orbits, restricted by these ties, Maitreya. For every star, there is a bond and, as they move, the Pole Star rotates with them. Just as workers pressing oil turn the wheel by pacing round it, similarly, the stars revolve, all bound with aerial bonds.

So there is evidence that the idea of the celestial bodies being bound was present in texts written much earlier than Donnolo's *Book of the Wise* and its sources. It can be speculated that this idea transited from Indian to Jewish astronomy indirectly, via Persian reworking, as happened with the idea of a monster associated with the eclipses and the lunar nodes, although we can also find traces of it in the Bible, where the «chains of the Pleiades» and the «bonds of Orion» (Job 38:31) are briefly mentioned, without further explanation. Sev-

en stars are described as bound in the first book of Enoch (18:12–16; 21:3–6), in which they are said to have disobeyed divine commands. The idea of the sky tied up with ropes is indeed ancient: in the Babylonian creation myth *Enuma Elish* (V 59–68), the god Marduk forms the cosmos with the body of the monster Tiamat and ties the heavens and the earth up with ropes, which are also mentioned in other texts and inscriptions (Horowitz 1998: 120). Thus, when medieval texts such as the Iranian *Bundahishn* or the *Barayta of Samuel* describe the rotary motion of the heavens as transmitted through ropes, they seem to be preserving a cosmological model which apparently survived for millennia.

In some points, Donnolo even refers to certain texts describing two dragons rather than one (Mancuso 2010: 346):

> According to some books, there are two Dragons [...], which are like two big sea-monsters [...], or like two writhing serpents [...] twisted in the shape of two [half] rings facing each other, one to the south, the other to the north, with the head of the one attached to the tail of the other and vice versa. As they progress along their course, they change over: the one to the south turns north, and the one to the north turns south. They are in the fourth firmament, the abode of the sun. Six constellations are attached to the first Dragon, and six other to the second Dragon.

As will be discussed later, he does not specify the title of these books and neither does the already mentioned *Quicumque*, which refers to two anonymous astronomers, one Arab and one Chaldean, who claimed that there were two dragons, one male and one female, responsible for the eclipses. According to *Quicumque*, the belief in the existence of one eclipse dragon is typical of Jewish astronomers, whereas the gentiles believed that there were two. In this regard, a Manichaean text known as M98 I mentions two dragons, one male and one female, believed to make the firmament turn (Boyce 1975: 60, ff.; Panaino 1998: 100–101; Panaino 2005: 800–811).

Later Byzantine texts, all written from the 13th to the 15th centuries, show that by that time additional confusion had been added to the description of the eclipse dragon: one (MS Paris, BN Grec 2426, f. 9r) attributes Babylonian origins to the image of an "Athalia" dragon, which is described as a two-headed and two-tailed snake (*Catalogus Codicum Astrologorum Graecorum* VIII, I, 195) while in another work (MS Vienna, phil. gr. 179, f. 65; cfr. Furlani 1948: 592) the eclipses are said to be caused by one obscure celestial body called "Head and Tail" and finally, in at least one example (Bayerische Staatsbibliothek cod. graec. 287), the eclipse dragon was somehow conflated with the star Arcturus, in the constellation of Bootes, which, like the constellation of Draco, is close to Ursa Maior.

The order of the planets and the heavens

Another example showing how Donnolo reworked the material found in his sources is given by the order of the seven heavens and the planets. Although this became widespread thanks to Aristotelean-Ptolemaic cosmology, the idea of a sevenfold heaven is present in Jewish sources from late Antiquity, such as Midrash Rabba (Deuteronomy II 32) and the Babylonian Talmud (Hagigah 12b), although with different names, none of them associated with planets or other celestial bodies. To quote Stadelmann (1970: 41–42):

> The rabbinical literature after the second century A.D. speaks of seven heavens. R. Eliezer said: "There are seven firmaments: *šmym* [heaven], *šmy hšmym* [the heavens of heavens], *rqy'* [firmament], *šḥqym* [sky], *m'wn* [habitation], *zbwl* [residence], *'rpl* [thick cloud]." Another passage, though retaining the number seven, describes the separate layers of the sky as follows. Resh Lakish said: "There are seven heavens: *wylwn* [curtain, from Lat. velum], *rqy'* [firmament], *šḥqym* [clouds], *zbwl* [lofty abode], *m'wn* [habitation], *mkwn* [residence], *'rbwt* [probably based on Ps. 68:5]. The speculations about this seven-leveled structure of the sky are due to Babylonian influence. In Babylonian literature there are always seven heavens laid one atop the other, through which one must pass successively in order to reach the highest, that of Anu.

The fact that Donnolo names each heaven with the planet or luminary associated with it, instead of giving it a Hebrew name from either source, might mean that he probably did not know about either. If he did, he might easily have reconciled both Jewish and Greek traditions, as he did in other cases.

In Donnolo's description of the heavens, as we saw earlier, the planets and luminaries are ordered from slowest to fastest. Except for the Sun and the Moon, of course, the list coincides with the actual order of the planets visible with the naked eye from the farthest to the closest to the Sun. Donnolo follows the *Barayta of Samuel* in indicating the planets and luminaries with their initial only. In §5a, for mnemonic reasons, the *Barayta* groups the initial letters of the Hebrew names of the planets into two "words" of three and four letters arranged in different permutations, each with a specific astrological purpose. Specifically, the various combinations are used to assign each planet to a particular day or hour (Amram 1863: 15). Donnolo refers to one of these permutations, in which each day is believed to be influenced by the planet ruling over the first hour of that day (Mancuso 2010: 332–334) and tries to reconcile it with the one in the *Book of Formation*.[81]

[81] This planetary hour association is the reason behind the modern names for the days of the week, whose order does not correspond to the order of the planets as they appear in

The following table (adapted from Helley and Milone 2011: 96) shows that the sequence of the planets associated with weekdays differs from the sequence of the planetary orbits. In the table, the planets and luminaries are presented according to their orbits, from the highest to the lowest. In a recurrent series from 1 to 24 the numbers represent the hour of the day controlled by each planet. So, if we start counting from day one, Saturn governs the first hour, Jupiter the second, Mars the third, the Sun the fourth, Venus the fifth, Mercury the sixth and the Moon the seventh and then the planetary cycle repeats itself, with Saturn governing the eighth hour, the fifteenth and then the twenty-second, Jupiter governing the ninth, the sixteenth and the twenty-third, etc. Since the first hour of day one is associated with Saturn, the whole day is ruled by it (hence "Saturday"). Similarly, the first hour of day two is ruled by the Sun and thus the whole day is ruled by it (Sunday), then the third day starts with the Moon, which then rules over Monday, and so on.

Saturn	1	8	15	22	5	12	19	2	9	16	23
Jupiter	2	9	16	23	6	13	20	3	10	17	24
Mars	3	10	17	24	7	14	21	4	11	18	1
Sun	4	11	18	1	8	15	22	5	12	19	2
Venus	5	12	19	2	9	16	23	6	13	20	3
Mercury	6	13	20	3	10	17	24	7	14	21	4
Moon	7	14	21	4	11	18	1	8	15	22	5…

Table 3. The planetary hours.

In §41 and §44 (Hayman 2004: 136–146), the *Book of Formation* lists the seven planets in sequence from the farthest (Saturn) to the closest (Moon) and, we have seen, these are linked to the seven openings in the human head, i.e. eyes, nostrils, ears and mouth. In §43, on the other hand, the planets are listed in this sequence (Hayman 2004: 140): Sun, Venus, Mercury,

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the sky. For days other than Sunday, Monday and Saturday, the connection between the planets and specific days is even clearer in the Romance languages, e.g. Giove (Jupiter) for Giovedì (Thursday) or Venere (Venus) for Venerdì (Friday). As is well known, in English the names of Greek-Roman gods were replaced by their Nordic counterparts, e.g. Thor, the god of Thunder like Jupiter, for Thursday, and goddess Freya replacing Venus for Friday.

Moon, Saturn, Jupiter, Mars. In Hayman's words (Hayman 2004: 143): «It is interesting that Shabbetai Donnolo was acutely conscious of this discrepancy and expressed the necessity of correcting the aberrant contents of SY [i.e. the *Book of Formation*] at this point». This could be why he stressed the importance of listing the planets in the correct order.

