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NATURE IN THE BOOKS OF SEVEN METALS – ǦĀBIRIAN CORPUS IN DIALOGUE WITH ANCIENT GREEK PHILOSOPHY AND BYZANTINE ALCHEMY –

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Abstract

Nature in the *Books of Seven Metals*

− Ǧābirian Corpus in Dialogue with Ancient Greek Philosophy and Byzantine Alchemy −

The main topic of this PhD dissertation is the exploration of the concept of nature in Arabic and Greek alchemy by analysing Arabic alchemical texts, the *Books of Seven Metals,* which were supposedly composed in the tenth century and ascribed to Ǧābir b. Ḥayyān. Among the different kinds of nature discussed in these sources, the fifth nature is a crucial notion to comprehend what nature is in the Ǧābirian corpus (hereafter the Corpus). Since the fifth nature has a close relation to ancient Greek philosophical concepts (e.g., Empedoclean particles preceding the elements, Aristotelian fifth element and the Stoic pneuma), its analysis is conducted from the viewpoint of the Graeco-Arabic studies. It is known that the Corpus is under the influence of ancient Greek philosophical, alchemical and medical traditions and, in turn, it influenced the medieval Latin alchemy. Moreover, there is another direction in which the Corpus cast its influence, i.e., the late Byzantine alchemy. *The Work of Four Elements*, a Greek alchemical anonymous text possibly written in South Italy in the twelfth century, depends on Ǧābirian *Book of Thirty Words*. As Colinet (2000) suggested, the author of the *Four Elements* probably got access to the *Thirty Words* via its Latin translation. Thus, describing the relation of influence on and from the Corpus is another theme of the dissertation as well as elucidating the concept of nature.

The dissertation consists of three parts: I. Introduction (general information about the Corpus and its influential relation), II. Texts and Contents (analysis of the *Seven Metals* focusing on the fifth nature), and III. Appendix (presentation of the edited Arabic texts). The concluding chapter precedes III, gives an overview of I & II, and summarises the concept of nature in the Corpus. Through the analysis, the fundamental position of the fifth nature in the Ǧābirian science is ultimately revealed. Furthermore, the conclusion provides relevant themes that seem worth investigating further.

Synopsis of the contents:[1]

Chapter 1.1: Although Ǧābir is supposed to have lived around 721 to 830, the Corpus was probably composed in the ninth and the tenth centuries. This means that the Corpus could have had several authors. One of them was possibly Ǧābir, but it is natural to think that the most parts of the Corpus were written by others who relied on the authority of Ǧābir. The late dating of the Corpus comes from the fact that it contains ancient Greek knowledge that was probably imported in the Arabic world after the ninth century.

The Corpus is constituted of several collections. The *Seven Metals* are regarded

[1] As for the book titles abbreviated in this abstract, see p. viii, ‘Abbreviations’.

as one of the last collections that were written in the tenth century. The *FN* and the *Iḫrāǧ*, both of which are quoted in the *Seven Metals*, are parts of the *Books of Balances* that were probably composed in the early tenth century. Some collections have references to other writings, which enables us to determine the order of the collections in the Corpus to some degree. Moreover, not only the cross-references between the collections, but also the identification of the main basic alchemical metals can give approximate information on the relative dating of the writings that are included in the Corpus. In the earliest writings of the Corpus, indeed, the metals are first known as six, and only later on they are considered as seven. Moreover, the seventh metal, although identified with different substances, was mainly mercury or *ḫārṣīnī*. The later the books are, the more *ḫārṣīnī* is recognised as the seventh metal.

Chapter 1.2: According to the *Iḫrāǧ*, the Ǧābirian sciences are seven: the sciences of (1) medicine, (2) the art (i.e., alchemy), (3) properties, (4) talismans, (5) operating the upper things (i.e., celestial bodies), (6) balance and (7) generation.

(1) The science of medicine is considered to be significant in the Corpus and is described longer than the other six sciences in the *Iḫrāǧ*. As the basic notions of medicine, four elements, four natures, four humours, four seasons and four main parts of the human body are introduced by combining them with one another. (2) The object of the art, i.e., alchemy, is threefold: six spirits (*arwāḥ*), seven bodies (*aǧsād*) and mineral bodies (*aǧsām*) that are exemplified with five stones (*aḥǧār*). (3) The properties can be divided into three: ‘condition’ (*ḥāl*) that quickly disappears, ‘state’ (*hayʾa*) that remains for a long time, and ‘essential property’ (*ḏātī*) that represents what-it-is. (4) Talismans are meant either to attract and increase something or to clear something and make distance from it. The talisman is a thing through which people try to extend any influence on terrestrial world by corresponding celestial motions through similarity and oppositeness. (5) The science for operating celestial bodies (*ʿilm istiḫdām al-ʿulwiyyāt*) gives the knowledge about what time and which sacrifice are appropriate for each planet. There are two kinds of preparation to exploit the influence of celestial bodies: one is observation (*raṣad*) of stars and the other concerns incense (*buḫūr*). (6) The balance is divided into three parts. The first one is in the realm of the similarity and oppositeness. The second one is the balance in terms of weight. The third balance is about letters – *abǧad* –, which could be reworded as numerical balance. (7) The science of generation (*ʿilm al-takwīn*) is a result of the other six sciences in order to artificially produce animals, plants, and stones.

Chapter 1.3: The influence of Euclid, Galen and Alexander of Aphrodisias on the Corpus deserves to be noted to confirm the presence of ancient Greek heritage in the Ǧābirian writings. As for Euclid, Definition 4 of the Euclid’s *Elements V* is cited and indirectly referred to several times in the Corpus. The longest citation concerning Euclid, found in the *FN*, is Proposition 9 of the *Elements I*. Secondly, to investigate the influence of Galen on the Corpus, one of the important works is the Ǧābirian *Book of Poison*. Galen’s *On*

the Capacities of Simple Drugs seems to have been the most influential Galenic work in the Corpus. Another pharmaceutical book of Galen, i.e., *On the Composition of Medicaments According to Kind* preserves a suggestive idea for quantification of qualities which can be paralleled to the metaphorical concept of weight described in the *FN*. Furthermore, apart from pharmaceutical writings, the *QAM* can be regarded as a source book for Ǧābir. Lastly, it is certain that the Corpus imported hylomorphic idea from Alexander's *Quaestiones*: its Arabic translation, indeed, has the term *maḥmūl* as an equivalent to the phrase ἐν ὑποκειμένῳ in the Greek original. *Maḥmūl* is used in both the *Seven Metals* and the *FN* in relation with *mauḍūʿ* which means ὑποκείμενον. The citations from the *Quaestiones* are found in the *Compendia* which was supposedly written in the same period as the *Seven Metals*.

Chapter 1.4: Byzantine alchemy shows clear points of contact with Arabic alchemy. The tenth century Byzantine manuscript *Marcianus* gr. 299 transmits a recipe where θουθία is used. This ingredient, θουθία, never appeared in ancient alchemical texts and probably came from an Arabic word, *tūtiyāʾ*, that could have been any zinc related substance. As far as Ǧābir is concerned, a representative text that shows the influence of the Corpus on Byzantine alchemy is the anonymous text, the *Four Elements*, where an egg is distilled and reduced to the four elements, i.e., water, air, fire and earth. The combination between parts of the egg and the four elements, which is explained by Pandolfus (i.e., Empedocles) in the Arabo-Latin text called *Turba philosophorum* (*The Assembly of Philosophers*), presents the reverse of the common cosmology where the earth is the centre of the world and the fire is outermost. As Colinet pointed out, the *Four Elements* was written under the influence of the Ǧābirian *Book of Thirty Words* probably through its Latin translation, *Liber de triginta uerbis*. Roger Bacon's *Speculum secretorum* mentions the *Liber de triginta uerbis* with reference to separation of four elements by distillation. This text by Bacon was reproduced in another Byzantine anonymous text, the *Chrysopoeia* (i.e., the Anonymous of Zuretti) which preserves other evidence that Ǧābirian knowledge was absorbed into Byzantine alchemical texts. Besides several Bacon's writings, *De aluminibus et salibus* was the path through which Ǧābirian alchemy was conveyed to the *Chrysopoeia*.

Chapter 1.5: The concept of nature in alchemy is explored. The *Four Elements* has some phrases concerning the nature, which are arranged in two types: (1) 'The nature prevails over (νικάω) [another] nature' and (2) 'The hidden nature is carried out to the outside'. Type (1) was repeatedly used in alchemical writings with other variations such as 'Nature conquers (κρατέω) nature' and 'Nature charms (τέρπω) nature' since ancient times, at latest in Pseudo-Democritus' and Zosimos' texts. However, this tradition – inserting spell-like phrases between alchemical recipes – does not seem to have been inherited among Arabic alchemists. In fact, the *Book of Thirty Words*, a possible source of the *Four Elements*, does not have any similar texts like type (1). Type (2) has its ancient origin as

well. However, unlike type (1), it has relevant tradition in Arabic alchemy. When type (2) occurs in ancient Greek or Byzantine alchemical texts, the nature is not specified and remains obscure. On the other hand, the Ǧābirian *Book of Ten*, which belongs to the *Books of Seventy*, clearly describes the shift of the four qualities – called natures in the Corpus – from the inside of the elements to their outside. Thus, Ǧābir mingled natures with qualities in the theory, while Greek alchemy, both antique and Byzantine, seems to have kept the distinction between natures and qualities. On the other hand, both Greek and Arabic alchemy shared the idea that the four elements are made up of the four qualities. As a matter of fact, a Greek text called the *Chapters of Zosimos to Theodore* explains the change of the four elements with the shift of four qualities. Ǧābir extended the meaning of nature in a certain continuity with the ancient Greek tradition and applied it not only to alchemy but also to medicine and philosophy. This expansion of nature is confirmed by analysing the *Seven Metals*.

Chapter 2.1: The *Seven Metals* are preserved in three manuscripts, i.e., [ب] MS Paris BnF Arabe 2606, [ق] MS Cairo Ṭalʿat, kīmiyāʾ wa ṭabīʿa 187, and [ط] MS Ṭehran Mağlis 729. The Arabic text in Appendix is principally based on [ب]. The MS [ق] is in the same family as [ب], but it seems to have been transcribed a little more carelessly than [ب] judging from the presence of some words that are irrelevant to the context. [ط] is probably a revised version of [ب] and [ق] by attaching significance to astrological knowledge. In fact, the order of the seven books in [ط], which differs from that of [ب] and [ق], is in accordance with a geocentric spherical order. Besides these three MSS, there is another manuscript that is an indirect witness of part of the *Seven Metals*: it is MS Paris BnF Arabe 5099 [ب 5099] that has the *FN* which is partially copied in the *Copper*.

Chapter 2.2: Table of contents of the *Seven Metals* visualises the different structure of [ط] in comparison with [ب] and [ق] by specifying which folio has the same contents among the three manuscripts.

Chapter 2.3: An overview of the contents of the *Seven Metals* is provided according to selected themes, i.e., alchemical recipes (e.g., sharp water and ink), medical recipes and theory of four humours, nature of the seven metals, dualistic theories (e.g., Father-Mother classification, Similarity-Oppositeness, Substrate-Essence, and Subject-Predicate), and the theory of properties and talismans. Around one-third of this chapter is occupied by the texts from the *Ḫārṣīnī* in order to show that the latter half of the *Ḫārṣīnī* is a copy of the text on the science of talismans in the *Iḫrāǧ*.

Chapter 2.4: The seventh metal, *ḫārṣīnī* could indicate any zinc ore – perhaps smithsonite

(calamine), i.e., $ZnCO_3$ – originated in China together with another word for a zinc-related substance, i.e., *tūtiyāʾ* that probably has its roots in India. Both names seem to have come into Arabic through Persian.

Chapter 2.5: In addition to the four natures (i.e., hot, cold, moist and dry), there is another concept of nature, i.e., the fifth nature. It is dealt with in the *FN* and part of the *Copper* which is almost the same text as in the *FN*. Besides, the fifth nature is fragmentally referred to in other Ǧabirian writings, namely, in the *Small Book of Balance*, the *Book of Genera* and the *Book of Elite*. According to these books, the sources of the fifth nature could be three: Aristotelian fifth element (i.e., aether), Empedoclean particles (i.e., elements that exist before the four elements), the Stoic pneuma. While aether was introduced as matter for celestial bodies, the latter two, i.e., particles preceding the elements and pneuma, are principles for everything, not limited to the celestial world. As a result of mixture of these notions, the fifth nature has a twofold meaning: on the one hand, it is a thing that concerns the celestial world; on the other hand, it is also the first existence for everything in the changeable world. There should have been several routes through which Ǧābir got to know these ancient concepts. Among them, physicians Athenaeus and Archigenes, known as Pneumatists, deserve to be noted as possible direct sources of the Stoic pneuma for Ǧābir.

Chapter 2.5.1: The fifth nature described in the *FN* is analysed. In the same way as it turned out in Chapter 2.5, the fifth nature is said to be the basis for both the celestial bodies and the terrestrial existence. Furthermore, the fifth nature in the *FN* has another subdivision, i.e., it can be either internal or apparent. The internal fifth nature is a physical basis of things, while the apparent fifth nature is eventually regarded as logical essence that defines things. On the analogy of hylomorphism, the former is matter, ultimately the prime matter, and the latter is form. In the course of explaining the fifth nature, Ǧābir refers to the four kinds of the intellect and the four ways for things to exist as in Aristotle's *Categories*. It seems that Ǧābir combined the theory of intellect with the description of the existing things in the *Categories*, although it is impossible to combine them if we stick to a general understanding of the *Categories* and the theory of intellect that originated in Aristotle's *De anima*.

Chapter 2.5.2: The texts on the fifth nature in the *Copper* are compared with those in the *FN*, which are almost the same texts but with differences. The most noticeable divergence is that the *Copper* says, with reference to Galen, that life is the sixth nature, while life is the fifth nature in the *FN*. Chapter 2.5.2 also includes an analysis of the texts that are fragmentally the same between the *Copper* and the *FN* but are not directly related to the explanation of the fifth nature, where Ǧābir calls attention to the Arabic homonym – the same root word can represent completely different things (e.g., *al-taḏkiya* can mean not only 'flare' or 'intelligence' but also 'slaughter'). This linguistic reference probably

concerns the balance of letters which is a main topic in the latter half of the *FN*.

Chapter 2.6: According to the *Seven Metals*, the art – alchemy – is a way to manipulate properties that are determined by the quantity of the four natures. The quantity is perceived as the balance of metaphorical weight among natures. The balance defines things and represents what-they-are, i.e., the essence that can also be called 'nature', based on the analysis in Chapter 2.5.1. The idea that things are defined by the balance of the elements – of the four natures for Ǧābir – can be traced back to Empedocles. Aristotle adopted the Empedoclean theory of four elements and added four qualities as further principle for the four elements, saying that Empedocles did not say anything about nature – this nature means the essence of each thing – in Aristotle's *De generatione et corruptione*. Ǧābir replaced the four elements or qualities with the four natures and formed the theory of balance. The equation of qualities with natures in the Corpus seems to have been a Ǧābirian response to Aristotle's criticism of Empedocles, whether it was what Ǧābir intended or not.

In the Corpus, natures are the four qualities and, at the same time, the principle of things. The balance of natures represents the essence, i.e., what-it-is. The balance is indicated by quantifying natures, i.e., quantification of quality. Here, both quality and quantity seem interchangeable as the principle of the Ǧābirian science. This equation between quality and quantity is a result of reducing quality to numbers. Numbers are discontinuous quantity as well as letters. For Ǧābir, the balance of letters in the name of things is an indicator of what the things are. The balance is represented by means of numbers and letters. Therefore, it can be said that the Ǧābirian science is a system based on discontinuous quantities, i.e., numbers and letters. Unlike the idea that things are defined by the balance of the primary elements in the things, Ǧābirian adhesion to letters shows discontinuity to Empedoclean-Aristotle's philosophy. Concerning whether the name represents what-it-is of things or the name is only an indication given by the humans, Empedocles and Aristotle thought that the name is nothing but given by chance, whereas Ǧābir had faith in the name as something that defines things.

In this way, the Corpus was on the one hand within Empedoclean-Peripatetic thoughts, but on the other hand went beyond such a framework. One of the 'deviations' – given that Peripatetic philosophy as understood today is orthodox – is the identification between substance and matter, which cannot be acceptable in Aristotelian hylomorphism. However, this identification is not unique to Ǧābir. A similar view is found in the Stoic philosophy too. Recalling that the fifth nature might have derived from the Stoic concept of pneuma and that Euclid and Galen also influenced the Corpus, Ǧābirian eclecticism clearly appears. A huge building that was constructed from various kinds of earlier traditions can embrace inconsistency in itself. Nevertheless, it remains erect since the flexibility of terminology as exemplified by the concept of nature sustains the structure of the Ǧābirian sciences.

Nature in the *Books of Seven Metals*

– Ǧābirian Corpus in Dialogue with Ancient Greek Philosophy and Byzantine Alchemy –

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Preface

In this PhD dissertation, I sought new clues to the notion of nature in the Ǧābirian corpus (hereafter, the Corpus), especially focusing on what is called the fifth nature. That the fifth nature might be a fundamental principle in the Ǧābirian system was already implied in previous studies such as the works by Paul Kraus (1942) and Shed Nomanul Haq (1994). However, what is really meant by the fifth nature is still vague because not all Ǧābirian texts relevant to this subject have been made available and scrutinised. If these texts are closely analysed and the meaning of the fifth nature is elucidated, this will remove one of the veils which still cover those Ǧābirian ideas that sustain the whole system of the sciences described in the Corpus. Therefore, in order to elucidate the basis of the Ǧābirian science where the concept of nature seems to play a crucial role, I set the fifth nature as a main theme of this dissertation. Moreover, seeking the origin of the fifth nature leads to interdisciplinary research and ultimately shows the importance of the Corpus not only in the history of science but also in the history of philosophy, since the same concept of fifth nature cannot be comprehended without considering its being influenced by ancient Greek philosophical traditions. Thus, the Corpus preserves ancient Greek philosophy imported into the medieval Arabic intellectual world although it is mainly known as a collection of ‘alchemical’ texts.

Now that I called the Corpus ‘alchemical’, I have to briefly discuss what is alchemy for my study since alchemy is an inevitable term to refer to the Corpus but continues to be a vague field that escapes clear-cut definitions. I define the word ‘alchemy’ in two ways: on the one hand, in a narrow sense – ‘narrow’ literally without any negative meaning –, alchemy means chrysopoeia, that is, the making of gold out of base metals. On the other hand, alchemy in a wider sense can include other sciences that are adjacent to chrysopoeia. The latter might overlap with the Ǧābirian seven sciences described in Chapter 1.2 such as medicine and the science of balance. I am aiming at ultimately using the latter – wider – meaning of alchemy as the term that can indicate every Ǧābirian science, i.e., an eclectic entity in which each discipline has fluid boundaries. However, this is a goal that is far from the current stage of Ǧābirian studies. For, if the Ǧābirian sciences as a whole are just called ‘alchemy’ before being analysed in detail, they remain elusive. Therefore, in this dissertation I basically use alchemy as a synonym of chrysopoeia, which seems useful to analyse the Ǧābirian sciences, one of which is named ‘the art’, i.e., alchemy in a narrow sense.

The approach to the sources for this research has been deeply influenced by the fact that many texts are still unedited. Already in the eighteenth century, the Corpus and the historical figure of Ǧābir attracted the attention of researchers in relation with the Latin *corpus geberianum*. However, the Corpus written in Arabic was not closely explored because the hurdles imposed by the Arabic language on scholars who were mainly chemists. Gradually, historians with a full-fledged expertise in Arabic embarked on examining the Corpus. Following Julius Ruska and Eric John Holmyard, Paul Kraus

published his fundational study of the Corpus, i.e., *Jābir ibn Ḥayyān: contribution à l'histoire des idées scientifiques dans l'Islam*, v. 1 in 1943: *Le corpus des écrits jabiriens*, v. 2 in 1942: *Jābir et la science grecque*. With these two volumes, Kraus shaped Ǧābirian studies. After Kraus, several researchers published their investigations into unedited Ǧābirian texts. All those studies have their own originality and are surely important in themselves, though they branched out from Kraus' work. My study too stems from his tremendous work but, like other achievements made after Kraus in the Ǧābirian studies, it has its own viewpoint in the analysis of the Corpus and a few original additions. For example, among the references to Euclid in the Corpus, Definition 4 of Euclid's *Elements V* is most frequently mentioned. This fact is not noticed by Kraus though he discussed the general influence of Euclid on the Corpus. In relation to the originality, I also present fresh English translations of many Ǧābirian passages. When the texts – not only of the Corpus but also of other primary sources – were already translated into English and I decided to adopt them, I indicated where I cited the translation from in the footnotes. Apart from this case, all the translations in this dissertation are mine. Similarly, when I presented the diagrams without any indication of their sources, it means that I drew them. In addition, when the text had its translation published in any modern language but not in English, I have recorded the published translation as a reference in the footnotes introduced by the abbreviation 'cf.' to show that I consulted it before offering my own English translation of the text.

The *Book of the Fifth Nature* (the *FN*) is, as its title shows, devoted to the fifth nature. While exploring the Corpus, I happened to notice that the first half of the *FN* is the same text as the one attested in the central part of the *Book of Copper* (the *Copper*). Since both books – the *FN* and the *Copper* – have not been edited, I decided to present the transcription of the Arabic texts at least concerning the fifth nature in order to analyse it. Before the analysis of the *FN*, I presented how the fifth nature is described in the other Ǧābirian texts that are already edited. After this study of the edited texts in Chapter 2.5, I analysed the *FN* in Chapter 2.5.1 which is consequently a highlight of my study. Chapter 2.5.2 provides a comparative analysis of the *Copper* with the *FN*. These three chapters from 2.5 to 2.5.2 are the trunk of this dissertation.

Along with the fifth nature, the concept of nature itself is also an object of my study. The *Copper* is one of the *Books of Seven Metals* (the *Seven Metals*) where each metal is defined by four qualities called 'natures' (i.e., hot, cold, moist and dry). Accordingly, to reveal the first question that I set up, i.e., what 'nature' is in the Corpus, it seemed useful to present how metals are described with their natures in the *Seven Metals*, the description of which I put in Chapter 2.3. Since metals are included in the title, the *Seven Metals* might seem to be alchemical texts. Indeed, these seven books have recipes dedicated to chrysopoeia, i.e., alchemy in a narrow sense, but they also include medical recipes and the knowledge of such other disciplines as described in Chapter 1.2, e.g., the sciences of properties, talismans and balances. Consequently, Chapter 2.3 presents a variety of contents in the *Seven Metals* through a thematical overview of the seven books.

A more concise outline of the *Seven Metals*, i.e., the table of contents, is shown in Chapter 2.2. The information about manuscripts of the *Seven Metals* and the *FN* is in Chapter 2.1 as preparatory work for the study of the text. Chapter 2.4 might look exceptional and amateurish because it includes, as interdisciplinary research, arguments based on chemical knowledge and the exploration of some Chinese sources. Both chemistry and Chinese language are outside my reach. Nevertheless, on the ground that *ḫārṣīnī* is counted as the seventh metal in the Corpus, I tried to grasp *ḫārṣīnī*, a mysterious substance, with the support of some experts in other fields. On this point, I should say in advance that any mistake and misunderstanding that might be found in my pages are to be ascribed to me only, since I chose what I present in this dissertation. In the course of my research on what *ḫārṣīnī* is, natures – not only as four qualities but also in their wider meaning – of *ḫārṣīnī* are described as well in Chapter 2.4. Thus, Chapter 2.1 to Chapter 2.4 are basically dedicated to an explanation of the *Seven Metals*, which are secondary preparative research, compared with Chapter 2.5 that is a direct preparation to the analysis of the fifth nature in Chapter 2.5.1 and Chapter 2.5.2.

That I put the balance as the last theme in Chapter 2.6 is indeed due to a close connection between the concept of nature and the theory of balance as the *Book of Copper* treats the latter in close connection with the texts on the fifth nature. This choice is also motivated by a second reason. In order to explain this, I need to mention the motivation of this study. Indeed, I began to read the Corpus looking for an answer to the question that came into my mind while I was examining the Arabic tradition of Euclid's *Elements*: why were mathematical magnitudes generally quantified – recognised with numbers – in the medieval Arabic world? Ancient Greek mathematicians kept the distinction between magnitudes and numbers, whereas Arabic mathematicians tried to equate magnitudes with numbers. To be precise, while the proportion of magnitudes is defined in the *Elements V* apart from the proportion of numbers the definition of which is found in the *Elements VII*, Arabic commentators on the *Elements* considered that magnitudes and numbers could have had the same definition of proportion. In addition, there is another phenomenon that implies the inclination to combine magnitudes with numbers in Arabic mathematical texts, which concerns the usage of the Arabic words *miqdār* and *qadr* as equivalents of μέγεθος and I analysed this issue in my master's thesis. I aimed to study this change from unquantified magnitudes to magnitudes combined with numbers. However, sources within history of mathematics do not have explanation of the reason for such a tendency because Arabic mathematical texts only contain the result of that change. Therefore, I began to search non-mathematical texts for any clues to explain this inclination, and then, I got to know the Ǧābirian science of balance that is meant to reduce everything to quantity. Since quantity is an outcome of one-to-one correspondence between magnitudes and numbers, the reduction to quantity can be reworded as the recognition with numbers. I expected that the inclination for quantifying magnitudes in Arabic mathematical texts might be explained by examining the science of balance, and I decided to study the Corpus. Based on this motivation, I assigned Chapter 2.6 to an

inquiry into the science of balance in relation with the study of nature and I proposed, in the last part of Summary and Conclusion right after Chapter 2.6, further research into the balance of letters that seems significant but obscure in the Corpus.

In this way, Chapter 2.1 to Chapter 2.6 constitute the body of this dissertation. In these chapters, which are called Part II, I conducted original research mainly based on the Ǧābirian texts that were still preserved in the manuscripts and I made available for the first time in the course of this study. The Arabic texts I transcribed are found in the Appendix. To situate this study in the history of Ǧābirian studies, further introductory sections to Part II are required. I call them Part I, which is divided into different chapters: Chapter 1.1 provides an overview of the Corpus in terms of its history and structure; Chapter 1.2 offers descriptions of the Ǧābirian seven sciences, which support readers in understanding the various contents of the *Seven Metals* as overviewed in Chapter 2.3. The next two chapters depict the relation of the Corpus with other intellectual worlds in different times and places. The traces of ancient Greek philosophy in the Corpus are introduced in Chapter 1.3. Moreover, to indicate that the Corpus was not only a receiver of earlier knowledge but was also a source of the knowledge produced in the later period, I discuss the influence of the Corpus on medieval Byzantine alchemy in Chapter 1.4, where a Byzantine anonymous text *The Work of Four Elements* is analysed as it seems to depend on the Ǧābirian *Book of Thirty Words* perhaps through its Latin translation, the *Liber de triginta uerbis*. The translation of *The Work of Four Elements* is in the Appendix with explanatory notes that also deal with its relationship with the Arabic and Latin source texts. Latin alchemy is definitely under the influence of the Corpus, but I decided not to include Latin alchemy in this dissertation for the following reasons: first, the distinction between Latin Geber and Ǧābir as an author of the Corpus has been recognised. Secondly, the exclusion of Latin was the consequence of those painful though necessary limitations to one's research. Thirdly, my main interest lays in Graeco-Arabic studies. The last chapter of Part I, i.e., Chapter 1.5 is a beginning of the research into the notion of nature. Based on previous studies, I briefly describe how the concept of nature is used in Greek and Arabic alchemical texts. And then, Part II begins heading for the fifth nature.

Lastly, it is important to touch upon some limitations of this study. As I mention in Chapter 1.1, the composition date of the Corpus is considered to be over two centuries around 900 A.D. This means that the author of the Corpus could not have been a single person. Working with a corpus of collective authorship always brings a certain fragility in the reasoning that comes from texts analysis. For, there is no guarantee that the authors unanimously share or support the same doctrine. In fact, the usage of terminology in the Corpus is not always fixed and consistent. Nevertheless, sometimes one can find that subtle differences in the use of some expressions make the texts understandable. This actually occurred while I was reading the *FN*. In Chapter 2.5.1, I showed the outcome of such reading that relies on a supposed rigorous usage of the terms. Indeed, it is necessary to recognise those restrictions that the Corpus has as a fragile material of research. However, with such caveat in mind, it will not be naive to believe that the texts are rational

to some degree and to try to depict the system of the Ǧābirian science by scrutinising these texts. If we do not try to find logical consistency in our textual sources, the core of the Corpus will continue to be missed.