It is not only the *Book of Formation* which contains discrepancies, but there are others in Donnolo's commentary as well. The most notable of these probably consists of the placing of the *tly* in the fourth heaven, abode of the Sun (Mancuso 2010: 343) and at the same time below the first heaven, in which the Moon orbits the Earth. In fact, he puts not only the *tly*, but also the fixed stars in this heaven (Mancuso 2010: 348). This discrepancy has been discussed in the secondary literature since the first translation of the *Book of the Wise* (Castelli 1880). The peculiar position of the firmament of the fixed stars below the Moon firmament clearly does not derive from the classic ouranography inherited from Ptolemy. Persian cosmologies, on the other hand, envisioned the heavens as ordered from darkest to brightest: the starry heaven was believed to be closest to the earth, followed by the heaven with the Moon, and finally the brightest of all, the heaven hosting the Sun: «this order is well known and widely attested» (Panaino 1995: 206). There are two conflicting ouranographies in the Iranian *Bundahishn*, with differing numbers of heavens (Panaino 1995: 207) and a Mazdean work of uncertain date known as *Olama-ye Eslam* places the Gočihr (i.e. the eclipse dragon) in a heaven below the moon's abode.[82]

As the first translator of the *Book of the Wise* points out (Castelli 1880: 59), Diodorus Siculus (1st century BCE circa) attributes to the Chaldeans the belief that the stars were in the same sky as the Moon (*Bibliotheca historica* II, 30). Incidentally, this idea appears in the work of Presocratic philosopher Anaximander (DK12A18 = Aetius 2.15.6). The reason for this belief is not clear (Naddaf 1998: 6, note 23), since it is counter-intuitive: clearly at night the Moon hides the stars behind it and not the other way around, so there is no apparent reason to think that it is farther from the earth than they are. Perhaps he, too, borrowed this peculiar cosmological model from the Persians, since at a certain point of his life the Achaemenids ruled his city of Miletus (Dandamaev 1989: 153).

[82] https://iranicaonline.org/articles/azdaha-dragon-various-kinds and bibliography. See also https://iranicaonline.org/articles/olama-ye-eslam (both pages last accessed on 31st March 2024).

All these elements clearly point to Persian origins for Donnolo's peculiar cosmology, which he might have learned from his teacher Bagdat (Castelli 1880: 59), although we cannot be certain that he did not take it from the several, anonymous books that he claims to have read.

The permutations

As we have already seen, the *Book of Formation* posits that the cosmos was made through permutations of the twenty-two letters of the Hebrew alphabet. §40 (Hayman 2004: 134–135) explains how these were used, through a metaphor representing the letters as building blocks (i.e. stones) and words as houses:

> How did he combine them? Two stones build two houses, three [stones] build six houses, four [stones] build twenty-four houses, five build one hundred and twenty, six build seven hundred and twenty, seven build five thousand and fourty. From here go and calculate what the mouth can not express and what the ear can not hear.

In the *Book of Formation*'s metaphor if each letter can be represented as a stone, then the number of different "houses", i.e. the number of possible different arrangements of these stones, increases exponentially with each new stone. This sequence represents a series called factorials in modern mathematics, which are used to calculate the different unique permutations of a certain number of elements in a series. The factorial of a certain number *n*, symbolised by an exclamation mark after the number (*n*!), can be defined as the product of the same number (*n*) times all the integer numbers preceding it ($n \times n\text{-}1 \times n\text{-}2 \times n\text{-}3\ldots$). Thus, following the examples given by the *Book of Formation*, the factorial of 2, i.e. 2!, is 2 (2×1), the factorial of 3 is 6 ($3! = 3 \times 2 \times 1$), the factorial of 4 is 24 ($4! = 4 \times 3 \times 2 \times 1$), the factorial of 5 is 120 ($5! = 5 \times 4 \times 3 \times 2 \times 1$), and so on. The sequence is relatively easy to calculate, at least for small numbers, since the *n*-th element is the product of *n* times the previous factorial, although such calculations clearly become more difficult the further on in the sequence one proceeds.[83] This might be why the author(s) of the *Book of Formation* stopped at a certain point (i.e. at the factorial of 7) instead of enumerating all the factorials up to 22, which yields a large number,[84] indeed so large that «the mouth

[83] In mathematical terms: $n! = (n\text{-}1)! \times n$.

[84] 1.124.000.727.777.607.680.000 (https://www.wolframalpha.com/input?i=22! visited on 2nd April 2025).

cannot express» it, at least not in medieval Hebrew. In non-mathematical terms, the factorial represents the number of possible unique "words" of twenty-two letters, granted that the majority of these "words" cannot even be pronounced, due to the proximity of long series of consonants, hence another possible interpretation of the phrase «the mouth cannot express» used in the *Book of Formation*. In any case, there are no Hebrew words made up of twenty-two letters, but then again this fits well within a theist worldview according to which the Deity uses all the potential residing in language, with human beings using only a small fraction of it in a limited way, so that divine speech is incomprehensible to mortals. This also provides grounds to justify the existence of magic words, usually unintelligible sequences of sounds, often derived from misheard or mispronounced foreign words, although this is not the case.

In addition to permutations of "words" of twenty-two letters, another kind of combinatorics is implied earlier in the *Book of Formation*. In §18 (Hayman 2004: 98), letters are said to be on a wheel which is fixed to the *tly* and has two hundred and thirty-one gates which go back and forth. The same number is once again to be found in the following §19 (Hayman 2004: 100–102):

> How did He weigh and permute them? Aleph with all of them and all of them with Aleph; Beth with all of them and all of them with Beth. And they all rotate in turn. The result is […] two hundred and thirty-one gates.

Two hundred and thirty-one is the number of unique combinations of pairs of twenty-two letters. This calculation differs in several ways from the permutations seen earlier. First and foremost, it deals with pairs of letters, i.e. "words" of two letters each instead of twenty-two. Moreover, the combinations are unique in the sense that—using the Latin alphabet in this example for the sake of clarity—"XY" is considered equivalent to "YX", so the latter combination is not counted in the total. Thus, the «two hundred and thirty-one gates» represent the various unique pairs that can be formed with the twenty-two letters of the Hebrew alphabet. Incidentally, some manuscripts of the *Book of Formation* present the number two hundred and twenty-one, but this number does not fit within the context of permutation. On the other hand, there are witnesses of the *Book of Formation* which present a list of all these one hundred and thirty-two pairs (Hayman 2004: 106–109), so we can assume that this was the intended value and the other was probably due to a scribal error.

In order to illustrate the first kind of permutation and how these increase exponentially (as we would say now) with the addition of each letter,

Donnolo creates a sentence in Hebrew made up of words (מן רמז שבעה דברים שכתבנו בראשונה) with an increasing number of letters, from two to seven, which can be translated as: «from hinting [of] words that we wrote first and foremost».[85] After that, he proceeds to enumerate each and every permutation of each word (Mancuso 2010: 182–184 // 310–312): two for the first two-letter word, six for the second three-letter word, twenty-four for the fourth word, and so on, providing a practical example of the theory of permutation that is hinted to in the *Book of Formation*.

Donnolo did not simply acritically accept what he read, although he did show deference to the sources he used (Mancuso 2010: 74):

> Donnolo adopts a very critical attitude towards [the *Book of Formation*]. He does not fail to identify and emend a series of statements which clash with some of the fundamental principles of his scientific background (e.g. the relations between the zodiacal signs and the months, between the planets and the days), although he does not dismiss the text and its authoritativeness.

For example, he added the spinal cord (or backbone) to the series of correspondences between the microcosm and the macrocosm presented in the *Book of Formation*, showing that he viewed it as imperfect and subject to additions, although he seems to have believed the claim at the end of the book, i.e. that its contents were revealed to Abraham (e.g. Mancuso 2010: 279, 283).

Donnolo tried, albeit not always successfully, to reconcile contradictory statements from different sources and sometimes even in the same source, as is the case of the *Book of Formation* with its two different kinds of planetary melothesia. More generally, he attempted to harmonise the Greek-Byzantine and Hebrew traditions. The results of this operation vary: on one hand, he successfully reconciled the (apparent) melothesia of the *Book of Formation* with the classic melothesia deriving from Hellenistic sources in a clever adaptation; on the other hand, his ouranography was not always consistent, as we have seen. He was no philologist, and this shows in his belief that «all texts agree with the *Barayta of Samuel*», as if it were the source of all astronomy, when in fact it depended on other sources, ultimately deriving from Ptolemy's works.

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[85] It could be also translated as "from allusion [come] the seven words [or "things"] we wrote about at the beginning" (Mancuso 2010: 310, note 88).

5. DONNOLO'S THOUGHT IN CONTEXT

Jewish science in Donnolo's time

As shown in Chapter 2, the hagiographer of the *Life of Neilos* regarded physical health as intrinsically linked to the salvation of the soul. Similarly, in Jewish culture, bodily health was often considered a religious and spiritual matter as well.

In the Bible, such closeness was expressed through dietary laws, ablutions and various purity laws, which could be considered a form of preventive medicine, as it were. Healing was directly entrusted to the Deity, from which ultimately the ailments originated. For instance, in the episode of the bronze serpent (Numbers 21:6–9), set during the Exodus from Egypt, Moses was commanded by YHWH to make a bronze (or copper) serpent to heal those who were bitten by venomous snakes, sent by YHWH as punishment. In 2 Chronicles 16:12, King Asa is reprimanded for seeking assistance from physicians rather than from God. The cause of sickness is not always specified (Leviticus 13; 1 Kings 17:17; 2 Kings 5:1), but when it is, the cause could be either natural (2 Kings 4:38–40) or divine (1 Samuel 5:6–12; 2 Kings 6:18; Psalms 38), in particular when it is seen as a punishment for sins (Numbers 12; cf. 2 Kings 5:20–27; Numbers 16:41–50; 2 Samuel 12:15–18), as stated in the book of Deuteronomy (28:22, 27–28, 35, 59–61). The book of Job, though, polemises against this view by affirming that God's will is inscrutable and that bad things can happen to good people while evil people can prosper. Clear references to specialists dedicated to the medical arts only emerge in the Hellenistic period and in deuterocanonical texts such as Tobit and Sirach. In Tobit, the angel Raphael shows the eponymous protagonist how to extract a remedy from the innards of a fish (Tobit 11: 8), while Sirach praises the physician (Ben Sirach 38: 1–5), whose «gift of healing comes from the Most High».

As already pointed out (p. 40), Donnolo is not the earliest known Jewish physician, but he was preceded by Asaph. Inspired by Greek, Babylonian, Persian, Egyptian and even Indian medical sciences (not to mention Nubian and Ethiopian prescriptions), Asaph was co-author of an oath very similar to the Hippocratic Oath, albeit with some "judaising" variations. A critical edition of his work remains a desideratum, likely due to textual complexity arising from the linguistic diversity of the sources he used. The other famous Jewish physician before Donnolo was Ishaq ibn Amran (circa 9th century). He was educated in the House of Wisdom and then he moved from Baghdad to the city of Kairouan in present-day Tunisia, where he became the teacher of Isaac Israeli, which will be examined later.

The main tenet of Donnolo's worldview is microcosmism, i.e. the correspondence between microcosm and macrocosm, which represents the fundamental principle that underlies the second and the third sections of his *Book of the Wise*. The idea of the human being as a microcosm played a fundamental role in pre-modern natural philosophy, as already stated.

Rudolf Allers (Allers 1944: 321–331) classified microcosmisms into six different categories. More recently, a more detailed classification has been compiled by Ruth Finckh, who catalogued twenty-nine categories of microcosmism (Finckh 1999: 469–471), the last of which is further subdivided into three additional subcategories. Yet, Jewish texts have been grouped by Finck into one generic category, despite possessing characteristics attributable to distinct categories as per Allers' classification.

Without delving too deeply into the details of the various categorisations, what is relevant for the sake of this study is to bear in mind four fundamental microcosmisms, which were the most prevalent in the Middle Ages. The first category follows the division theorised by Plato in *Timaeus* (30b) between body, spirit and soul: both in the macrocosm and microcosm, the former represents the material component, i.e. the human body and the physical world, both made up of the four elements (32c, ff.; 42e); the latter constitutes the spiritual component, serving as the vivifying and ordering agent in both the cosmos and the human body; finally, in both the microcosm and the macrocosm, the soul is the mediator between the other two principles. In addition to the Platonic perspective, another microcosmism found (albeit less frequently) in Medieval philosophies is of Aristotelian origin. According to this perspective, a human being can establish a connection with the cosmos through the exercise of the intellect, which governs both the body in the microcosm and the celestial spheres in the macrocosm. The third form of microcosmism discussed here revolves around the simple resemblance between elements of the human body and cosmic features. The fourth form of microcosmism is represented by melothesia (zodiacal and planetary), which, as previously noted, posits that luminaries, planets and constellations correspond to various organs and parts of the human body.

Of the four just examined, the microcosmism that was most widespread in the Middle Ages was the Neoplatonic one, which could be better adapted to the biblical text. Among many other things, what distinguished Judaism and Christianity from Greco-Roman culture was the way of conceiving the relationships between man and the cosmos and between the cosmos and godhood: while pagan cosmologies, on the one hand, emphasized the relationship between the gods and the cosmos, of which man was considered an integral part, medieval Judeo-Christian speculation, on the other hand,

assigned greater importance to the relationship between God and man, created in His image and likeness. This entailed a radical change in the perspective of man's relations with the macrocosm, compared to how they were conceived in ancient pagan thought. For Jews (including Donnolo) and Christians, the human being is not considered merely one of the many parts of the cosmos, but its master, a vicar of God, with Whom he shared the spirit breathed into him at the moment of his creation.

Microcosm and macrocosm in pre-modern Jewish thought

In the Dead Sea Scrolls

The Qumran library contains texts that include elements of physiognomy (4Q561 and possibly also 4Q434 and 4Q436, as well as 4Q184), but only one explicitly establishes a relationship between celestial bodies and the human body, namely 4Q186 or *4QZodiacal Physiognomy*.[86] What makes this text unique is that it was written in different scripts: in addition to the so-called "square" or "Aramaic script", which the author exceptionally uses from left to right, other alphabets have been used, such as ancient Hebrew alphabet, Greek letters, as well as a cryptic alphabet typical of Qumran texts (Popović 2007: 7).

Based on what can be reconstructed from the ten discovered fragments, 4Q186 appears to be divided into three sections. The first seems to provide the physical description of the ideal man: in the first fragment, for example, there is a protasis of the type «if the man is…», and there are also adjectives such as "broad", "round", etc., which have been interpreted as referring to parts of the body (Popović 2011: 230). Incidentally, the sentence structure closely resembles not only legal texts also found at Qumran but also lists of Babylonian signs (*ibid.*: 232; cf. Rochberg 2010: 399 and Borger 1974: 193), although it is difficult to conceive of another way to convey the correspondence between a list of cases and their meanings or required actions, other than through causal clauses.

The function of 4Q186 would therefore seem to provide the reader (presumably a member of the elite group, given the cryptic nature of the text) with the tools to judge the potential suitability of an aspirant to join the community. A candidate wishing to join the community of the "Sons of Light" (as the members called themselves, at least for a certain period) needed to possess certain physical and psychic characteristics. The latter were determined by

[86] Originally published under the name *4QHoroscope* in Allegro and Anderson 1968, table XIII (Tov 2010, p. 35), the text knew subsequent editions: Popović 2007, pp. 29–32; Popović 2011.

the influence of the stars during the "hours of light", presumably referring to the cosmology described in the *Book of Astronomy*, which is one of the sources that ended up being part of the *Book of Enoch*. Since fragments of it (4Q208–4Q211) have been found at Qumran,[87] we can conclude that it was read by the community, if not in fact composed by one or more of its members.

In Qumran texts, therefore, the relationship between human beings and the cosmos is linked to the stars and regulated by them: partly because they are responsible for time measuring, but especially because they were believed to exert since birth a direct influence on the human body and psyche, as in Babylonian astrology (Reiner 1993). Knowledge of the stars and celestial mechanics is fundamental in order to recognise constellations and accurately determine the influences of the stars on the human body.

The fragmentary nature of the texts does not allow us to reconstruct the underlying philosophy behind them and to ascertain whether stars were believed to influence humans or if humans were considered an integral part of the cosmos. In other words, we do not know, from these and other fragments found at Qumran, how the connection between the human body and celestial bodies was intended. What is certain, though, is that the authors of such texts did believe in the existence of such a connection and that there was a strict correspondence between certain human features and certain configurations of celestial bodies.

In the works of Philo of Alexandria

Information about the life of Philo of Alexandria is scarce. Even the exact dates of his birth and death are not well-documented: he was born around 15 BCE and died in an unspecified year after 41 CE (Schwartz 2009: 10).

He lived in a cosmopolitan city where the Jewish presence was very strong, as he himself states in his *Flaccus* (*In Flaccum* 55) and as corroborated by Josephus Flavius in both his *War* and *Antiquities* (*De bello iudaico* 2.488–495; *Antiquitates iudaicae* 14.117). As a Hellenised Jew, Philo attempted to reconcile, through highly allegorical exegesis, Greek philosophy with the biblical text, which he probably read in the Greek version of the Septuagint. Greek thought is used by Philo as an interpretative tool, but it is still considered as subordinated to biblical revelation. The idea of the human being as a microcosm recurs several times in his works.

In his *Who Is the Heir of Divine Things* (*Quis rerum divinarum heres sit* 31.155), he refers to unspecified authors who assert that the human being,

[87] Recently edited with a commented translation: Drawnel 2011.

defined as «the smallest of animals», is equivalent to the entire world: he is a small world, and the world is an immense human being because both are constituted by a body and a rational soul.

In his work *On Creation*, Philo provides three reasons why, in his view, humans were created last (*De opificio mundi* 25–27). The first reason is that God, in His goodness, wanted to create everything else first so that man would have nothing to long for: being created last, anything that he desired was already there, within his reach. The second reason is that man was created in an abundant world because he had not yet sinned and therefore had not deserved the punishment of being deprived of every good. The third reason is that God wanted to complete creation in a somewhat symmetrical way: having created heaven first, the most perfect of visible entities, He created man last, the most perfect of mortal beings. The philosopher adds that man is like a firmament, even in his short life, and that he also contains the stars in the form of arts, sciences, philosophies and virtues (*ibid.* 27.82). Finally, the author provides, as an appendix, a fourth reason why man was created last: it was so that he could tame the animals, which thus became more docile. While discussing the number seven in the context of a long numerological passage, Philo lists various celestial bodies, such as the stars of the Great Bear (*ibid.* 39.114) and the Pleiades (*ibid.* 39.115) together with calendrical elements that are somehow related to the number seven, juxtaposing them with human characteristics that can be grouped according to the same number, such as, among other things: the seven parts of the body (head, chest, abdomen, arms and legs), the seven internal organs (stomach, heart, lungs, spleen, liver and kidneys) and the seven openings in the head (eyes, ears, nostrils, mouth), which he considers the most important part of the human body. There are also seven possible movements: upward, downward, right, left, backward, forward and rotary motion (*ibid.* 41.122). Subsequently in his treatise (51.146–167), Philo describes the human being as composed both of the divine Logos, in his rational part, and the same four elements with which the cosmos itself is composed. Moreover, our species is described as the most adaptable among all others, being able to move on land, in water and, thanks to sight and intellect, among the stars and planets. Thus, the human being encompasses the characteristics of all animals.