Abbreviations

Books

The Corpus, *i.e.*, Ǧābirian corpus
The *Seven Metals, i.e.,* the *Books of Seven Metals*
The *Gold, i.e.,* the *Book of Gold*
The *Silver, i.e.,* the *Book of Silver*
The *Copper, i.e.,* the *Book of Copper*
The *Iron, i.e.,* the *Book of Iron*
The *Tin, i.e.,* the *Book of Tin*
The *Lead, i.e.,* the *Book of Lead*
The *Ḫārṣīnī, i.e.,* the *Book of Ḫārṣīnī*
The *FN* or the *Fifth Nature, i.e.,* the *Book of the Fifth Nature*
The *Compendia, i.e.,* the *Book of Compendia*
The *Iḫrāǧ, i.e.,* the *Book of Bringing What is in Potentiality to Actuality (Kitāb iḫrāǧ mā fī al-quwwa ilā al-fiʿl)*
The *Four Elements, i.e., The Work of Four Elements*
The *Chrysopoeia, i.e., The Sacred and Divine Art of Chrysopoeia* known as the *Anonymous of Zuretti*
CAAG, i.e., Berthelot, M. & C.-É. Ruelle, *Collection des anciens alchimistes grecques*, (Paris: Georges Steinheil 1888).

Manuscripts

[ب] MS Paris BnF Arabe 2606

[ب 5099] MS Paris BnF Arabe 5099

[ب 5312] MS Paris BnF Arabe 5312

[ج 1279] MS Istanbul Carullah 1279

[ج] MS Istanbul Carullah 1721

[ط] MS Ṭehran Mağlis 729

[ق] MS Cairo Ṭalʿat, kīmiyāʾ wa ṭabīʿa 187

Others

TLG, *i.e.,* THESAURUS LINGUAE GRAECAE ® A Digital Library of Greek Literature

I. Introduction

1.1 Ǧābirian corpus

A large number of Arabic writings attributed to Ǧābir b. Ḥāyyān, known as an alchemist, are collectively called the Ǧābirian corpus (hereafter, the Corpus). Both the Corpus and Ǧābir himself have not been grasped enough in the history of alchemy. As for the Corpus, that is because it has not been sufficiently scrutinised yet and most texts of it even remains unedited in the manuscripts. Concerning Ǧābir, the difficulty in describing his biography derives from a lack of sources that give information about him. It might be never revealed who Ǧābir was. Nevertheless, his significance in the history of sciences is affirmed through the presence of the Corpus which imported a rich scientific heritage from various cultural regions and had a great influence on the sciences in later times. The exploration of the Corpus is on the way for decades. Several studies have been devoted to the Corpus and such devotion to the Corpus is still needed for the research into the history of sciences because the Corpus keeps the scientific knowledge that was leading at that time.

The historical figure of Ǧābir

Despite his prestige in the history of alchemy, little is known about when Ǧābir lived. The following historical description of Ǧābir was proposed by Eric John Holmyard and has been generally accepted until today.[1] Ǧābir is supposed to have been born around 721 A.D. and lived until the reign of the Abbasid al-Maʾmūn (r. 813-833). There seems to have been a connection between Ǧābir and the political centre because some of the Ǧābirian works were dedicated to the Barmak family, who were flourished under the reign of the Abbasid Hārūn al-Rašīd (r. 786-809). Above all, the key element to depict Ǧābir's biography is that Ǧābir is generally regarded as a son of Ḥayyān al-ʿAṭṭār (lit. perfume-maker, apothecary), who was a pharmacist and worked for the Abbasid as a Shiite missionary. According to al-Dīnawarī's *Long Narattives* (*Kitāb al-aḫbār al-ṭiwāl*), Ḥayyān al-ʿAṭṭār was executed by the Umayyads in Ḫurāsān after his activity as a Shiite missionary. Ḥayyān al-ʿAṭṭār was a Shiite missionary from Kūfa,[2] and was executed by the Umayyads in Ṭūs in Ḫurāsān,[3] that could explain why Ǧābir is called Kūfī as well as Ṭūsī.[4] Since the execution seems to have been carried out soon after his arrival in Ḫurāsān where Ǧābir was supposedly born, it can limit the possible time of Ǧābir's birth.

[1] See Holmyard (1923), (1925) and (1927). He later summarised the survey of Ǧābir's life in Holmyard (1957), esp. pp. 28-37.
[2] Kūfa is located in Iraq at the present day.
[3] Ḫurāsān is an eastern part of Iran in modern times.
[4] The nisba Kūfī or Ṭūsī means that Ǧābir has his origin in the region called Kūfa or Ṭūs.

Moreover, the dedication of his father to the Abbasid can explain that Ǧābir's connection to the politicians. In addition, it is plausible that his father's pharmaceutical knowledge might have led Ǧābir to alchemy that is closely related to medical knowledge.[5] However, this father-son relationship is "the tentative suggestion" according to Holmyard, the very proposer of this hypothesis.[6] In fact, Thijs Delva raised question as to this connection between Ǧābir and Ḥayyān al-ʿAṭṭār.[7] If that Ḥayyān is not Ǧābir's father, it can release the tie between Ǧābir and his supposed birth year.

Latin *corpus geberianum*

Holmyard studied the Corpus as a historian, and so did Julius Ruska.[8] Before them, however, the Corpus and Ǧābir were taken into account mainly by chemists in relation with the Latin *corpus geberianum* – which consists of *Summa perfectionis*, *De investigatione magisterii*, *De investione perfectionis* and *Liber fornacum* – owing to their interest in the history of chemistry. The researchers once wrongly identified Latin Geber with Ǧābir, which means that all *corpus geberianum* was regarded as Latin translation of Arabic works attributed to Ǧābir. Karl Christoph Schmieder (1832) described the history of alchemy from ancient Egypt through Greek, Arabic and Latin to 1800 A.D. In the chapter named "Arabic Alchemy," he used Latin works attributed to Geber as sources of his information on Ǧābir. In the same way, Ferdinand Hoefer (1842-43), when he recounted the history of alchemy and chemistry after the sixteenth century, did not distinguish Latin Geber from Arabic Ǧābir. On the other hand, Hermann Kopp (1875) expressed doubts on the authenticity of the *Corpus geberianum*. Nevertheless, Kopp concluded that these texts were Latin translations of Arabic treatises written in the eighth century by Ǧābir. Later, Marcellin Berthelot (1893) finally reached the conclusion that the *corpus geberianum* is not a translation of the Corpus. Berthelot's work was supplemented by Edmund Oscar von Lippman (1919).[9] The aforementioned researchers,

[5] Suppose that alchemy here especially means chrysopoeia where metals are cured with medicine so that any metal can reach its perfect status, i.e., gold. It can be said that alchemy is a kind of medical operation. From this point of view, alchemy is inevitably connected to medicine. The Corpus has not only alchemical texts but also pharmaceutical ones. See also 'Minor books in the Corpus' at the end of this Chapter 1.1.

[6] Holmyard (1927), p. 32.

[7] Admitting that the hypotheses of Holmyard are compelling, Delva casts doubt on the notion that Ǧābir's father was Ḥayyān al-ʿAṭṭār, who was a Shiite missionary, by means of reexamining Dīnawarī's *Long Narratives (Kitāb al-aḫbār al-ṭiwāl)*, the only source which Holmyard used when he deduced this father-son relation, and by adding two sources which had been little studied until today, *Ansāb al-ashrāf* by Balāḏurī (d. 892) and *Aḫbār al-ʿAbbās wa-wuldihi*, an anonymous late ninth century text. See Delva (2017).

[8] Ruska denied that the sixth Imam Jaʿfar al-Ṣādiq dedicated himself to alchemy. Based on this denial, he suggested that, the works of the Corpus, where Jaʿfar al-Ṣādiq is named as Ǧābir's master are falsifications of a later period. See Ruska (1924).

[9] As for the recognition of Latin Geber and Arabic Ǧābir by scholars, see Ruska (1929), esp. pp. 1266-1267.

mainly chemists, gradually began to collaborate with orientalists.[10] Finally, in the twentieth century, the centre of the research into the Corpus seems to have moved from chemists to historians. Today, Latin Geber is recognised separately from Ǧābir. In fact, as for the *Summa perfectionis*, William R. Newman demonstrated that its author was probably Paul of Taranto.[11] On the other hand, it does not mean that the Corpus was never translated into Latin. The *Liber de septuaginta* ascribed to Geber is recognised as a Latin translation of the *Books of Seventy* which is one of the main collections of the Corpus.[12] The influence of the Corpus on the Latin world is not only through direct translation but there are some Latin works that indirectly imported the knowledge in the Corpus. For example, the *Picatrix*, a medieval magical text, is a Latin translation of the *Goal of the Sage (Ġāyat al-ḥakīm)* which depends on the *Book of Compendia (Kitāb al-nuḫab)*,[13] one of the later works of the Corpus.[14] Moreover, the Corpus had an influence on medieval Byzantine alchemy through its Latin translation. This can be seen through Byzantine alchemical anonyms: one is *The Work of Four Elements* which has parallel contents to the *Liber de triginta uerbis*, that is a Latin translation of Ǧābirian *Book of Thirty Words*. The other is the *Chrysopoeia* (known as the Anonymous of Zuretti) which preserves several witnesses of Ǧābirian influence via Latin alchemical texts such as Roger Bacon's.[15] Thus, the influence of the Corpus expended to posterity.

The composition date of the Corpus

Being the origin of the knowledge in the later world, the Corpus itself was, on the other hand, once a recipient of the ancient heritage and mainly reflects the influence of ancient Greek philosophy, medicine, mathematics and astronomy. The Corpus refers to many names of ancient Greek sages such as Pythagoras, Empedocles, Socrates, Plato, Aristotle, Euclid, Archimedes, Galen, Alexander of Aphrodisias, Themistius and others. Some of their works are even cited in the Corpus,[16] which can be a clue to find when the Corpus

[10] For example, Berthelot relied on linguistic knowledge of Rubens Duval and Octave Houdas. Von Lippmann depended on the translations of Arabic alchemical writings by orientalists like Ruska when he wrote the chapter named "Alchemy in the East".
[11] Newman (1991), p. 64ff.
[12] Berthelot considered *Liber de septuaginta* to be authentic, that is, a Latin translation of *the Book of Seventy (Kitāb al-sab'īn)* attributed to Ǧābir. See Berthelot, Duval & Houdas (1893), pp. 320-321.
[13] See Plessner (1962), esp. pp. ix, lxii-lxvii, where *Kitāb al-nuḫab* (the *Compendia*) is called *Kitāb al-baḫṭ*. Dr. Liana Saif is currently working on a critical edition of the *Compendia* (*Kitāb al-nuḫab*) which is expected to be published in the near future within the framework of the ERC project "The origin and early development of philosophy in tenth-century al-Andalus: the impact of ill-defined materials and channels of transmission" led by Godefroid de Callataÿ in Louvain-la-Neuve.
[14] As for *Book of Compendia* as a later work of the Corpus, see 'The composition order of the main collections in the Corpus' in this Chapter 1.1.
[15] See Chapter 1.4.
[16] See Chapter 1.3 where I focus on Euclid, Galen and Alexander of Aphrodisias found in the Corpus. The Arabic text and French translation of the *Commentary on Aristotle's On Coming-to-Be and Perishing 2.2-5* by Alexander of Aphrodisias that is preserved in the *Book of Morphology (Kitāb al-taṣrīf)* are in Gannagé

was really composed because not every ancient Greek work quoted in the Corpus was translated into Arabic during the supposed time when Ǧābir lived, i.e., c. 721-c. 830. Indeed, some of the ancient Greek philosophical and scientific writings supposedly began to be translated into Arabic already in the latter half of the eighth century, but most of those translations are considered to have been made in the middle of the ninth century and after, by two pillars: one is a group of translators led by al-Kindī (c. 801-873). The other is a line of the representative translators, Ḥunayn b. Isḥāq (809-873) and Isḥāq b. Ḥunayn (c. 830-c. 910).[17] Consequently, although Ǧābir is considered to have died in the first half of the ninth century, most parts of the Corpus were supposedly composed after the middle of the ninth century because many of them presuppose ancient Greek knowledge. That is why the Corpus is generally considered to have written not only by Ǧābir himself but also by those who felt reverence for Ǧābir and ascribed their writings to him.

Furthermore, the composition date of the Corpus probably comes down to the tenth century considering the fact that some Ǧābirian writings are characterised by Shiite thoughts that were actively formulated in the tenth century.[18] As for the *terminus ante quem*, the book catalogue is one of the points. Since almost all of the Ǧābirian works are registered in the *Fihrist* which is a comprehensive book catalogue compiled by Ibn al-Nadīm in 987-988, it follows that the Corpus was completed by that time. Integrating all relevant information, Kraus, a leading researcher on the Corpus, suggested that the extant Corpus emerged gradually between the second half of the ninth century and the beginning of the tenth century and was revised in the period down to the second half of the tenth century.[19]

However, there have been several opinions about the composition date and the authenticity of the Corpus. The late dating of the Corpus was rejected by Fuat Sezgin,[20] whom Plessner, in turn, strongly criticized, defending Kraus' views.[21] In contrast, Syed Nomanul Haq has supported Sezgin,[22] although the evidence on which Haq depended in dating the translation activity earlier than that is normally accepted has been questioned by Emma Gannagé.[23] Against Kraus, Sezgin believes in the authenticity of the Corpus, i.e., that it could have been written in the eighth century, based on the fact we cannot reject the possibility that Greek works were translated into Arabic before the reign of al-

(1998), and its English translation is in Gannagé (2005). Part of Aristotle's *Categories* was found in the *Book of Stones (Kitāb al-aḥǧār)*, and its text and translation are in Haq (1994). As for the *Categories* that is fragmentally found in the *Seven Metals*, see Chapter 2.5.1.

[17] The massive scale of the translation activity continued until around the end of the tenth century. The translation activity is discussed in Rosenthal (1965), Saliba (1982), Gutas (1998), and more recently Di Branco (2012).

[18] Kraus (1943), p. XXXV.

[19] Kraus (1943) Introduction, esp. p. LXV.