In his *On the Posterity of Cain and His Exile* (*De posteritate Caini* 16), the philosopher uses the three Egyptian cities of Peithom, Ramses[88] and On/

[88] The same Ramses (Heb. רעמסס) mentioned in Exod. 1:11.

Heliopolis as symbols of human faculties, such as speech,[89] inner sense and intellect (νοῦς), respectively. The third city, also associated with a hill, is used as a symbol of intellect because it performs, in the microcosm that is man, the same function that the Sun performs in the world, i.e., giving light and dispelling darkness (*ibid.* XVI.58).

The analogy between the world and man is also reiterated in his *On the Migration of Abraham* (*De migratione Abrahami*, 39.220), in which he invites the reader to reflect on the human body, on the mind and on its faculties and to ponder on what folly and wisdom, injustice and justice are, before embarking on the journey into the larger and more perfect being, namely the world.

His work titled *On Providence* (*De Providentia*), in which Philo recounts the creation of man, has survived only in two quotations in Eusebius of Caesarea's *Praeparatio Evangelica* (3rd–4th centuries). According to what the bishop and Christian historian reports, regarding the image and likeness of God, Philo stated that no creature can be in the image of the Deity but the human being can resemble His Word (*De Providentia* 1.40, quoted in *Praeparatio Evangelica* 7.21.336b–337a).

In Philo, therefore, there are different ways to understand a correspondence between man and the cosmos: man is a miniature world, both substantially and metaphorically. Like the cosmos, of which he is the image, he is endowed not only with a body but also with a rational soul. Not only is man consubstantial with the cosmos, but he represents its fulfillment: as the final act of creation, he is placed as a seal as its highest expression. In his *Questions and Answers on Genesis*, even Noah's Ark was built with proportions symbolizing the human body (*Quaestiones et solutiones in Genesin*, 2.1–7). In addition to a physical and structural correspondence, the human being is associated with the universe from a merely metaphorical point of view: the comparison between the stars and human virtues is to be understood allegorically, just as the entire world is likened metaphorically to an immense organism.

Thanks to his allegorical interpretation and his application of Greek philosophical categories to the Bible, Philo's thought was highly regarded by early Church Fathers, for whom Greek philosophy constituted an integral part of their education. Perhaps the fact of being adopted by the emerging new religion played a decisive role in the rejection that Philo received from Jewish religious authorities. Rabbinic literature distanced itself from the

[89] Thanks to the assonance with the Greek πείθειν, the Egyptian toponym is conflated pseudoetymologically with the Greek verb πείθω, "to persuade", and is thus associated with λόγος.

works of the Alexandrian philosopher, even when dealing with the common theme of the human being as a microcosm, as we shall see now.

In rabbinic literature

Although with significantly different modalities compared to Philo's Middle Platonic interpretation, the theme of man as a microcosm is also present in rabbinic literature, especially in *midrashim*: «The comparison between man and the world in both directions, man as microcosmos and the world as macroanthropos, is a favorite subject of the Haggadah» (Ginzberg 2003, vol 1: 49, note 4). Examining a series of aggadic *midrashim* in which the idea of a correspondence between the cosmos and the human body is present, recurring themes and differences will be explored, although many of them are difficult to date precisely.

In the *midrash* entitled *The Fathers According to Rabbi Nathan*, composed between the 8th and 9th centuries,[90] the parallelism between microcosm and macrocosm is presented in poetic form. In Chapter 31, Rabbi Yose ha-Galil is attributed a composition in rhythmic verses, marked by the rhyme *adam* / *olam* (i.e. "man" / "world"), listing examples illustrating that «God formed in man what He created in the world»: for instance, hair is compared to forests, parasites to animals, the Sun to the forehead, the stars to the cheeks, and so on.[91]

The so-called *Aggadah of the microcosm* (*Aggadat olam qatan*)[92] is a brief *midrash* that describes how everything that was created in the world was also created in man: the firmament corresponds to the head, the Sun and the Moon to the eyes and the five planets are compared with the "doors" in the head (presumably, the mouth, nose and ears). The *midrash* then lists the constellations of the Zodiac, relating them either to physical attributes, e.g., the claws of Cancer are associated with the arms, or to psychological traits, e.g., just as Aquarius fills and empties, so does the human being in his everyday activities. The correspondences are thus drawn with an allegorical criterion: despite involving planets and constellations, the connection between the

[90] *The Jewish Encyclopedia*: I, 82, s.v. *Avot de-rabbi Natan*.

[91] Chapter 31 of the so-called Recension A (Goldin 1955, pp. 127–128). The corresponding chapter (36) in Recension B deals with the creation of the world without tracing parallels with the human body (Saldarini 1975, 225–231).

[92] Edited by Jellinek (1938: V, 57–59), who assigned it its current title, which does not appear in the text itself (Seidenberg 2015: 244, note 784). The date of composition of the *midrash* remains uncertain.

human being and celestial bodies is purely one of analogy and resemblance, and references to celestial influences seem to be absent.

Commenting on the verse «By wisdom, the Lord laid the earth's foundations» (Proverbs 3:19), the *midrash* known in Aramaic as *Pesiqta Hadta* (Aramaic for *New Collection*) presents a brief passage considering similarities between the human body and the earth. Since Adam was formed from the soil, his body is composed of elements similar to those of the cosmos: for example, the blood flowing in his veins is similar to the waters flowing in the rivers (Jellinek 1938: VI, 36). The *midrash* continues by narrating the creation of the world, explicitly quoting the *Book of Formation*.

The visionary *midrash* known as *Alphabet of Rabbi Akiva* (Jellinek 1938: III, 27, ff.; Wertheimer 1953: 368) uses the letters of the Hebrew alphabet for mystical speculations about the nature of man, angels, the Deity and so on. In it, the mouth and the tongue are compared to the sea with its waves.

A *midrash* on Exodus, found in the collection *Tanhuma B* or *Tanhuma Yelamedenu* (II, 34), after relating the aforementioned verse from Proverbs 3:19 to Exodus 31:3 («I have filled him with the Spirit of God»), compares the Tabernacle to a human embryo, which, in turn, is considered a miniature world (Berman 1996: 652, ff.). The theme of the Tabernacle as a microcosm is also taken up in other *midrashim*, such as *Midrash Tadshe* (a *midrash* on Genesis 1:11) and, although only outlined, also in Saadya Gaon's commentary on the *Book of Formation*, which will be examined later on and which could have used the former as a source (Lambert 1891, p. 186, n. 435).

Two versions, "large" and "small", of the same *midrash* on Ecclesiastes, dated between the 8th and 9th centuries (Mancuso 2004: 20), attribute to Rabbi Shimon ben Laqish a list of similarities between the human body and the Earth, citing biblical passages, decontextualising them (as is customary in *midrash*) and interpreting them in a hyper-literal way. For example, the earth would possess eyes, since in Exodus 10:5, «the face of the earth» is mentioned, implying that it has human features; or the Earth would have ears, since in Isaiah 1:2 the Earth is commanded to listen, and so on. This passage will in turn be the source of another *midrash*, namely Abkir (*Yalkut* I: 148.743).

The constellations symbolically represent aspects of man in the *midrash* collection likely compiled in the 9th century (Braude 1968: 2), known as *Pesiqta Rabbati* (i.e. *Large Collection*): in one of the last *midrashim* in the anthology, God explains the symbolic reason behind the creation of each individual constellation (203a, *ibid.*: 887, ff.). Each of them represents a quality, mostly moral, represented in the human being who is about to be created. For example, Gemini corresponds to the dual human tendency toward good and evil; Cancer symbolises hiding; Leo the courage acquired once the man

has come out of hiding, and so on. Presented in a narrative-like form, this sequence, is far from presuming that the constellations have an influence on the human body and intends to connect, in a symbolic fashion, human actions and behaviors with the figures represented in the Zodiac.

In the homiletic treatise *Derekh Erets Zuta* (9,13), Rabbi Samuel the lesser (the same to whom the *Barayta of Samuel* was pseudepigraphically ascribed) is said to have compared the human eye with the world, in which the ocean is likened to the white part of the eye, the iris to Jerusalem, and the pupil to the Temple.

An ethical treatise from the 14th–15th centuries known as *The Ways of the Righteous* or *The Book of Character Traits*, explains the reason why man is called a "microcosm": he shares the divine nature in his spirit and psychic qualities, while the body shares its qualities with the world, since the elements of the cosmos can also be found on a small scale in the human body: the celestial vault is reflected in the skull, where the eyes represent the two luminaries, the bones the mountains, and so on. These parallelisms are found in the *Aggadah of microcosm*, examined earlier, which could thus constitute the source for this treatise. The last chapter of the treatise reprises verbatim Donnolo's *Book of the Wise* in its exposition of the similarities between the human body and the cosmos.