[20] Sezgin (1964), esp. p. 267.

[21] The whole text of Plessner (1965) is dedicated to severe criticism at Sezgin.

[22] Haq (1994), Chapter 1, esp. pp. 25-29.

[23] Gannagé (1998), pp. 427-449. See also Delva (2017), p. 38, n. 14.

Manṣūr (r. 754-775). Haq agrees with Sezgin and emphasises that the translation activity could have been flourishing in the seventh and eighth centuries.

The focus of the debates among researchers was about the *terminus post quem* of the Corpus. One of the key sources is a Hermetic magic work, the *Book of Secret of the Creation (Kitāb sirr al-ḫalīqa)* attributed to Apollonius of Tyana, who is known as Balīnās in Arabic. The words of Balīnās are frequently quoted in the Corpus in connection with the science of balance,[24] and the *Book of Secret of the Creation* had a major influence on the Corpus as Kraus affirmed.[25] Kraus concludes that ps.-Apollonius of Tyana's *Book of Secret of the Creation* does not have a Greek original text of Apollonius of Tyana but is an Arabic original book written under the reign of the Abbasid Maʾmūn (r. 813-833).[26] Contrary to Kraus, Sezgin claims that the *Book of Secret of the Creation* is an Arabic translation of a Greek work written in the sixth century. Ursula Weisser agrees with Sezgin, while Fritz Zimmermann supports the view that the *Book of Secret of the Creation* originated in Arabic.[27] To determine when the *Book of Secret of the Creation* was composed, the composition date of another Arabic work *Kitāb al-istamāṭīs* should be taken into account because the *Book of Secret of the Creation* stems from *Kitāb al-istamāṭīs*. Weisser insists that the *Book of Secret of the Creation* imported *Kitāb al-istamāṭīs* before its being translated into Arabic, whereas others generally consider that Arabic *Kitāb al-istamāṭīs* influenced on the *Book of Secret of the Creation* that originally written in Arabic.[28] It is uncertain when the *Book of Secret of the Creation* itself was composed. Consequently, this work of Balīnās is not a decisive mark to limit when the Corpus could have existed after. Therefore, the late dating of the Corpus compared with the supposed living time of Ǧābir has been widely accepted.

Concerning the number of the books in the Corpus, it can be around three thousand. Based on the *Fihrist* by Ibn al-Nadīm, Kraus published a comprehensive catalogue of the Corpus in 1943 with additional information obtained by exploring all available manuscripts. Kraus numbered each book of the Corpus and the total number reached 2982. However, the number of the books is probably reduced because not a few books that were counted as individuals might belong to other books. Indeed, some books have only a few folios or sometimes less than one folio. It is likely that such books can be chapters of a book as Kraus realised.[29] Regarding this point, Haq assumed that some only 500 titles of the Corpus can be individually named, on the ground that Kraus' counting of Ǧābir's treatises is full of numerous large vacancies which were introduced out of consideration either of the internal indications of the Corpus, or of the Arabic bibliographers' rough

[24] The science of balance is one of the characteristic knowledge for the whole Ǧābirian sciences. The details are reported in Kraus (1942), pp. 187-303.
[25] Kraus (1942), p. 282.
[26] Kraus (1942), p. 275.
[27] Weisser (1980), pp. 1-70, esp. p. 69; Zimmermann (1981) which is a book review on Weisser (1980).
[28] For further information of *Kitāb al-istamāṭīs*, see Burnett (1981).
[29] Kraus (1943), pp. XXII-XXIV.

estimates of the wealth of literature.[30] David E. Pingree partially agrees with Haq in that the Corpus may certainly have consisted of far fewer than 3000 items, but Pingree insists that the Corpus must have contained at least 2000 treatises if it is reduced.[31] Moreover, it is possible that different books partially share the same text with each other. I will show, in Part II Texts and Contents, that the *Copper* has the same text as the *Fifth Nature* has,[32] and the *Ḫārṣīnī* has a citation from the *Book of Bringing What is in Potentiality to Actuality (Kitāb iḫrāǧ mā fī al-quwwa ilā al-fiʿl)* (hereafter, the *Iḫrāǧ*).[33] Accordingly, the Corpus must be smaller than the image that the opus number might give.

The composition order of the main collections in the Corpus

The Corpus is constituted of several collections and other books that do not belong to any collections. Based on the information about which collection is referred to in other ones, the composition order of the collections can be reconstructed to some degree: from the earliest, the *112 Books*,[34] the *Books of Seventy*,[35] the *Books of Balances (Kutub al-mawāzīn)*, the *500 Books* come,[36] and then the *Books of the Seven Metals (Kutub al-aǧsād al-sabʿa)*.[37] Ǧābir says that the *Seven Metals* are the cream of the *Books of Balances* or even can be that of all books of his.[38] The *Ten Books (ʿašr maqālāt) of Rectifications (muṣaḥḥaḥāt)*, Kraus says, seem to be dated at the same time of the *Books of Seventy* or at latest before the *Books of Balances*.[39]

In addition, some books, although they are not part of collections, can be key writings to depict an internal structure of the Corpus. The *Book of Mercy (Kitāb al-raḥma)* is mentioned in the *112 Books*, which implies that it was written before any other collections of the Corpus.[40] In fact, it can be regarded as the only authentic book of Ǧābir.[41] The *Great Book of Properties (Kitāb al-ḫawāṣṣ al-kabīr)* that has 71 chapters are dated after the *Books of Balances* and in the same time as the *Book of Compendia*

[30] Haq (1994), p.11.
[31] Haq (1994), p. ix, i.e., Preface by Pingree to Haq (1994).
[32] See Chapter 2.5.2.
[33] See Chapter 2.3.
[34] Although Ibn al-Nadīm says that these books are one hundred twelve (وهذه الكتب مائة واثنا عشر كتابا), only 104 titles are registered in the *Fihrist*. See Kraus (1943), p. 10.
[35] The *Books of Seventy* are called in the Corpus by some variations: *sabʿūn kitab*, *al-kutub al-sabʿūn*, *kutub-na al-sabʿūn*, and even *al-maqālāt al-sabʿūn*. See Kraus (1943), p. 43.
[36] According to Ǧābir's words recorded in the *Fihrist* by Ibn al-Nadīm, the *500 Books* were composed to refute philosophers (ثم ألفت بعد ذلك خمسمائة كتاب نقضا على الفلاسفة). See Kraus (1943), p. 100.
[37] Kraus (1943), p. XXIII. On the other hand, Kraus also says that nothing is established concerning the relation between the *500 Books* and the *Seven Metals*. See Kraus (1943), p. 112.
[38] The Gold, [ب 8a]:

فاعرف فضل هذه الكتب على سائر كتب الموازين خاصة فإنها زبدة كتبي في الموازين بل زبدة كتبي كلها من الموازينية وغيرها

[39] Kraus (1943), p. XXXIV.
[40] Kraus (1943), p. 8.
[41] Kraus (1943), p. 9.

(Kitāb al-nuḫab) that refers to several treatises of the *500 Books*.[42] As for the *Compendia*,[43] considering that it is one of the source books of the *Goal of the Sage* that was completed in 959 A.D., it must have written before that. The *Book of Fifty (Kitāb al-ḫamṣīn)* is close to the *Compendia* in its style and contents,[44] and seems to be dated in the same time as the *Seven Metals*.[45]

Kraus explored not only the internal reference but also external appearance of Ǧābirian books in other works than the Corpus, which brought the information about when each collection of the Corpus was written approximately.[46] With those supposed composition dates, the chronological order of Ǧābirian collections and some major books can be presented as follows:

Chronological internal order of the Corpus

Book of Mercy ——— Second half of the ninth century
112 Books, *Books of Seventy* ——— Late ninth century
Ten Books of Rectifications
Books of Balances ——— Early tenth century
Great Book of Properties
500 Books ——— Around 941
Books of Seven Metals, *Book of Compendia*, *Book of Fifty* — Before 959 — Tenth century (in no particular order)

This internal order of Ǧābirian works has been widely accepted among researchers except that the composition date itself was questioned in the course of challenges to the late dating of the Corpus as mentioned in the previous section ‘The composition date of the Corpus’.

The metal as a chronological clue

[42] The *Great Book of Properties* is considered to have at first had only 50 chapters which are already mentioned in the *Books of Balances*. The book that came down to us with 71 chapters is an amplified version. See Kraus (1943), p. 144.
[43] The *Compendia* has been called the *Book of Research* because the manuscript says that its title is *Kitāb al-baḥṯ*. However, al-Bīrūnī and Ḫāǧǧ Ḫalīfa called the same book *Kitāb al-nuḫab*. See Kraus (1943), pp. 142-143. Moreover, the explanation of the title is given in the very book. Judging from it, the *Compendia* is likely to be more appropriate although the title is written as *Kitāb al-baḥṯ* not *al-nuḫab*. Cf. the *Compendia*, [ج 3a]: وإنه كتاب البحث لأنا قد انتخبنا ما فيه لنصل إلى علمه الدني والعالي
[44] Kraus (1943), p. 146.
[45] Kraus (1943), p. XXXIV.
[46] Kraus (1943), esp. pp. LVIII-LXV.

Depending on the chronological order, the Ǧābirian thoughts can differ from book to book. An index of such transition is metals which are, as the object of alchemy, often mentioned in the Corpus. They are called 'bodies' (*aǧsād*) and considered to be six at first, i.e., in the older books of the Corpus, and later seven. The seventh body is not fixed through the Corpus, including whether the seventh exists or not. When the seventh is counted, it is mercury, *ḫārṣīnī* (lit. Chinese arrowhead) or even others such as called 'glass (*zuǧāǧ*)'. Therefore, tracing the seventh metal can indicate a gradual change in Ǧābirian knowledge to some degree and might be able to reinforce the probability of the supposed internal order of the Corpus shown above. The fact that the number of metals and the assignation of each metal are not always the same in the Corpus was already depicted by Kraus.[47] The following paragraph is a summary of the change, focusing on the seventh metal.

In the *Book of Element of Foundation (Kitāb al-usṭuqus al-uss)*, i.e., the first book of the *112 Books*, bodies are six (gold, iron, copper, lead, silver and tin), and mercury is recognised as one of the six spirits (sulphur, arsenic, oil, ammonia, mercury and camphor). The spirit is another important category in alchemy besides the body. In the *Books of Seventy*, some books count mercury as a metal while the mercury is sometimes replaced with 'glass' in other books where mercury is regarded as one of the four spirits. In the *Books of Balances*, the spirits are principally seven (yellow and red arsenic, camphor, ammonia, sulphur, marcasite and magnesia) excluding mercury that is counted as a metal. However, at least two books in the same collection are exceptions: the *Book of Hidden Secret (Kitāb al-sirr al-maknūn)* does not have mercury in the list of metals where, instead of mercury, *ḫār* (lit. arrowhead)[48] and some other substances are mentioned.[49] Moreover, in the *Iḫrāǧ*, *ḫārṣīnī* is associated with the planet Mercury instead of mercury. This choice of *ḫārṣīnī* as a metal also consists in the *Great Book of Properties*, the *Books of Fifty*, the *Seven Metals* of which one is titled the *Book of Ḫārṣīnī*. In summary, given that the supposed composition order of Ǧābirian books is true, it follows that the seventh metal was not recognised at first, but later mercury began to be added to the other six metals, and then, owing to its being recognised as a spirit, mercury was replaced with *ḫārṣīnī* that is probably zinc-related substance but has not been identified precisely yet.[50]

Minor books in the Corpus

The bodies (i.e., metals in modern recognition) and the spirits are main objects of alchemy by which here I mean chrysopoeia.[51] Therefore, the fact that these materials are dealt with through the Corpus, as shown the previous paragraph, can indicate that the contents of

[47] Kraus (1942), pp. 18-23.
[48] It is not even *ḫārṣīnī* but simply written as *ḫār* in Kraus (1942), p. 21, n. 7.
[49] The others that are listed up with *ḫār* are *dawṣ* (iron related substance), *šabah* (yellow copper), *ṭāliqūn* (not known but Kraus suggests it might be relevant to μεταλλικόν), *isfīdrūyeh* (Persian name of white copper) and *ḥadīd ṣīnī* (lit. Chinese iron). See Kraus (1942), p. 21, n. 7.
[50] As for *ḫārṣīnī*, see Chapter 2.4.
[51] As for the realm of alchemy in the Corpus, see Chapter 1.2, [2] 'The science of the art, i.e., alchemy'.

the Corpus are generally alchemical. In fact, almost all books of the Corpus that have been mentioned so far concern alchemy. However, alchemy is not a sufficient word to represent the character of the Corpus. For, the *Great Book of Properties*, the *Book of Compendia* and the *Book of Fifty* can be classified into the field of theurgy, magic, physics and others.[52] In addition to these three books, there are some other books that are dedicated to the same field, but, among them, extant are only the *Book of King (Kitāb al-malik)* and the *Book of Black Magic (Kitāb al-ǧafr al-awsad)*.[53] The others are not known but by their titles. Besides this field, there are books in philosophy (including logic), mathematics, astronomy and religion. Unfortunately, their texts have not been discovered, and nothing is known about them except their titles that are cited in other books.[54] Besides them, another filed that is adjacent to alchemy is medicine, especially pharmacology. The *Book of Poisons and Removing Their Harm (Kitāb al-sumūm wa dafʿ maḍārrihā)* is the only extant medical work in the Corpus although there are some other titles are known as medical writings such as the *Book of Simple Medicaments (Kitāb al-adwiya al-mufrada)*.[55]

Furthermore, there remain other collections of alchemical books that are not included in the list that is indicated above to show the chronological order.[56] One is the *Ten Books* or *Ten Chapters (ʿašara kutub* or *ʿašr maqālāt)* as a supplemental collection for the *Books of Seventy*. Extant is only one of the ten, i.e., the *Book of Clarification (Kitāb al-īḍāḥ*). Another is the *Twenty Books* among which the *Book of the Innermost (Kitāb al-ḍamīr)* has come down to us although the extant text is not its original but its long excerpt. The other is the *Seventeen Books*, the titles of which are mentioned in some other Ǧābirian writings such as the *Great Book of Properties*, but none of them has found in manuscripts as original texts. In addition to these minor collections, there are still 192 books that are not classified into any alchemical collections referred to so far, but many of them, Kraus says, are probably part of the *500 Books*.[57]

In this way, although the Corpus is generally alchemical, yet it involves some other realms of sciences. In the next chapter, I introduce what kind of sciences are dealt with in the Corpus according to Ǧābirian classification of seven sciences.

[52] Kraus (1943), pp. 141-154.
[53] Kraus (1943), p. 154.
[54] Kraus (1943), pp. 161-171.
[55] Kraus (1943), pp. 155-160.
[56] The information of the minor collections is in Kraus (1943), pp. 62-74.
[57] The 192 books are numbered 957 to 1149 in Kraus (1943), pp. 117-140.

1.2. Ǧābirian sciences

The Corpus is usually known for its alchemical aspect, i.e., a source of the chrysopoetic art. Indeed, recipes with alchemical knowledge occupies a major part of the Corpus, but alchemy is not a sufficient word to describe the whole range of the knowledge that the Corpus conveys. The art that transmutes metals can be called alchemy in particular, but in its broader meaning, alchemy is eclectic since it can include medicine, philosophy, magic and even theology. The Corpus, known as an alchemical corpus, contains several sciences – an integrated form of theoretical knowledge and its application – that look various but adjacent, which are seven sciences (*al-ulūm al-subāʿiyya*):[1] the sciences of [1] medicine (*al-ṭibb*), [2] the art (*al-sanʿa*), i.e., alchemy, [3] properties (*al-ḫawāṣṣ*), [4] talismans (*al-ṭilasmāt*), [5] operation of the upper world (*istiḫdām al-ʿulwiyyāt*), [6] balance (*al-mīzān*), [7] generation (*al-takwīn*), all of which are systematically described in the *Iḫrāǧ* which is one of the *Books of Balances*. Overviewing these seven sciences is a useful introduction to the Corpus for understanding its complex contents that cannot be explained only with one word, alchemy, i.e., the art for transmutation of metals.[2] This chapter presents main notions in each science according to the *Iḫrāǧ* because such key terms help to comprehend the realm of each science in the Corpus.[3]

[1] The science of medicine (*ʿilm al-ṭibb*)

Medicine is regarded as the most important science in many places of the Corpus as Kraus pointed out.[4] As a matter of fact, medicine is described longer than the other six sciences in the *Iḫrāǧ*. Medicine is first divided into two parts: theory (*naẓar*) and practice (*ʿamal*). The theory is further subdivided according to whether it relates intellect (*ʿaql*) or body (*ǧism*). The theory concerning intellect is the first, i.e., the introduction to every art (*ṣināʿa*) of principle sciences (*al-ʿulūm al-awāʾil*), while the theory concerning body is acquired science (*al-ʿilm al-mustafād*). The practice is also subdivided into two: one is about the soul (*nafs*) and the other is about the body (*ǧism*). The practice of the soul is classified into either natural and necessary (*ṭabīʿī ḍarūrī*) or situational and conventional

[1] The *Iḫrāǧ*, ed. Kraus (1935), p. 47: إن السُباعية هي العلوم التي قدمنا الوعد بها وإنا نشرحها في كتبنا هذه أعني كتب الموازين

[2] It is not easy to define each of the seven sciences because any clear definitions of them are not given in the Corpus that has come down to us. Although it might be feasible to give their definitions with the help of some other writings relevant to the Corpus, yet it seems appropriate to refrain from characterising these sciences with other frameworks outside the Corpus, for purpose of showing what is written in the Corpus as it is. I sometimes refer to the knowledge that is acquired outside the Corpus, but this is just to complement significant lack of explanations in the Corpus, not to define the sciences themselves.

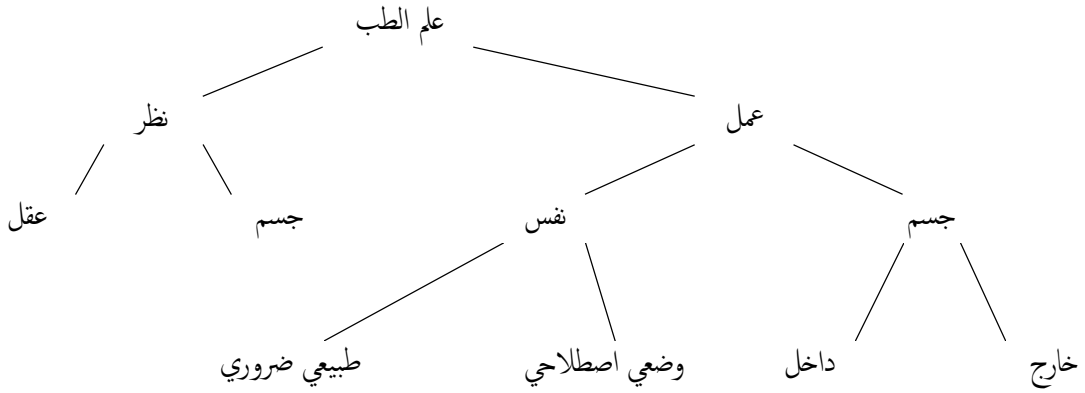
[3] The Arabic text of the *Iḫrāǧ* is in ed. Kraus (1935), pp. 1-95, of which the text after p. 47 describes the seven sciences. The sources of the descriptions of the seven sciences below in the body text of this chapter mainly come from the Arabic texts that are indicated in the footnotes.

[4] Kraus (1931), p. 19.

(*waḍaʿī iṣṭilāḥī*). On the other hand, that of the body is either internal (*dāḫil*) or external (*ḫāriğ*). All these are required in the science of medicine.[5]

In addition, the first principles (*al-awāʾil*) of this art should be known, which are the four elements (*usṭuqsāt*): hotness, coldness, moistness and dryness. Another four elements (*ʿanāṣir*) after them are fire, air, water and earth, which are composites of original two elements. Fire is hot and dry, air is hot and moist, water is cold and moist, and earth is cold and dry. These are from upper (*aʿlā*) to lower (*asfal*) in this order. That is, fire is the highest and earth is the lowest. Moreover, there are four seasons: summer (*qayẓ*),[6] autumn (*ḫarīf*), winter (*šitāʾ*) and spring (*rabīʿ*),[7] which are associated with the four elements.

Structure and principles of the science of medicine



الأعضاء الرئيسة	الأخلاط / الرطوبات	الأزمنة	العناصر	الأسطقسات	
القلب	الصفراء	الصيف / القيظ	النار : أعلى	اليبوسة	الحرارة
الكبد	الدم	الربيع	الهواء ↕	الرطوبة	
الدماغ	البلغم	الشتاء	الماء ↕		البرودة
الأنثيان	السوداء	الخريف	الأرض : أسفل	اليبوسة	

[5] Ed. Kraus (1935), p. 49:
الطب ينقسم قسمين : إلى نظروإلى حمل. والنظرينقسم قسمين أول فالعقل وثان في الجسم . فأما الأول فهو الأول لكل صناعة من الملوم الأوائل أعني بذلك المداخل. والثاني العلم المستفاد مما سنذكره. والعلم ينقسم قسمين أيضا : في النفس وفي الجسم وذلك في النفس ينقسم قسمين : إما طبيعي ضروري، وإما وضعي اصطلاحي وأما الذي فى الجسم فينقسم قسمين : إمّا من داخل، وإما من خارج . هذا جميع ما يحتاج إليه في علم الطاب وعمله. ونحن الآن قائلون في شرح هذه الأصول بحسب مانراه كافيا، إن شاء الله عز وجل

[6] Summer (*qayẓ*) is also expressed with *ṣayf* as in ed. Kraus (1935), p. 50: صيف وهو قيظ.

[7] Ed. Kraus (1935), p. 49:
أما الأوائل في هذه الصناعة فأن تعلم أن الأستقصات أربعة وهي : الحرارة والبرودة واليبوسة والرطوة. وأن تعلم بعد ذلك أن العناصر أربعة وهي : النار والهواء والماء والأرض. وأنها مركّات ثوانٍ، وأن النار حارة يابسة، والهواء حار رطب، والماء برد رطب، والأرض باردة يانسة. وأن تعلم أن النار أعلى الأشياء، والهواء دونها، والماء دون الهواء، والأرض أسفل كل شيء. وأن تعلم أن الأ زمنة أربعة وهي : قيظ وخريف وشتاء وربيع.

As for the second principles (*al-ṯawānī*) of the sciences, it should be known that humours (*aḫlāṭ*) in the human body are four, called moist things (*ruṭūbāt*), which are yellow bile (*ṣafrāʾ*), black bile (*sawdāʾ*), phlegm (*balġam*) and blood (*dam*). Yellow bile is like fire and possesses what belong to summer. Blood is like air and spring. Black bile is like earth and autumn. Phlegm is like water and winter.[8] Lastly, what should be known is main organs of the body: brain (*dimāġ*), heart (*qalb*), liver (*kabd*), testicle (*unṯayān*). Brain is like phlegm, water and winter. Heart is like yellow bile, fire and summer. Liver is like blood, air and spring. Testicle is like black bile, earth and autumn.

By showing these principles, Ǧābir clarified the structure (*bunya*) of the world, the nature (*ṭabīʿa*) and the human, and he implies the idea of microcosmos and macrocosmos by saying that the world is necessarily the human and the human is a small part in relation to the world.[9]

[2] The science of the art (*ʿilm al-ṣanʿa*), i.e., alchemy

The art means alchemy although Ǧābir does not call it *al-kīmiyāʾ*.[10] Firstly, he introduces three types of the object in this art. Firstly, the spirits (*arwāḥ*) are six: mercury (*zaybaq*), arsenic (*zirnīḫ*), sulphur (*kibrīt*), ammonia (*nūšādir*), camphor (*kāfūr*), and oil (*duhn*).[11] Secondly, the bodies (*aǧsād*) are seven: lead (*raṣāṣ usrub*) associated with natural quality of the Saturn (*zuḥal*), tin (*raṣāṣ qalʿā*) with the Jupiter (*muštarī*), iron (*ḥadīd*) with the Mars (*mirrīḫ*), gold (*ḏahab*) with the Sun (*šams*), copper (*nuḥās*) with the Venus (*zuhara*), silver (*fiḍḍa*) with the Moon (*qamar*), and *ḫārṣīnī* with the Mercury (*ʿuṭārid*).[12] Thirdly,

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[8] Ed. Kraus (1935), p. 50:
ثم الثواني من العلوم، وهو أن تعلم أن الأخلاط في بدن الإنسان أربعة تسمى الرطوبات، وهي الصفراء والسوداء والبلغم والدم. فالصفراء مثل النار، ولها من الزمان القيظ. والدم مثل الهواء، وله من الزمان الربيع. والسوداء مثل الأرض، ولها من الزمان الخريف. ثم البلغم و< هو > مثل الماء، وله من الزمان الشتاء.

[9] Ed. Kraus (1935), pp. 50-51:
وأن الأعضاء الرئيسة التي ينبغي أن تعرف خبر سلامتها وعللها أربعة وهي كما مثّلنا أولا : الدماغ والقلب والكبد والأنثيان. فالدماغ مثل البلغم من الرطوبات، ومثل الماء من العناصر، ومثل الشتاء من الأزمنة. والقلب مثل الصفراء ومثل النار والقيظ. والكبد مثل الدم والهواء والربيع. والأنثيان مثل السوداء والأ رض والخريف. فقد بان بذلك بنية العالم والطبيعة والإنسان، فكان العالم ضرورة إنسانا والإنسان جزءا صغيرا بالإضافة إلى العالم.

[10] Also in Greek tradition, alchemy is often referred to simply as τέχνη (art) as shown in the book title, *The Sacred and Divine Art of Chrysopoeia*. See Section 1.4.2 in Chapter 1.4.

[11] Ed. Kraus (1935), p. 61:
وهي الوبيق والورنيخ والكبريت والنوشادر والكافور والدهن من كل شيء، فهذه تطير عن النار. ولها فروق في ذواتها، وذلك أن هذه الأرواح الستة انقسمت ثلاثة أقسام : إما طائر غير محترق ممازج، وإما طائرغي محترق ولا ممازج، وإمّا طائر محترق ممازج. فأما الطائر الغير محترق والممازج فالزيبق وحده، وأما الطائر الغيرمحترق ولا ممازج فالنوشاد روالكافور، وأما الطائر الممازج المحترق فالكبريت والزرنيخ والدهن، وهذه وحدها < نفوس > لأن جميعها دهن.

[12] Ed. Kraus (1935), pp. 62-63:
وأما الأجساد فهي (...) وهذه السبعة هي : الرصاص الأسرب وهو بطبع زحل، والرصاص القلعى وهو بطبع المشترى، والحديد وهو بطبع المريخ، والذهب وهو بطبع الشمس، والنحاس وهو بطبع الزهرة، والفضة وهي بطبع القمر، والخار الصيني وهو بطبع عطارد. وأمّا أكثر الصنعويّين فإنهم يُدخلون الزيبق مكان الخار الصيي، وذلك أن الزيبق داخل في عداد الأرواح لا في عداد الأجساد ولأجسام.

the mineral bodies (*aǧsām*), i.e., the stones (*aḥǧār*), are exemplified with marcasite (*marqašīṯā*), magnesia (*maġnīsiyā*), malachite (*dahnaǧ*), lazulite (*lāzaward*), and *dawṣ* (ferric stone).[13] The mineral bodies, being composites of spirits and bodies, are closer to what comes out by means of the art than spirits and bodies that are single substances.[14] This might mean that the operation of the art is mainly applied to spirits and bodies, not to the mineral bodies. Verily, when Ǧābir explains how to conduct the art (*tadbīr al-ṣanʿa*), the way is divided into four according to its objects, i.e., spirits, bodies, mixtures and casting, where the mineral bodies (*aǧsām*) are not included though the spirits and the bodies are. How to conduct the art is equated with how-it-is (*kayfiyya*).[15] In the description of the mixture (*mizāǧ*), Ǧābir mentions another key word, 'counterbalance' (*mawāzina*), which is measure (*miqdār*) that connects the upper to the lower and the lower to the upper.[16] The counterbalance has the same root as the balance (*mīzān*) does, and both seem to be similar indications that are known with the scale of measure or quantity. However, the counterbalance is more about the relation between the upper and the lower things and does not seem to indicate an inner structure of things as the balance shows. Notions representing the relation between any two things are naturally needed in this science because the art is mediation. Those who are dedicated to this art believe, Ǧābir says, that the world is large human, the art is medium human, and the human is small human.[17]

[3] The science of properties (*ʿilm al-ḫawāṣṣ*)[18]

(The similar text to the underlined one is found in the *Book of Iron*. See T1 in Chapter 2.3).