Earlier commentaries on the *Book of Formation*

Saadya Gaon

Saadya ben Yosef al-Fayyumi was born in 892 in the village of Dilaz in the Fayyum region, in modern-day Middle Egypt, although at the time it was considered part of Upper Egypt. At the age of twenty-three, he moved to Tiberias, and three years later, in 926, he joined the *yeshivah*[93] of Sura in Mesopotamia (Malter 1921: 54), where he was subsequently appointed *gaon* (i.e. head of the *yeshivah*). Saadya marked a new era in Jewish philosophy, being among the first Jewish intellectuals to benefit from the translation movement of Greek scientific texts mentioned above.

He earned virtually undisputed authority in various disciplines such as grammar, philosophy and other sciences (Malter 1921: 51). For example: he correctly theorised that there are zones on the planet where day and night last for six months each (Lambert 1891: 54); he demonstrated a reasonably precise knowledge of the Earth's diameter (Lambert 1891: 107); he knew

[93] A *yeshivah* was not only a rabbinical academy, but also «high courts of Jewish law and seats of communal leadership» (Rustow 2013: 95).

combinatorics, at least in some elementary form, as he was able to correct the version of the *Book of Formation* that featured the wrong number of permutations of two hundred twenty-one instead of the correct number of two hundred thirty-one, as stated in the previous chapter.

He was able to draw on various ideas and the structure of debates from a group of Arab philosophers and theologians who had been increasingly influential for some time, particularly the *mutakallimun*, a term derived from the Arabic word *kalam*, meaning "word" or "discourse".[94] After the Arab world discovered Greek culture, the latter was integrated within Islamic science and theology, which relied on classical philosophy, including Aristotelean logic, and with Ptolemaic cosmology as well. Various schools of thought emerged, and different philosophical currents that followed one another. A culture of dialogue and dispute flourished not only within each school or between different schools, but between religions as well, as Islam engaged in a theological dialogue (and often polemics) with Christianity. Consequently, within Judaism, there arose the need to acquire the same logical and dialectical tools in order to engage in debate with theologians belonging to other religious traditions. Since, with rare exceptions, Judaism has not generally pursued proselytism, this apologetic impulse was not particularly felt in preceding centuries. This could be one explanation as to why it took almost a millennium after Philo of Alexandria for a Jewish author to show interest in Greek philosophy. Unlike Christian and Islamic theologians and thinkers, who extensively utilised Greek concepts to construct a framework for interpreting and commenting on Scriptures, Saadya appears to have used his knowledge of Hellenic philosophy and logic primarily for apologetic purposes. A theoretical framework was not strictly necessary for a religion, such as Judaism, that focuses mainly on practical precepts and rituals.

Saadya operated in a context that facilitated access to Greek sources that he would have had difficulty accessing otherwise. Besides Hebrew, he was proficient in Arabic, which allowed him to understand the thought of Greek philosophers thanks to their Arabic translation that was being carried out, and to write his works in a language that facilitated their dissemination. The fact that he was acquainted with Greek philosophy becomes evident when examining the creation theories that he refutes, revealing that some of them originate from pre-Socratic philosophers.

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[94] The term *mutakallim* can hardly be translated with "theologian", since they dealt with the totality of known science (Dhanani 1994: p. 2). Probably "philosopher" would be more apt, if we intend it in the broader meaning, closer to the ancient Greek usage.

Saadya's commentary to the *Book of Formation* was composed in 931 and was written in Arabic under the title *Tafsir al-kitab al-mabadi* (Hebrew: *Perush Sefer yetsirah*, literally meaning *Commentary on the Book of Formation*).

In the prologue, following a brief introduction, the author reviews and critiques nine different systems that deal with the act of creation (cosmogony) and the relationship between the Creator and the cosmos (cosmology and theology).

The first cosmological system that he refutes is one that regards matter as eternal, without origin or end. Like the Islamic Mutazilite philosophical school, he rejects this thesis because he reserves the attribute of eternity solely for God. In his emphasis on the uniqueness of the Deity, particularly in denying the co-eternity of divine attributes, Saadya seems to align with the primary tenet of Mutazilite theology, namely "oneness" (*tawhid*). Among Greek philosophers, the main proponent of the theory of the eternity of matter was Aristotle, but Saadya's polemic was probably directed towards the theories of al-Razi, a proficient Muslim physician and philosopher of his time, who postulated the existence of four other principles co-eternal with God: space, time, matter and the universal soul (Rudolph 2006: 25).

The second cosmological system Saadya refutes posits that visible things do have an origin, which is to be identified with atoms. Besides the obvious reference to the theories of Leucippus and Democritus, this refutation could be partly directed at the Mutazilites themselves. A form of "temporal atomism" was advocated by the Asharite school of *Kalam*, founded by Saadya's contemporary, Abu-l-Hasan al-Ashari (d. approximately 936). This school asserted that God continuously recreates the world at every instant and that physical laws were merely descriptions of "habits" that God could change at any moment at will. Furthermore, Saadya's polemic could also be directed against the aforementioned al-Razi, who envisioned matter as composed of indistinct atoms.

The third philosophical system refuted by Saadya acknowledges the existence of a principle but prohibits inquiry into it. This line of thought refers to the Book of Sirach, possibly composed in polemic against those who, drawing from texts like those in the Enochic tradition, sought to explore the mysteries alluded to in that literature.

The fourth, fifth and sixth systems are well-known theories of Presocratic philosophers, refuted without mentioning the names of their respective authors, although they can still be recognised. Saadya does not consider valid the theories positing that the world was created from a single element such as water (Thales), air (Anaximenes), or fire (Heraclitus). The first two are rejected as they conflict with the biblical account, particularly in the book of Genesis, whereas the third is refuted with cosmological arguments.

The seventh and eighth systems propose that the world was created, respectively, through numbers only (likely a reference to Pythagorean school) and through both numbers and letters, as in the *Book of Formation*. Finally, the ninth system, which Saadya elevates above the others, encompasses the last two and corresponds to the biblical account referenced in Rabbinic tradition.

Before exposing his own theories, the author posits that number and word are discrete (i.e. discontinuous) quantities, as if they were a series of disconnected elements, in contrast to the other five types of continuous quantities, such as volume, surface, line, space and time. After addressing divine names and angelic categories, the author briefly discusses the few names of celestial bodies mentioned in the Bible, such as the constellation of Orion and the Pleiades.

After the prologue, Saadya comments on the *Book of Formation*, verse by verse. As previously mentioned, the order of chapters in Saadya's version of the *Book of Formation* differs from the other two recensions,[95] and it is still uncertain whether this particular version is his work or not. Saadya's work is structured so that each passage is presented in the original Hebrew and then followed by its commentary in Arabic.

Saadya's commentary begins with the presentation of Aristotle's ten categories, aiming to demonstrate their foundational role in the *Book of Formation*, by interpreting the frequent references to the number ten as allusions to these categories. The *gaon* then assigns to each category a divine name or appellation, a commandment and a group of precepts.

In addressing the "mother" letters, he briefly mentions their possession of a «powerful [...] and sublime mystery» (II, 2: Lambert 1891: 63), attributing the formation of the universe to the three elements derived from them. Saadya then moves on to discuss the seven "double" letters, providing only a brief reference to their correspondence with the seven pairs of opposites. As a grammarian, Saadya prefers to focus on their correspondences with the seven Hebrew vowels and includes other sounds present in languages other than Hebrew, such as the Arabic *dhad* and *jim*, bringing the total sounds to forty-two. These are then examined from a philological standpoint, comparing them not only across different languages but also in various Arabic dialects, such as Palestinian, Egyptian and others. He then returns to discussing the "mother" letters and, having noted the absence of

[95] This different arrangement of the chapters could serve a mnemotechnic purpose: «La suite des chapitres, chez Saadya, est logique; chez les autres, elle est mnémotechnique» (Lambert 1891, p. vi).

the earth element in the *Book of Formation*, he explains this apparent discrepancy using his interpretation of a Bible verse. Specifically, Job 38:38, that mentions the dust that turns into a mass and the clods that stick, is interpreted as the process through which the earth element was formed from the others instead of being directly created. It is noteworthy that he endeavors to reconcile the biblical text and that of the *Book of Formation* with the classical four elements.

The commentary on this section ends with additional linguistic considerations on the "double" letters, particularly on the different articulation of sound based on whether they are doubled or not doubled or whether they are at the beginning of a word or between vowels.

When the topic of correspondence between microcosm and macrocosm is hinted at in the *Book of Formation*, Saadya merely considers how the three "witnesses" (i.e. the world, the year, and man) demonstrate the existence of the Creator. The *gaon* argues that the order in the world necessarily implies the work of an artisan, that the alternating seasons and the limits on the increase of light in summer and darkness in winter indicate external intervention and that man testifies to the existence of a Creator through the tripartition of the soul into reason, concupiscence and anger. Saadya identifies the rational soul, the concupiscent soul and the irascible soul (which are, of course, those presented by Plato in Book IV of his *Republic*) with different Hebrew terms for the soul, namely *neshamah*, *nefesh* and *ruah*, respectively, adding *hayyah* (the vital spirit) and *yehidah* (individuality) from Rabbinic tradition.