[13] Ed. Kraus (1935), p. 64:
وأما الأجسام فهى التي اختلطت في معادنها من الأرواح والأجساد على غير مزاج. فهي تطير وتثبت لأن الطيار منها أرواحها والحالّ منها أجسادها. وإنما افترقت في التدبير لأنها غير ممتزجة. [فاعلم ذلك] وهي المرقشيثا والمغنيسيا والدهنج واللازورد والدوص وأمثال ذلك <فاعلم ذلك> واعمل به. فهذا ما في الأحجار من العلم. (*Dawṣ* is not identified but is probably iron-related substance.)

[14] Ed. Kraus (1935), p. 65:
وأما الأجسام التي ليست أرواحا ولا أجسادا لكنها مركبة من الجميع – أعني الأرواح والأجساد – فهي في الحقيقة أقرب من كون الصنعة من الأرواح المفردة ةالأجساد المفردة.

[15] Ed. Kraus (1935), p. 66:
الكيفية هو تدبير الصنعة الذي لولاه لم تكن وهي التدبير. وذلك ينقسم أقساما : إما للأرواح، وإما للأجساد، وإما للامتزاج، وإما الطرح. وهذه الأربعة هي الصنعة في الحقيقة.

As for the exclusion of the mineral bodies as the objects of how to conduct the art (*tadbīr al-ṣanʿa*), see also the text cited in n. 13 above, where it is said that the mineral bodies are separated in terms of conduction (*tadbīr*) (وإنما افترقت في التدبير).

[16] Ed. Kraus (1935), p. 69: وأما الموازنة فهي مقدار تعلّق الأعلى بالأسفل والأسفل بالأعلى، فاعلم ذلك.

[17] Ed. Kraus (1935), p. 71:
وإذ قد أتينا على ذلك فلنقل : اعتقاد الصنعويين في الصنعة أنهم يعتقدون أن العالم إنسان كبير، والصنعة إنسان أوسط، والإنسان إنسانصغير.

[18] I basically translate *ḫawāṣṣ* in the Corpus with 'occult properties' as in Chapter 2.3, but sometimes simply express the same word by 'properties' without 'occult' when the term seems to have a connection to Aristotle's terminology as presented in this section [3].

The term, properties (*ḫawāṣṣ*), has three meanings: one is 'condition' (*ḥāl*) that quickly disappears, another is 'state' (*hayʾa*), and the last one is 'essential property' (*ḏātī*) of what-it-is. Following this statement, Ǧābir says that this was already clarified in the first part of the *Logic*,[19] by which he probably means the chapter 8 of Aristotle's *Categories* where 'condition' (διάθεσις), 'state' (ἕξις) and 'natural capacity', i.e., "something which people are called in virtue of natural capacity or incapacity" (ὅσα κατὰ δύναμιν φυσικὴν ἢ ἀδυναμίαν λέγεται)[20] are introduced, and these three correspond to *ḥāl*, *hayʾa* and *ḏātī fī-mā huwa fī-hi* respectively. Moreover, Ǧābir says that a person who consider *ḫawāṣṣ* (properties) must connect them to ten categories (*al-maqūlāt al-ʿašar*), i.e., either substance (*ǧawhar*) or attribute (*ʿarḍ*). The attributes should be nine: quantity (*kammiyya*), quality (*kayfiyya*), time (*zamān*), place (*makān*), position (*nusba*), possession (*qunya*), relation (*muḍāfa*), active (*fāʿil*) and passive (*munfaʿil*).[21] Thus, the concept of properties seems to have originated in ancient Greek philosophy although its meaning cannot be confined to the Peripatetic framework. On the other hand, al-Tabarī (839-923), a Muslim savant, contrasts 'occult properties' with 'faculties' as follows:

> Each natural object, in fact, has a faculty (*quwwa*) that can be perceived with the senses, but it has also an occult property (*ḫāṣṣa*) that is unknown, whose depth cannot be grasped but by trying it out several times (*taǧārib*, lit. 'experiences'), because the occult properties are a mystery hidden in the natural objects.[22]

This occult properties seem different from the properties described in the *Iḫrāǧ*, but they are also related to Greek knowledge because *quwwa* (faculty) is often used as an equivalent to δύναμις in the Galenic translations.[23] The properties, in any case, are often mentioned with talismans as shown in the description of talismans below.[24]

[4] The science of talismans (*ʿilm al-ṭilasmāt*)

[19] Ed. Kraus (1935), p. 73:
الخواص اسم ينقسم بثلاثة معانٍ : إما سريع الزوال ويسمى حالا، وإما بطئ الزوال ويسمى هيئة، وإما ذاتي فيما هو فيه. وقد أوضحنا ذلك في الأول من المنطق.

[20] Aristotle's *Categories*, 9a15-16.

[21] Ed. Kraus (1935), p. 76 (cf. Aristotle's *Categories*, 4):
وينبغي للناظر في علم الخواص [إلى] أن يجمع منها ما يحتاج < إلى> أن يمتحنه، ثم يلحق كل واحد منها بالمقولات العشر، إما الجوهر وإما بالعرض، فيلحق كل واحد منها بجنسه. فإن التي تعمل بالجوهر ليست كمثل التي تعمل بلكمية ولا بما بعدها، وكذلك إلى تعمل بالكمية ليست العاملة بالكيفية. (...) كذلك الى فى الزمان والمكان : كل واحد منها يعمل بما نصبته. (...) وكذلك القول في النصبة والقينة والمضاف والفاعل والمنفعل.

[22] Tr. Raggetti (2019), p. XIV.

[23] See Raggetti (2019), p. XIV. See also T5 'Galen, *On the Composition of Medicaments According to Kind*, III, 2' in Chapter 1.3, and Section 1.5.2 'Hidden nature' in Chapter 1.5.

[24] As for the relation between properties and talismans, see also Chapter 2.3.

Despite its greatness, those who are familiar with the science of talismans had disappeared before the time Ğābir lived.[25] Talismans are either to attract and increase something, like attracting snakes, frogs, fish, people and beasts, or to clear and make distance, like driving these creatures away from cities and certain places. Talismans follow both of the followings: one is natural qualities of medicaments and drugs, the other is natural qualities of motion of stars and of their positions, while properties follow one of them. Ğābir says that this is a difference between the talisman and the property.[26] He seems to have meant that properties are simply led by one direction either terrestrial or celestial, whereas talismans are connected to both the lower and the upper world at the same time. For, the talisman is a thing through which people try to make any terrestrial and celestial influence on human by similarity and oppositeness.[27] These descriptions of talismans are in the *Iḫrāğ*, apart from which, the *Compendia* that is another Ğābirian work gives a definition of talisman:[28]

The *Compendia* [ج, 17a; ب 5321, 85b]

By that, it is true that a definition of the talisman is an artificial imitation of natural effects with a celestial observation according to a certain purpose.	فقد صح بذلك أن حد الطلسم إنما هو مشابهة مهنية أفعالا طبيعية برصد فلكي نحو غرض من الأغراض

A little before this definition, Ğābir mentions the difference between artificial things and talismans:

The *Compendia* [ج, 16b; ب 5321, 85a]

That is, every talisman is an artificial imitation similar to a natural thing, but not every artificial imitation of a natural thing is a talisman. The meaning of the talisman is distinguished from [that of] other artificial imitations by that the talisman concerns the celestial observation.	وذلك أن كل طلسم فهو مشابهة شيء مهني لشيء طبيعي وليس كل مشابهة مهنية بشيء طبيعي هو طلسم. فقد انفصل معنى الطلسم عن سائر المشابهات المهنية باختصاصه بالرصد الفلكي.

[25] Ed. Kraus (1935), p. 48: والعلم الأكبر العظيم الباطل في زماننا هذا أهله والمتكلمون فيه، أعني علم الطلسمات

[26] Ed. Kraus (1935), pp. 78-79 (This text is cited in the *Ḫārṣīnī*. Their comparison is in Chapter 2.3):
وإذ قد بان الوجه في المقابلة والمماثلة فإنا راجعون إلى ذكر الطلسمات وقد قلنا فيها إنها إما استجالاب واستكثار كاستجلاب الحيات والضفادع والسمك والناس والوحوش، وإما نفي وإبعاد مثل طرد هذه عن المدن والأماكن. وهذه الطلسمات تتبع شيئين وهما : طباع الأدوية والعقاقير، وطباع حركات النجوم وطباع مواضعها لا غير. وليس كذلك علم الخواص، لأن الخواص تتبع أحدهما : إما طباع النجوم بالحركة و[إما] طباعها أيضا بالوضع، وإما طباع الأدوية والعقاقير والحجارة وغير ذلك. فهذا هو الفرق بين الطلسم والخاصية.

[27] Kraus summarised what the talismans are, as follows: Sie versucht Einwirkungen irdischer und himmlischer Erscheinungen auf den Menschen durch Analogiezauber und Gegenwirkung (*mumāṯala* und *muqābala*) zu bannen. See Kraus (1931), p. 19. Cf. ed. Kraus (1935), p. 80:
فالطلسم – عافاك الله – مُسَلِّط في فعله، قاهر غالب بموازاة المماثلة والمقابلة.

[28] In the *Compendia*, Ğābir tries to justify the science of talismans from the point of view of hylomorphism.

Both the description in the *Iḫrāǧ* and the definition in the *Compendia* indicate the importance of celestial observation for the science of talismans.

[5] The science of operation of the upper world (*ʿilm istiḫdām al-ʿulwiyyāt*)[29]

This science gives the knowledge about what time and which sacrifice are appropriate for each planet.[30] According to Ǧābir, there are two kinds of preparation for utilising the influence of celestial bodies:[31] one is observation (*raṣad*) and the other concerns incense (*buḫūr*).[32] The former is to know which degree (*daraǧa*) a certain planet wants to enter in order to operate the same thing as the planet has done before. This degree can be understood in two ways. If the degree means physical position of the planets in the celestial spheres, it will follow that an operator of this science should be familiar with when each planet is in a certain position through observation of the upper world. On the other hand, when Ǧābir explains what the similarity is in 'observation', the word 'degree' is used in relation with natural quality (*ṭabʿ*) (i.e., hot, cold, moist or dry) of the planet as in "if the planet is cold, the degree will be cold".[33] This degree means theoretical position of the planets in four natures rather than physical position in celestial spheres. As for the 'incense', Ǧābir means that the operator of this science must have the knowledge about suitable sacrifices to the planets. Since every planet has two types of incense: one is similar to its nature and the other is opposite to it.[34] It is necessary to prepare sacrifices that are in accordance with or against the incense of the intended planet. The sacrifice is a kind of counterpart of the planet to balance terrestrial things with celestial bodies with the aim of utilising the influence of the planet.

[6] The science of balance (*ʿilm al-mīzān*)

[29] This science is flexibly called in different ways such as "the science of operation of planets (*ʿilm istiḫdām al-kawākib al-ʿulwiyya*)" in ed. Kraus (1935), p. 48.

[30] Kraus briefly reworded this science: "Sie lehrt, welche Opfer und Gebete den einzelnen Planeten darzubringen sind, um sie zu beeinflussen" in Kraus (1931), p. 19.

[31] In relation with utilising the influence of celestial bodies, it might be useful to mention that Zosimus' texts show the connection between astrology and dyeing. "The expression *kairikai katabaphai* – variously translated as 'tinctures to be effected at propitious times', 'propitious tinctures', 'opportune tinctures', or 'timely tinctures' – plays a central role in Zosimus' argument. The adjective *kairikai* seems to qualify the tinctures as depending upon specific *kairoi* and has often been interpreted as referring to astrologically conditioned dyeing processes" in Martelli (2017), p. 210.

[32] When summarising this science, Kraus seems to have replaced these terms, i.e., observation (*raṣad*) and incense (*buḫūr*) with 'sacrifice' and 'prayer'. Cf. Kraus' words cited in n. 30 above.

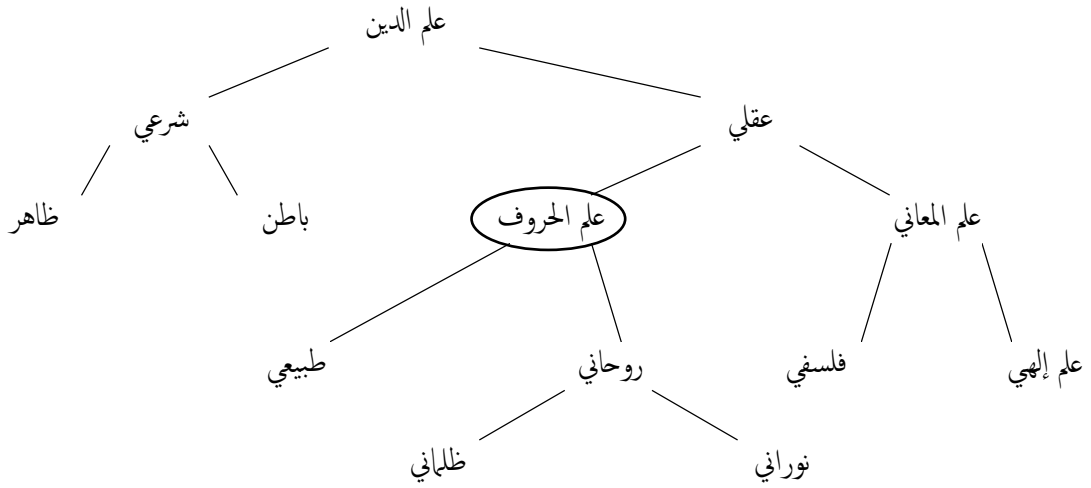
[33] See the underlined text in the next note.

[34] Ed. Kraus (1935), p.87:

هذا يكون لشيئين لا غير، وهما الرصد والبخور. فأما الرصد فأن تنظر نزول أي كوكب أردتَ إلى أي درجة أردتَ لعمل ذلك الشيء بعينه. < وأما البخور > فلكل كوكب بخور إن أحدهما للمماثلة والآخر للمقابلة. فالمماثلة أن يكون الكوكب في درجة بطبعه، إن كان الكوكب باردا كانت الدرجة باردة، وإن كان حارا كانت حارة. وكذلك إن < كان رطبا أو يابسا > كانت رطبة أو يابسة. ويكون البخور كما قدّمنا القول فيه.

The balance is divided into three: the first one is in the realm of the similarity and oppositeness. The similarity is found in the equilibrium between the hotness and the hotness for simple things, and for the composite, it is in the equilibrium between the hot-moistness and the hot-moistness. The oppositeness is in inverse equilibrium. For example, the oppositeness for simple things is the relation of the hotness to the coldness or of the moistness to the dryness, and, for the composites, that of the hot-dryness to the cold-moistness or of the hot-moistness to the cold-dryness. This is a principle of the science of the first balance. The second one is balance in terms of weight. The two substances that are compared to each other should have the same kind of magnitude. If one is round, the other should be round, too. If one is even surface, the other should also be even. This – the second balance – can be regarded as quantitative balance compared with the first balance that is qualitative. The third balance is about letters – *abǧad* –, which could be reworded as numerical balance because each *abǧad* represents its corresponding number.[35] The text about the third balance in the *Iḫrāǧ* seems too compressed to interpret. Since the balance of letters is an inevitable component of the Corpus, I here bring another Ǧābirian book that specifies the science of letters, that is the *Book of Definition (Kitāb al-ḥudūd)*, i.e., one of the *500 Books* composed after the *Iḫrāǧ*.

The religious science in the *Book of Definition*[36]



The *Book of Definition* classifies sciences with a dichotomy: the religious (*ʿilm al-dīn*) or the secular (*ʿilm al-dunyā*). Unlike the *Iḫrāǧ*, the art (*al-ṣanʿa*), i.e., alchemy, is placed in a chief position instead of medicine among other secular sciences. The religious science is divided into canonical (*šarʿī*) or intellectual (*ʿaqlī*) one. The latter consists of the science of letters (*ʿilm al-ḥurūf*) and the science of meanings (*ʿilm al-*

[35] Kraus did not give us his interpretation of each balance of the three kinds. Instead, he translated *ʿilm al-mīzān* collectively with die Wissenschaft von den Zahlenverhältnissen in Kraus (1931), p. 19.
[36] A full tree diagram of Ǧābirian sciences, including the secular science, described in the *Book of Definition* is found in Kraus (1931), p. 12.

maʿānī). The science of letters is either natural (*ṭabīʿī*) or spiritual (*rūḥānī*), and the spiritual one is subdivided into dark (*ẓulmānī*) and light (*nūrānī*) ones.[37]

The science of letters is defined, in the *Book of Defenition*, as the science that comprehends the questions of whether it exists (*haliyya*), what it is (*māʾiyya*), how it is (*kayfiyya*) and why it is (*limaiyya*) by means of research into four letters. Arabic letters are in total twenty-eight. Each letter corresponds to any number, and every seven of them are allocated to one of the four natures (i.e., hot, cold, moist and dry). By analysing the letters of a name, a thing with the name is grasped in nature (i.e., quality) and quantity. This is based on a premise that the name, being something divine, is not a thing that is given by people but derived from its nature (i.e., whatness). In other words, the name is not given by chance but is necessarily as it is. As such a divine element that reflects the essence of things, the name deserves to be examined for answering what and how things are. Reducing the name to letters means to numerically determine the contents of a thing with the name.[38] The outcome of the reduction is represented as the balance.[39] Thus, the science of balance by means of letters can be a cornerstone of Ǧābirian sciences that is based on the comprehension of the balance in things.[40]

To return to the description in the *Iḫrāǧ* where the balance was classified into three (i.e., the balances in terms of the similarity and the oppositeness, of weight and of letters), it should be noticed that Ǧābir also calls the science of balance as a whole by the science of nature,[41] which is consistent with the fact that the balance is explained with four natures (i.e., qualities), and perhaps could be related to the idea that the name is derived from nature (i.e., whatness / essence) of things.

[7] The science of generation (*ʿilm al-takwīn*)

Since the seventh science is a result of the other six sciences, it is, Ǧābir says, entirely the science of the world.[42] What the operator should do is to give things their realities (*ḥaqāʾiq*) in each step of the operation.[43] The details of this science are exposed in the

[37] The relevant Arabic text of the *Book of Definition* is in ed. Kraus (1935), p. 100.

[38] This might be called arithmology. Several names of letter-number interpretation are concisely mentioned in Savage-Smith (2004), pp. xxxv-xxxvi.

[39] For further research into the balance, the theory of balance in the *Epistles of the Brethren of Purity* is one of the important objects that have a possible relation with Ǧābirian thoughts. See Marquet (1988), El-Bizri & de Callataÿ (2018) and Baffioni (2022).

[40] This paragraph is based on Kraus (1931), p.17 and on my interpretation of the texts from the *Book of Definition* preserved in ed. Kraus (1935), p. 103.

[41] Ed. Kraus (1935), p. 48: وعلم الطبيعة كله وهو علم الميزان

[42] Ed. Kraus (1935), p. 93 where *istiḫdām al-ʿulwiyyāt* is altered into *istiḫdām al-rūḥānīyāt*:
التكوين الباب السابع، وهو نتيجة علم الميزان والطلسمات واستخدام الروحانيات والطب والصنعة. وهذه هي علوم العالم بأسره.

[43] Ed. Kraus (1935), p. 93:
فنقول إن الذي ينبغي للمدبّر أن يحدوه في علم التكوين علم حقائقها في الوزن. فلا يزيد بشيء ولا ينقص بشيء، وإلا كان به الفساد وأن يعطي الأشياء حقائقها من المواتب.

Book of Concentration (Kitāb al-taǧmīʿ),[44] the contents of which are dedicated to three themes: artificial production of animals, plants and stones. In the Corpus, these are called 'three species' that represent every creature in the world.[45] They are natural existence in contrast to the artificial one. Ǧābir tried to imitate the generation and the corruption in the natural world by manipulation. Accordingly, it is artificial creation that Ǧābir meant with this final science.

As for the significance of each science, Ǧābir might sound inconsistent because the science of generation is given a chief position as an integrated form of the other six sciences while he says that medicine is the most important science at some points. However, this is not exactly contradiction. For, medicine is the first as a foundation for several sciences, whereas the science of generation is situated on the top of the sciences as their outcome, literally the last science.

In this way, the seven sciences presented in the *Iḫrāǧ* were overviewed with complement of the *Book of Definition* regarding the science of balance. Part of the *Iḫrāǧ* is quoted in the *Ḫārṣīnī*, i.e., the last book of the *Seven Metals*. The cited text is about the similarity (*al-mumāṯala*) and the oppositeness (*al-muqābala*) – one of the common principles of the seven sciences. When the *Seven Metals* are overviewed in the Part II, it will turn out that the seven sciences are inseparably related to one another and built up on the heritage of ancient knowledge. As for the ancient heritage in the Corpus, for example, in the description of medicine in the *Iḫrāǧ*, Ǧābir briefly mentions Galen and his large and small book (*Kitab al-kabīr wa al-ṣaġīr*).[46] This book probably means *De pulsibus* called *Kitāb al-nabḍ al-kabīr* in Arabic and *De pulsibus ad tirones* of which Arabic title is *Kitāb al-nabḍ al-ṣaġīr*.[47] Apart from them, the Corpus has many other references to the ancient Greek knowledge, which is a focus of attention in the next chapter.

[44] Ed. Kraus (1935), p. 94:
فإنه إذا حصّل هذه الأصول بلغ إلى الموتبة التي يريد من التكوين الصحيح الذي قد عرضنا به في كتاب التجميع.
[45] As for the actual usage of the term 'three species (*al-ṯalāṯa al-aǧnās*)', see the Chapter 2.5.1.
[46] Ed. Kraus (1935), p. 51, 4-5.
[47] Kraus (1942), p. 326.

1.3. Trace of ancient Greek heritage in the Corpus

The Ǧābirian corpus is of great importance not only for the history of science in general, but also for the Graeco-Arabic studies in particular. Concretely, Ǧābir assigned a series of *Books of Rectifications* to Pythagoras, Socrates, Plato, Aristotle, Archigenes, Homer and Democritus, who were all regarded as ancient 'alchemists'.[1] In addition to them, the Corpus preserves other Greek names such as Thales, Empedocles, Porphyry, Simplicius and Apollonius of Tyana.[2] Kraus indicated that plenty of Greek texts could have influenced Ǧābirian doctrine in his monograph dedicated to the analysis of the influence of Greek science on Ǧābir and published in 1942. Moreover, he selected some Greek writings cited in the Corpus and gave an overview of them in the appendix of the same book, where Aristotle, Alexander of Aphrodisias, Galen, Archimedes and pseudo-Plutarch are treated in detail.[3] In this chapter, I try to expand Kraus' appendix on Greek sources in Corpus, focusing on Euclid, Galen and Alexander of Aphrodisias.

Euclid

Kraus did not focus on Euclid in the appendix entitled 'Remarque sur quelque ouvrages grecs cités dans les écrits jābiriens'.[4] However, the information of Euclid mentioned by Ǧābir is scattered in his book.[5] It is worth collecting these data and adding further information to them since not all citations from Euclid's *Elements* in the Corpus have been edited and analysed.

According to Ibn al-Nadīm, Ǧābir wrote the *Book of Commentary on Euclid*,[6] which is not preserved in any extant manuscripts. Among the Ǧābirian writings that have come down to us, Kraus indicated that the following books include references to Euclid: [1] the *Book of Compendia (Kitāb al-nuḫab)*, [2] the *Book of Stones according to Balīnās (Kitāb al-aḥǧār ʿalā raʾy Balīnās),* [3] the *Book of Concentration (Kitāb al-taǧmīʿ),* [4] the *Book of Field of Intelligence (Kitāb maydān al-ʿaql)*, [5] the *Book of the Fifth Nature (Kitāb al-ṭabīʿa al-ḫāmisa)*. The source mentioned under the name of Euclid in the

[1] Kraus (1943), pp. 64-66. Only the *Rectifications to Plato* have been currently identified in Arabic manuscripts. As for ancient alchemists cited by Ǧābir, see Kraus (1942), pp. 42-59.
[2] Kraus (1942), pp. 45-47. Especially, Apollonius of Tyana had a great influence on the Ǧābirian doctrine. See Kraus (1942), pp. 270-303.
[3] Kraus (1942), pp. 319-339.
[4] As mentioned earlier, Kraus wrote only about Aristotle, Alexander of Aphrodisias, Galen, Archimedes and pseudo-Plutarch in the appendix, i.e., in Kraus (1942), pp. 319-339.
[5] Kraus (1942), p. 152: Euclid' *Elements I* as an indirect source of a geometric explanation of Ǧābirian cosmology; p. 178: Euclid mentioned in relation to Platonic theory of five bodies; p. 199: the perfect number in the Euclid' *Elements VII* with respect to Ǧābirian arithmology. In addition, Kraus (1943), p. 95: reference to Euclid in the *Fifth Nature*; p. 167: possible existence of the *Book of Commentary on Euclid*.
[6] In Ibn al-Nadīm's *Fihrist*, " كتاب شرح إقليدس " in ed. Flügel (1872), p. 357, l. 29; "Exposition of *Euclid*" in tr. Dodge (1970), p. 862.

Corpus is always Euclid's *Elements*. Above all, especially the fourth definition of the fifth book of the Euclid's *Elements* was well received, since we find various quotations of it in the Ǧābirian works mentioned above. Therefore, before grasping how Ǧābir referred to Euclid, it will be useful to overview its Greek text and its two Arabic translations (a1 and a2) that stem from two different families of manuscripts.[7]

> T0: Definition 4 of Euclid's *Elements V*
> 4. Magnitudes are said to **have a ratio** to one another which are capable, when multiplied, of exceeding one another.[8]
> δ΄. Λόγον ἔχειν πρὸς ἄλληλα μεγέθη λέγεται, ἃ δύναται πολλαπλασιαζόμενα ἀλλήλων ὑπερέχειν.[9]

[a1] المقادير التي لبعضها نسبة التي بعض هي التي يمكن إذا ضوعفت أن يزيد بعضها على بعض.[10]

[a2] المقادير التي يقال إن بين بعضها وبعض نسبة هي التي قد يمكن إذا ضوعفت أن يفضل بعضها على بعض.[11]

The *Elements V* treats the ratio and the proportion of magnitudes and starts with eighteen definitions at the beginning. Definition 4 is inconspicuous since it is generally regarded as complementary to Definition 3: "A ratio is a sort of relation in respect of size between two magnitudes of the same kind".[12] In addition, Definitions 5 have often been more controversial and people have paid closer attention to it, [13] which could have caused

[7] As for the Arabic version of Euclid's *Elements*, it is known that it was translated three times: the first and the second translations by al-Ḥaǧǧāǧ ibn Yūsf ibn Maṭar (f. 786-830) and the translation by Isḥāq ibn Ḥunayn (c. 830-910) with revision by Ṯābir ibn Qurra (c. 830-901). The Arabic text of the *Elements V* edited by Jon William Engroff is the third one, i.e., the Isḥāq-Ṯābit version. Engroff examined ten manuscripts and found that they are divided into two families. He called them after the number of manuscripts: one is the Four and the other is the Six, and he made two kinds of Arabic edition according to the families. The edition and the translation of both versions are found in Engroff (1980).
[8] Tr. Heath (1956), II, p. 114.
[9] Ed. Heiberg & Menge (1883), II, p. 2, which is reproduced in Heath (1956), II, p. 120.
[10] Ed. Engroff (1980), p. 60 (the Four version).
[11] Ed. Engroff (1980), p. 165 (the Six version). Engroff gave both the Four and the Six texts the same translation: "Magnitudes which are said to have a ratio to one another are those which are capable, when multiplied, of exceeding one another" in Engroff (1980), p. 61 and p. 166.
[12] Tr. Heath (1956), p. 114; ed. Heiberg & Menge (1883), II, p. 2: Λόγος ἐστὶ δύο μεγεθῶν ὁμογενῶν ἡ κατὰ πηλικότητα ποιὰ σχέσις. Thomas Little Heath says, following the interpretation by Augustus De Morgan, that the fourth definition also implies that the ratio mentioned in the third definition can also mean the one between incommensurable magnitudes. See Heath (1956), II, pp. 116-120. As far as it concerns the citations in the Corpus, the comprehension of incommensurability does not seem to be a problem for Ǧābir.
[13] Definition 5 of the *Elements V* defines the equality in ratios among magnitudes including incommensurable ones. On the other hand, there is another definition of the equality in ratios among natural numbers that are commensurable to one another. It is Definition 21 of the *Elements VII*. Thus, Euclid set different definitions of the same ratio between magnitudes and numbers owing to the existence of incommensurability in magnitudes. However, not a few commentators on the *Elements* questioned the meaning of Definition 5 of the *Elements V* considering its complexity that seems excessive to them. Although Definition 5 was later considered to be a substitute for a definition of irrational number as Heath

Definition 4 to be unremarkable. Therefore, it is an intriguing fact that Definition 4 of the *Elements V* repeatedly appears in the Corpus. In the same ways as Definition 4 is generally regarded, Ǧābir also seems to have thought that Definition 4 reinforces Definition 3 that the two magnitudes should be of the same kind, as emerges from the following citations [T1]-[T4].