The theme of man as a microcosm is present, albeit briefly mentioned, in Chapter III, paragraph 5 of his *Commentary*, where the author hints at the analogy between the two luminaries and human eyes, between God as life in the cosmos and the soul in a living being and between the Tabernacle veil and the human diaphragm.

To summarise, the *gaon*, philosopher and grammarian Saadya structures his entire commentary on the *Book of Formation* by attempting to relate, as much as possible, its contents to the Bible or to Aristotelian categories, concentrating his efforts more on linguistic and philological analyses. Speculations on the nature of creation and, especially, on the connections between the human body and the cosmos, which constitute the focal point of the *Book of Formation*, are not given much space. Saadya appears to be, ideally at least, distant from Jewish Neoplatonic circles, even though he demonstrates knowledge, at least in part, of Platonic doctrine, as seen in the tripartition of the soul or the analogy between the relationship of the human soul to the body and that of God to the cosmos.

Dunash ibn Tamim

The city of Kairouan, founded during the Islamic expansion as a simple resting place for caravans, quickly gained cultural and religious significance in the Muslim world, becoming the capital of Ifriqiya for a short time during the Fatimid Caliphate. Soon, a Jewish community emerged within the city and its scholars were consulted not only on religious matters, but also on historical and philosophical issues (Vajda 2008: 73), as evidenced by correspondence with other Jewish communities that has been preserved.

Hushiel ibn Elhanan (d. ca. 1027) established a *yeshivah* in Kairouan, where his son Hananel, who authored a renowned commentary on the Talmud, Isaac al-Fasi (11th century – early 12th century) and Nissim ben Jacob (ca. 990–1062), son of Jacob ben Nissim, were educated. The latter brought the tradition of the authoritative rabbinic academies of Sura and Pumbedita into Ifriqiya.

The most prominent figure in the intellectually rich environment of the Kairouan school, however, was the physician Isaac ben Salomon Israeli (9th–10th centuries). Although long attributed to Israeli, the commentary on the *Book of Formation* discussed in this section was, in fact, the work of his disciple Dunash ibn Tamim (10th century). Israeli served as the court physician for the founder of the Fatimid dynasty, gained a reputation as a skilled ophthalmologist and authored several successful treaties, which, once translated, became well-known among non-Jewish physicians throughout the Middle Ages. As a philosopher, he was the first in medieval Judaism to engage with the Neoplatonic tradition, which he knew through Arabic texts such as the pseudo-Aristotle's *Theology*, which is essentially an Arabic paraphrase of certain sections of Plotinus's *Enneads*. He was also influenced by al-Kindi, known as the first Muslim philosopher (Adamson 2007: 3), who lived in the 9th century.

In his *Book of Substances or Elements*, which has come down to us in fragmentary form, Israeli presents his philosophy, particularly his cosmology that consideres the universe as emanated from God. He explains that the human being is composed of the same four elements (air, water, earth and fire) and qualities (hot, cold, dry and wet) of creation and shares the vegetative soul with plants and the animal soul with beasts, in addition to possessing the rational soul and intellect that distinguish him from other earthly beings.

Although not particularly original, Israeli's thought left a lasting legacy in subsequent European philosophy, influencing both Jewish and non-Jewish authors, not only among Neoplatonists (Altmann and Stern 2009: xix–xx). Dunash ibn Tamim fully embraced Israeli's legacy. Not only did he study philosophy with Israeli, but also delved into medicine, mathematics, astronomy and other natural sciences (Vajda 2002: 7).

Ibn Tamim's commentary to the *Book of Formation* was composed around the middle of the 10th century (*ibid*.), approximately a decade after the time in which the table of the ephemerides present in Donnolo's *Book of the Wise* was compiled.[96] The commentary, which was found in fragmentary form in the Cairo *genizah*, underwent several Hebrew translations, grouped into five textual families. The author frequently references the *Commentary on the Book of Formation* by Saadya, with whom his teacher Isaac Israeli engaged in a prolific correspondence. Ibn Tamim demonstrates familiarity with the work of the previous commentator but often diverges from it in a strongly polemical manner, even after Saadya's death. Ibn Tamim interprets the *Book of Formation* through a Neoplatonic lens, believing that he can grasp its true meaning, which, in his opinion, eluded Saadya (*ibid*.: 12).

In his commentary, ibn Tamim reconciles the doctrines on creation found in the *Epistles of the Brethren of Purity* and the pseudo-Aristotle's *Theology* with the Jewish tradition, both biblical and Talmudic. There are apparent Pythagorean echoes in his commentary, for instance, when he identifies the *sefirot* with the first ten numbers, from which, according to him, all others emanate. In contrast, Saadya relates them to Aristotle's ten categories, as seen earlier.

While deviating from Saadya in his philosophical approach, ibn Tamim shares with the *gaon* an interest in Hebrew grammar and its comparison with Arabic. His interdisciplinary approach, influenced by his education, allows connections between linguistics, medicine and philosophy. For example, he compares the vowels of Hebrew and Arabic, highlighting similarities and differences, with excursions into the physiology of the vocal apparatus, particularly the lungs and their role in regulating body temperature, drawing on Aristotelian physiology (e.g. *De respiratione* 16, 478a, 28; *De partibus animalium* I, 1462a, 31).

After explaining the differences between some Hebrew consonants, particularly the twelve "simple" letters, and their Arabic equivalents, ibn Tamim's commentary proceeds to discuss the *sefirot*, considering them as numbers. The first number, akin to the first *sefirah* corresponding to spirit, is characterized by several unique features, thus is treated as a non-number, all while engaging in polemics with Saadya's interpretation of the term *belimah*.

Ibn Tamim offers his interpretation of the expression *b-spr w-spr w-spr*, found in the *Book of Formation*, and he links it to three different types of prophecy, namely: hearing of God's voice, having a vision and speaking on

[96] As we have seen, though, this is not the assumed date of composition for Donnolo's *Book of the Wise*, since it contains a reference to the year of 982 as well.

behalf of God. In his view, the latter type of prophecy was reserved solely for Moses.

In a later section, the letters of the alphabet are said to have been created exclusively for humans, the only creatures and rational beings to use them, unlike beasts and angels: the former do not possess the necessary faculties needed to use them, whereas the latter simply have no need for them. In fact, the act of writing and communicating in general is useful only to mortal beings who need to transmit their thoughts to people distant in space and time. The theme of humans as creatures halfway between the material world, symbolised by beasts, and the spiritual world, symbolised by angels, may echo patristic Christian literature, of which the most notable example in this case is represented by Gregory the Great (6th–7th century), who in his *Dialogues* (book I, chapter III) wrote that «a man is inferior to an angel and superior to a horse, sharing both the uppermost and lowermost qualities of both: immortality, i.e. spirit, is shared with the angel, while mortality, i.e. flesh, is shared with the horse».[97] It is also noteworthy that ibn Tamim emphasises the crucial role played by the letters of the alphabet for memorisation and recollection.[98]

Thus, according to ibn Tamim, letters are not directly involved in the creation of the cosmos, but they simply constitute the means by which divine wisdom can be transmitted and preserved among humans. However, their permutations conceal mysteries accessible only to those familiar with the mysteries of music (Vajda 2002: 97), although he does not elaborate regarding the nature of these supposed mysteries.

In conclusion, Dunash ibn Tamim's commentary on the *Book of Formation* reflects the cultural environment in which it was composed, providing medical and astronomical knowledge absent in Saadya's commentary. Specifically, the elements introduced in the Kairouan commentary include numerological speculations, references to anatomy and medicine (Vajda 2002: 153–155) and, most notably, a Neoplatonic interpretation rather than an Aristotelian one like that of the *gaon*.

After Donnolo

The idea of the human being as a microcosm became widespread in the centuries immediately following the completion of Donnolo's *Book of the Wise*. With the sole exception of Netanel Berab Fayumi, all the authors

[97] Translated from Migne, *Patrologia Latina*, vol. LXXVII, col. 321.

[98] Vajda 2002: 83. On the hypothesis according to which some parts of the *Book of Formation* could have been intended as a memory tool, see Cuscito 2018b.

presented here were born in the Iberian peninsula, which was then under Muslim rule.

Bahya ibn Paquda, who lived in the first half of the 11th century, authored a treatise on ethics titled *Guide to the Duties of the Hearts* (Ar. *Al-hidaya ila faraid al-qulub*). Later, in the second half of the same century, Yehudah ibn Tibbon[99] translated it into Hebrew as *Duties of the Hearts* (*Hovot ha-levavot*). The fourth chapter of the latter work is dedicated to the «signs of wisdom»[100] scattered by God in creation. In his view, the best way to approach divine wisdom is through the study of creation: just as an artwork bears the imprint of its creator, everything in the cosmos reveals the wisdom of its Creator. To discover this wisdom, humans need only seek it not only in the world but also within themselves, as they encapsulate the world of which they are an integral part and, in a sense, the purpose. It is therefore fitting for humans to know their own history, psychic faculties, in short, everything about themselves, citing Job (19:26): «In my flesh, I shall see God». Ibn Paquda's interpretation of this verse will become influential in the subsequent two centuries (Altmann 1963: 218).

In the same century, Shlomoh ben Yehudah ibn Gabirol, known by the Latinized name Avicebron, introduced Aristotelian hylomorphism into a Neoplatonizing philosophical framework in his work titled *The Source of Life* (*Meqor Hayyim*). In this perspective, the relationship between the most sublime part of the human being (i.e. the intellect) and the body is analoguous to the one between the most sublime substances and the macrocosmos of the physical world (3, 6). Consequently, humans can understand the structure of the cosmos by knowing the structure of their own being, as both are linked by that analogy (3, 44).

Yosef ibn Tsaddiq, author of the *Book of Microcosm*, lived and worked in the 12th century. His treatise is intended as an introduction to philosophy and was originally composed in Arabic, later translated into Hebrew. In it, the author explores the similarity between the human being and the cosmos in both its physical and spiritual aspects, described in the two different parts

[99] A physician and translator active in the 12th century between his native Granada and Provence, he translated several works from Arabic into Hebrew, which allowed classical Greek philosophy to permeate Jewish thought. His son Samuel continued his father's translation work of Arabic texts into Hebrew.

[100] This phrase seems to echo Islamic influences. In fact, it appears frequently in the Quran, e.g. in 2,164; 6,98; 16,12; 20,128; 39,21, etc. One of the sources of the *Guide* is the already mentioned *Epistles of the Brethren of Purity* (Kaufmann 1910: 15–17).

that constitute the second treatise. From a physical perspective, the human head is compared to the celestial vault, where the two eyes correspond to the luminaries, the ears to Saturn and Jupiter, the nostrils to Venus, the mouth to Mars and the tongue to Mercury. The twelve zodiacal constellations would correspond to the vertebrae, counting the neck vertebrae as one, even if that does not even bring the number to twelve. Additionally, in his view, mountains correspond to bones, trees to hairs and the four elements to the four humours: blood, phlegm, black bile and yellow bile. Further astronomical (or rather, calendrical) correspondences are given by the number of the teeth, which is said to coincide with the number of days of the solar month, by the twelve body openings that are said to correspond with the months of the year and by the seven sense organs believed to correspond to the days of the week, just as the seven orifices in the head (Habermann 2003: 81–82). From a spiritual perspective, the human being contains everything in itself, and God is likened to a man who builds a house for his son and places in it everything that exists in the world, so that the son has everything he needs without having to go out. In ibn Tsaddiq's view, the five senses correspond to the four elements: sight corresponds to fire, hearing to air, taste to water, touch to earth and smell is likened to vapor. Once the physical knowledge of one's body (and, consequently, the physical world) is achieved through the senses, humans are called to the intellectual knowledge of the spiritual world through speculative thought and in-depth study (Habermann 2003: 103–104).

Moses Maimonides, a contemporary of ibn Tsaddiq and ibn Gabirol and the most celebrated figure of his time, dedicated a part of his *Guide of the Perplexed* to expounding his theory on the human being as a microcosm. According to this physician and Aristotelian philosopher, just as the heart in man provides movement to the entire body, so does the First Mover in the skies, which in Aristotelian physics was believed to constitute the uppermost celestial sphere that sets in motion the lower spheres. Through its action, this First Mover holds together the entire cosmos and animates it (*Guide of the Perplexed* 1, 72), even if it is not clear to what extent the author does intend it as a simple metaphor or as an interpretative model, as he specifies: «This kind of conception is necessary, or at least very useful, when one wants to demonstrate that God is one» (*ibid.*). Abraham ibn Ezra (11th–12th centuries), known primarily for his emphasis on astronomy and astrology in his biblical commentaries, addresses the theme of the human being as a microcosm as well. At the end of his commentary on Exodus 25:40, he emphasizes self-knowledge, both physical and intellectual, as a principal means of knowledge of higher realities, since

humans are a small image of the world. In this correspondence, the Temple plays a fundamental role as an "intermediate world", an image of both the human body and the universe.

Also from the 12th century is the work of the Yemenite author Netanel Berab Fayumi, who, in his *Garden of Intelligences*, correlates the spirit, the body and the three physical dimensions of man with the Universal Intellect, the spheres and the material world, respectively (Altmann 1963: 220–221).

Bahya ben Asher, who lived between the 13th and 14th centuries, insists on the division of the human being into the same three parts (head, chest and abdomen) as outlined in the *Book of Formation*. He correlates these with the world of angels, the world of spheres and the material world, respectively. The human being is thus defined as a "microcosm" because its physical structure reflects that of the macrocosm.

In the first half of the 14th century, the Iberian Jewish philosopher Yoshua ibn Shuaib described the human body as composed in the image and likeness of everything contained in the ten *sefirot* and the ten celestial spheres. These correspond to the fingers of the hands and feet, respectively, whereas the other parts of the body are related to the 613 precepts of the rabbinic tradition. With ibn Shuaib, the rules of purity begin to assume a mystical significance: if human limbs are similar to those of animals but also contain supernatural elements (Altmann 1963: 221–222), then safeguarding their purity has repercussions in the whole cosmos. The theme of the cosmic significance of the precepts will be extensively developed two centuries later in Lurianic Qabbalah.

In the same century and area, David Ben Yom Tov wrote his *Brief Compendium* (*Kelal qatan*). Composed in Hebrew and then translated into Latin (Bos *et al.* 2005), the *Compendium* appears to unite the tradition of classical melothesia with iatromathematics (i.e. medical astrology, the origins of which can be traced to Ptolemy's *Tetrabiblos*), especially regarding the doctrine of the influence of planetary spheres on the human body. The *Compendium* emphasizes the role of lunar influences on bodily humours and designates specific days as more propitious for bloodletting or the administration of emetics, laxatives, etc. In addition to Ptolemy and Arabic literature traceable to translations of his works, the main source of the treatise is represented by Abraham ibn Ezra's *Book of Luminaries* (Langermann 2000: 576).

Finally, in Qabbalistic texts such as the *Bright Book* (*Sefer ha-bahir* §55) and the *Repairs of the Zohar* (*Tiqqune ha-Zohar* 130b) the human being is not correlated with the macrocosm but with the *sefirot*. In those two texts, composed between the 12th and the 14th centuries, the human being is called a microcosm because his limbs were arranged in the six days of creation,

corresponding to the six lower *sefirot*, which are considered here the lower emanations from the Deity and not simply the six directions of space as in the *Book of Formation*.

Summarising, in later medieval Jewish philosophy, themes already present in previous works are reused and reworked. Except for Ibn Ezra, who made it the centrepiece of his philosophy, astrology generally played a negligible role in understanding the correspondence between the human body and the cosmos. Instead, two dominant tendencies emerge: one, typical of *midrash*, is directed towards the purely physical aspect, which posits that the human body reflects the whole creation; the other tendency focuses on the relationship between the human soul (or spirit or intellect) and the body, and for which such relationship is analogous to that that exists between God and the cosmos. These two tendencies, rooted in rabbinic and Platonic thought, respectively, do not necessarily exclude each other; rather, they often find themselves coexisting.

Chronologically speaking, the two earliest proponents of the Neoplatonic interpretation of the *Book of Formation* were Donnolo and Dunash ibn Tammim. Regarding the former, his influence on the 11th century movement called "German Pietists", is well attested, since his works are explicitely cited in the works of the early founders of the movement. These works were transported, along with other Hebrew works, by their ancestors, i.e. the Qalonymos family, from South to North Italy first, and then to Provence and the Rhineland (Mancuso 2010: 81, note 9; *ibid.*: 224, note 8; Grossman 1975).

However, as mentioned earlier, the influence of the Kairouan school was much broader and deeper than that of Donnolo's thought, since it extended beyond the boundaries of Judaism and Jewish culture. The fact that almost all the texts mentioned above were composed in Arabic and in the Iberian Peninsula makes it clear that Neoplatonic doctrines reached Europe through what the Arabs called al-Andalus. The Neoplatonic view of the human being as a microcosm, as described by Proclus, appears to have been prevalent in Jewish thought at the time. In particular, Jewish thinkers, under Arab rule in the Iberian peninsula, sought, to varying degrees and in different ways, to reconcile this perspective with the Bible and earlier rabbinical works.

An Arabic text played a fundamental role in the dissemination of the idea of the human being as a microcosm, namely the *Epistles of the Brethren of Purity*, which placed particular emphasis on microcosmism. As already stated, the text presents itself as being written by a kind of secret society dedicated to disciplines such as philosophy, theology and natural sciences, including astrology and alchemy. The doctrine underlying the *Epistles* closely aligns

with the strongly Neoplatonizing current of Shia called Ismailism, which circulated primarily within the Fatimid caliphate. Benefitting from favorable socio-cultural conditions, the *Epistles* spread throughout North Africa and soon reached the Iberian Peninsula.

While many of Donnolo's contemporaries were reading and writing in Arabic, he was proficient in Hebrew and presented an original interpretation of Jewish texts such as the Bible, the *Book of Formation* and the *Barayta of Samuel* through the lens of Greek philosophy, which he could read in its original language, instead of accessing it through Arabic translation, as many of his contemporaries did.

In light of what has been pointed out, if we also take into account the opinion of his coreligionists regarding the fact that no other Jew dealt with astronomy around his area, we may conclude that Donnolo stood out among other Jewish philosophers of his and later times. While this has been already assessed in previous literature, a more defined portrait of Donnolo should be sketched, in a way that stays as close as possible to the few data at our disposal.

6. A REAPPRAISAL

Donnolo's role in knowledge transfer from East to West

Without delving too further beyond the defined temporal boundaries of this study, it should be pointed out that, being one of the few professions permitted to the Jews, medicine became one of the fields in which they specialised in the Middle Ages. Many Jews became renowned physicians, as was the case of Asaf, ibn Amran, Isaac Israeli and of course Donnolo. Nevertheless, due to the nature of the discipline, there was never a "Jewish" medicine, since Jews shared the same body of medical knowledge as the followers of other religious traditions, such as Christians and Muslims.

In the previous chapter, we have seen the role that European Jewry played in the transmission of "scientific" ideas, which traveled from North Africa to the Iberian Peninsula and from there to France and Italy. At least in the early stages of this knowledge transfer, the means through which this transfer was made possible was mainly the Arabic language. Precise astronomical calculations were useful to Arabs for determining Mecca's position and thus the direction of the daily prayers and the placing of the *mighrab*, i.e. a niche in the wall of a mosque that points to Mecca. Moreover, a precise account of celestial mechanics was useful to both Arabs and Jews for calendar calculations and the determination of festival days.

While this knowledge transfer was taking place in Arabic in the Iberian peninsula, Donnolo occupied an eccentric position as a Jew who lived in Byzantine Southern Italy. Moreover, in a cultural environment that was speaking and writing in Greek, he wrote in Hebrew, while Jews elsewhere were using the local languages only, generally Arabic. Still, his ability to read Greek texts was very useful to him, since he could access Ptolemaic astronomy and Hippocratic-Galenic medicine in the original language, instead of accessing them through some Arabic translation, as was common in Western Asia, North Africa and Western Europe.

Although there have been exceptions (Lacerenza 2004a), previous secondary literature has considered Donnolo a Byzantine Jew, and rightly so. Yet, he also took ideas coming from the Persian world, whether they originated there or simply transited through it from further East. This is the case, for example, of the order of heavens that he read or heard about in Persian sources and further elaborated on.

The *Book of Formation* is the earliest known Hebrew text dealing with what we now call combinatorics, i.e. the branch of mathematics that deals, among other things, with calculations of permutations and combinations of

elements. These techniques are present in Indian texts such as *Brhatsamhita* (6th century CE) and *Lilavati* (7th century CE), and perhaps even earlier work from the first centuries BCE (Kolachana *et al.* 2019: 356–357). *Lilavati*, in particular, distinguishes the two different techniques hinted at in the *Book of Formation* and their different applications (Biggs 1979: 115–117). It can be assumed that these ideas and techniques arrived from India through Persian mediation, as was the case of the idea of a monster that was believed to be responsible for the eclipses: in the same way that Rahu and Ketu of Hindu tradition became the *tly* via Persian *gozihr* and Syriac *antalya*, similarly the metaphores of perfumes and gates used in Indian works to explain combinatorics (Kolachana *et al.* 2019: 356–357) could have become the stones and gates mentioned in the *Book of Formation*. In the Arab world, the first evidence of combinatorics dates to around 786 in the work of grammarian Khalil ibn Ahmad (Brentjes and Morrison 2010: 587).

Taking all these elements into account, the most likely time and place for this transfer of knowledge from Indian to Jewish culture, and thus the writing and redaction of Donnolo's sources, is within the context of the translation movement that took place between the second half of the 8th century and the late 10th century, when the Abbasid Caliphate sponsored a «process of massive translations of Pahlavi, Sanskrit, Syriac and Greek texts […] primarily in Baghdad» (Brentjes and Morrison 2010: 565). If Donnolo's sources date to this context, then it could also explain why the eclipse dragon was called *tly* in Hebrew, likely from the Syriac *antalya*: Nestorian Christians, mainly from Syria, were some of the most active translators, especially in texts dealing with mathematics and related disciplines (Brentjes and Morrison 2010: 579).

How Donnolo became acquainted with two texts very likely written in the Baghdad area can only be a matter of speculation. The very fact that he met a man with a clearly Persian name shows that Iranic and Byzantine, let alone Jewish, cultures were not isolated from one another. In addition to imparting purely technical knowledge to him, his teacher Bagdat might have easily transmitted ideas directly from his own culture. In the end, though, it is difficult to be more specific about the sources of every aspect of Donnolo's worldview, since he himself claims to have read texts from different cultures, without mentioning any of those texts.

Donnolo has the merit of being the first known author to write an original medical treatise in Western Europe in the Middle Ages. He is also the first known medieval author to bring back to Western Europe the idea of the human being as a microcosm, two centuries before it became widespread once again, when Bernardus Sylvestris wrote his *Cosmographia*, Hildegard

von Bingen her *Liber divinorum operum* and Yosef ibn Tsaddiq his *Book of Microcosm*. Moreover, he was one of the first, if not actually the first, to have brought the science of permutations to Europe. The Kalonymos family brought Donnolo's writings from their native Apulia to central Europe and Donnolo's thought became influential in the circles of the German Pietists. Thus, by elaborating works that used material deriving from Syriac, Persian and even Indian sources, Donnolo played an invaluable part in the diffusion in Europe of knowledge ultimately coming from Asia.

Who was Shabbetay Donnolo?

Summarising what can be said with relative certainty about Donnolo's life, only the following can be stated with relative certainty: he was born in Oria around 913 CE; at the age of twelve, when the Saracens pillaged his town in July 925, he was captured and then freed in the nearby city of Tarent, while the rest of his family was deported in Sicily first and then in North Africa; when he grew up, he travelled within the Byzantine empire; during his travels, he met the astronomer Bagdat; he was in Rossano at a certain point of his life; he died after 982. Regarding the works that have been attributed to him, only two of them can be definitely identified as his, namely the *Book of the Wise* and the *Book of Mixtures*, while his authorship of the others is quite doubtful to say the least.

Donnolo's portrayals in literature, both scientific and non-scientific, including works of fiction such as novels, tend to depict him as a mystic or even a qabbalist *ante litteram*. But was he really one?

On one hand, it is true that modern definitions of science do not really apply to texts written in a time when religious matters were not distinctly separated from the concern for bodily well-being, as exemplified egregiously in the *Life of Neilos*. It would be pointless and anachronistic to even try to judge whether a text is scientific in nature, when such text has been written centuries before the definition of what we now call "science".

On the other hand, though, the same applies with the definitions of "mystic" and, for different reasons, "qabbalistic". Now we would define "mystic" or "mystical", in a broad sense, any discourse involving non-measurable forces connecting the microcosm and the macrocosm. In this regard, when Donnolo, commenting on the *Book of Formation*, seems to imply that there are invisible ties between those elements in the cosmos that are formed through the same letter of the alphabet, then we could define those passages as "mystical", in a very loose sense. At the same time, when he talks about the relations between the celestial spheres, he does so in purely physical terms of heat and cold. Moreover, his *Book of Electuaries*, as already stated,

is purely practical and empirical and does not contain any reference to astrology or magic or even religious practices.

So, was Donnolo a mystic? If we adopt the stricter sense of the word, the one deriving from the 5th–6th century *Corpus Dionysiacum*, in which "mystic" implies the idea of becoming one with the Deity (*unio mystica*), then there is no reason to believe that he was one, since his texts make no reference whatsoever to any ascent of the soul through the heavens in order to meet, or be one with, the Deity. It can be argued that even one of his main sources, namely the *Book of Formation*, is not mystical in the strict sense: in it, as already stated, the *sefirot* do not appear to be described as divine attributes or emanations, as they will be considered in later qabbalistic works. Historically, Qabbalah proper originated between Catalonia and Provence around the 12th century, so calling Donnolo a qabbalist would be as anachronistic as calling him a scientist.

He called himself Donnolo *ha-rofe*, i.e. not "the mystic", not "the astronomer", not even "the philosopher", but simply "the physician". That is how he probably saw himself or, at the very least, how he wanted to be seen by others. The theoretical framework through which he looked at the world, although it implies the act of creation by a deity through the letters of the Hebrew alphabet, does not make him necessarily a mystic. The body of knowledge that he possessed, including the basics of celestial mechanics and their alleged influences on the human body, was part and parcel of the cultural background of many medieval physicians.

Thus, it is difficult to frame Donnolo in one definition, because the meanings of words such as "science", "mysticism", "physician", "philosopher", have changed since the times in which he lived. However one may call him, what matters is his unique contribution for the history of Jewish and, in a larger scope, European thought.

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