T1: The *Compendia (Kitāb al-nuḫab)*, [ج 77a][14]

أما التي تتناسب بالطبع فهي نسبة الشيء إلى مثله كالحار إلى الحار والبارد إلى البارد وسائر الباقية والتي تختلف فهي التي تتباين طبائعها كالحار للبارد والرطب لليابس بالعكس حتى أن **إقليدس ليقول في مصادرة المقالة الخامسة إن الأشياء التي بينها وبين بعض نسبة هي التي إذا ضوعفت أمكن أن يزيد بعضها على بعض** وعلم هذه المقدمة يعين جدا على استخراج علم الطلسمات وقد ضل في تفسير هذا خلق كثير وقالوا أقاويل بعيدة عن الصواب جدا والوجه في ذلك أن تعلم أنه ليس للخط نسبة بالسطح [ج-77ب] ولا للسطح نسبة بالجسم فلو زيد على سطح طوله ذراع واحد خط طوله مائة ألف ذراع ما زاد في السطح مقدار عقد واحد وكذلك الحال في السطح والجسم فإذن الأشياء التي تناسب الخطوط هي الخطوط والتي تناسب السطوح هي السطوح والتي تناسب الأجسام وهي الأجسام فإذن التي تناسب الطبائع أو ذوات الطبائع هي الطبائع أو ذوات الطبائع

What is proportional to one another in terms of nature is a ratio of a thing to something similar to it like the hot to the hot, the cold to the cold and the others. What is unproportional is a thing whose natures are opposed like the hot against the cold and the moist against the dry vice versa. Even **Euclid says at the beginning of the fifth treatise that things that have a ratio to one another are capable, when they are multiplied, of exceeding one another**. The knowledge of this premise is useful to extract the science of talismans. Many people went astray in interpreting this. They gave accounts much far from correctness. The meaning in it is that you [should] know that the line does not have a ratio to the plane and the plane does not have a ratio to the body. If a line whose length is 100,000 cubits was added to a plane whose length is 1 cubit, even an inch of magnitude would not be added to the plane. The situation in the plane and the body is in the same way. Hence things that have a ratio to lines are lines. Things that have a ratio to planes are planes. Things that have a ratio to bodies are bodies. Thus, things that have a ratio to natures or

said: "Certain it is that there is an exact correspondence, almost coincidence, between Euclid's definition of equal ratios and the modern theory of irrationals due to Dedekind" as in Heath (1956), p. 124, yet its value had not been recognised for a long time. As for the Arabic world, the Andalusian mathematician and astronomer Ibn Muʿāḏ al-Ǧayyānī (the eleventh century) seems to have been the only one who defended Definition 5. See Vahabzadeh (2013).

[14] The ج stands for MS Istanbul Carullah 1721. See Abbreviations, p. viii.

essences (*ḏawāt*) of natures are natures or essences of natures.	

Ǧābir displays lines, planes and solid bodies as examples of magnitudes of different kinds. No matter how large scale of line is added to a plane, the plane does not increase at all. This is the case that does not fall into the condition written in Definition 4 of the *Elements V*. Therefore, a line and a plane cannot have a ratio between them. The difference of dimension among lines, planes and solid bodies is a disparity of their kinds. This clarification of Definition 4 with geometric elements in [T1] is also found in al-Nayrīzī's commentary on Definition 3 of the *Elements V*, where al-Nayrīzī introduces the ten Aristotelian categories; here, he points out that quantity as one of the ten is our subject, and then, he illustrates magnitudes of the same kinds with reference to lines, planes, solid bodies and others.[15] As a reason for citing Euclid, Ǧābir says that understanding this saying of Euclid is useful to gain valuable knowledge for the science of talismans, which is one of the seven Ǧābirian sciences and often mentioned in the Corpus.[16] The talisman is a thing that is artificially given a faculty to protect or change something in the sublunar word with the help of celestial bodies. Following the solid bodies, it is said that the things that have a ratio to natures or essences (*ḏawāt*) of natures are natures or essences of natures. The essences of natures, which appear to be a vague notion and need to be examined, are said by Ǧabir to be substrates (*mawḍūʿ*) of the talisman.[17] That a ratio can exist only between the magnitudes of the same kind seems important also for the making and use of talismans. In this way, Definition 4 leads to the science of talismans.

The second example, [T2], is less obvious concerning whether it is related to Definition 4 of the *Elements V*. However, as shown below, the phrase "if one of them is added to the other" with reference to lines and solid bodies could remind us of part of the condition about a ratio as written in Definition 4.

T2: The Fourth Part of the *Book of Stones according to Balīnās (al-ǧuzʾ al-rābiʿ min*

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[15] Ed. Besthorn & Heiberg (1932), part. 3, fasc. 2, p. 2 & p. 4:
قوله في القدر ليفصل به من سائر المقالات ويجعلها في مقالة واحدة وهي الكم وبين مقدارين أراد الحال التي لاحد المحدارين عند الآخر لأن النسبة هي حال قدرٍ واحدٍ عند قدر آخر من جنس واحد إمّا حال الخط عند الخط وإمّا حال السطح عند السطح وإمّا حال المجسّم عند المجسّم وإمّا حال العدد عند العدد وإمّا حال القول عند القول وإمّا حال الزمان عند الزمان وإمّا حال المكان عند المكان.

The commentary on Euclid's *Elements* by al-Nayrīzī (d. c. 922) is one of the oldest commentaries on the *Element*s. The Arabic text of the *Elements* with insertion of al-Nayrīzī's commentary is regarded as the second translation by al-Ḥaǧǧāǧ. According to Engroff (1980), pp.13-19, however, the Arabic translation seems to have been largely revised by al-Nayrīzī and does not seem to be a genuine translation by al-Ḥaǧǧāǧ any longer.

[16] Ǧābir tried to justify talismans philosophically within the framework of hylomorphism in the *Compendia*. Besides, there are references to talismans in other Ǧābirian writings such as the *Ḥārṣīnī*, one of the *Seven Metals* that is analysed later. See Chapter 2.3.

[17] The *Compendia*, [ج 77b]:
وإذ ذلك كذلك فأقول إن موضوع الطلسم أولا إنما هو من ذوات الطبائع أعني أن جنس الطلسم ومادته هي من ذوات الطبائع .

kitāb al-aḥğār ʿalā raʾy Balīnās) [ب 5099, 93a][18]

For, if one said how much measure is, what he knew would be what it is. What is meant by that is in the art, I mean, the premises. [It is] in the same way as in **Euclidean [plane] figures**. We reached that in the second part according to the purpose of the rules. There, we taught you how the figures should be and what should come from them and should not come from them. For, lines do not come from them. It is according to an isolated condition. A thing comes from them only **if one of them is added to the other**. Even if the first was added to them, a solid body would not come from them since the solid body must have length, width and depth.	فإنه لو قال قائل كم مقدار ما علم ما هو وإنما يعنى بذلك في الصنعة أعني المقدمات وكذلك في **الأشكال الإقليديسية** وقد أتينا بذلك في الجزء الثاني على غاية الأحكام وعلمناك فيه كيف ينبغي أن يكون الأشكال وما منها قد يكون ومنها لا يكون فان الخطوط لا يكان[19] منها وهو على حال الانفراد شيء وانما يكون منها **إذا أضيف بعضها إلى بعض** فإن أول إضافة لها لا يكون منها جسم إذ الجسم لا بد له من طول وعرض وعمق

The beginning of [T2] means that knowing the quantity of something is equal to know what it is. This is a hypothesis in this art, i.e., alchemy, and it is like a postulate in Euclidean geometry. Then, Ǧābir mentions "the second part", which can be the second part of the *Book of Stones according to Balīnās*, since this book is divided into four parts and [T2] comes from the fourth part of the same book. Ǧābir says that he already discussed, in the second part, how *aškāl* should be, what should or should not come from them. Here, a certain ambiguity derives from the polysemy of the word *aškāl*, the plural form of *šakl*. This word can mean both 'a figure' in general – an equivalent of σχῆμα – and 'a proposition' specifically in the *Elements*.[20] The term *aškāl* in [T2] can be translated with both meanings. However, considering the contents of the latter half of this passage, the first meaning seems more suitable: *aškāl* must be probably understood as geometrical figures, especially as plane surfaces, because lines and solid bodies are said to be unable to come from something that is, in the passage, referred to by a pronoun (*hā* of *min-hā*) which probably stands for *aškāl*. On the contrary, if *aškāl* is interpreted as 'propositions' and it is said that a solid body does not come from propositions, the impossibility of body's derivation from propositions is not explained by the last sentence "the body must have length, width and depth", which, instead, can be a reason for incompatibility between three dimensional bodies and plane surfaces. Consequently, given that the word *aškāl* here means two-dimensional plane figures that have length and width, it will be

[18] The information about MS ب 5099 is found in Chapter 2.1.

[19] يكون : فوقها "يكاد" مكتوب [5099 ب].

[20] Euclid's *Elements* is a collection of definitions and propositions which, the latter, can be divided into theorems (θεώρημα) and construction problems (πρόβλημα). The proposition is called *šakl* in Arabic translations of the *Elements*.

possible to understand Ǧābir's argument in [T2] as follows: if things cannot be added to one another, they cannot be compared with each other as lines and solid bodies are incapable of stemming from surfaces. Albeit it is not certain whether [T2] precisely refers to Definition 4 of the *Elements V*, this text is surely counted as one of the references to Euclid because it includes an explanation similar to the one found in [T1].

In contrast to [T2], the third example [T3] is clearly associated with Definition 4 of the *Elements V*. The *Book of Concentration* preserves an intact sentence of Definition 4 with clear reference to the fifth part of Euclid's book. In [T3], the lines, the planes and the bodies are not used to demonstrate homogeneity of things that can have a ratio. Instead of them, the relation between the body and the attributes is used along with the relation between gold and silver to explain Definition 4.

T3: The *Book of Concentration (Kitāb al-taǧmīʿ)* [Berthelot (1893), III, p. 170]

Better is what a proponent of **Euclid reached in the fifth chapter of his book where it is said that things that have a ratio to one another are capable, when they are multiplied, of exceeding one another**. For, this discourse is absolutely correct. The proof is that it is derived from principles intellectually, and what is obvious in it is that attributes do not increase by bodies and bodies do not increase by attributes like gold. For, gold does not increase by means of silver and silver does not increase by means of gold.	وما أجود ما أتى به صاحب **إقليدس في المقالة الخامسة من كتابه حيث يقول الأشياء التى بين بعضها وبين بعض نسبة هي التى إذا ضوعفت أمكن أن تزيد بعضها على بعض** فإن هذا كلام في نهاية الصحّة والبرهان لأنه من الأوائل فى العقل وبيان ما فيه هو أن الأعراض لا تزيد [171] بالأجسام والأجسام لا تزيد بالأعراض كالذهب فإنه لا يزيد بالفضة ولا الفضة تزيد بالذهب

Attributes mean incorporeal things, like qualities, that are attached to material substances which can be referred to as bodies (*aǧsām*). In [T3], gold and silver are mentioned as things that cannot have a ratio along with a pair of bodies and attributes. Gold does not increase if silver is added to it, vice versa, in the same way as a body does not increase if a quality is added to the body. A similar way of interpreting Definition 4 can be found in the *Book of Field of Intelligence*.

T4: The *Book of the Field of Intelligence (Kitāb maydān al-ʿaql)* [Kraus (1935), pp. 215-216 (= [ك]); [ب 5099, 41a)]

You should know that the weight only increases on a certain condition. That is, bodies do not exceed except homogeneous bodies that are similar to them. Attributes are in the same way. Bodies do not exceed attributes and attributes do not exceed bodies.	وينبغي أن تعلم أن الوزن إنما يكون زائدا على شرط. وهو أن الأجسام لا تزيد إلا بمشاركة أجسام وهو مثلها، وكذلك الأعراض. ولا تزيد أجسام بأعراض ولا أعراض بأجسام.

Euclid said what was of use about it and demonstrated it. **His saying is that things that have a ratio to one another are capable, when they are multiplied, of exceeding one another**.

Then, the subject should be set for quantifying what is in it, namely, a thing by which a body is changed and transformed from another, to save the science of balance correctly, or natures should be set to clarify the balance of the body and the others. A person who wishes to multiply something should owe it to know the magnitude of the body of the transported and decomposed thing and the magnitude of the transporting and composing body. Know that since this comes from what was mixed with key points.

وقد قال إوقليدس في ذلك ما أغنى ودلّ عليه **وهو قوله : الأشياء التي بينها وبين بعض نسبة هي التي إذا ضوعفت أمكن أن تزيد بعضها على بعض**.

فالموضوع إذن ينبغي أن يوضع منه بقدر ما فيه من الجسم المتحيل والمستحيل به من غيره ليخلص علم الميزان صحيحا أو يوضع[21] الطبائع ليتّضح ميزان الجسم وغيره. ولا بدّ لمن أراد أن يركّب شيئا من ذلك ليعلم مقدار جسم الشيء المنقول المفكوك ومقدار الجسم المنقِّل المركِّب. فأعلم ذلك، فإن هذا مما أشاب النواصي

It is not specified in [T4] that Euclid's words are cited from the *Elements V*. Nevertheless, the words can be identified with Definition 4 of the *Elements V* since they are clearly the same as in [T1] and [T3], where Ǧābir says that the cited Euclid's words come from the fifth part of Euclid's book.

Like [T3], the sentence corresponding to Definition 4 is explained with incommensurability between bodies and attributes in [T4]. What should be noticed here may be the fact that the author relies on Definition 4 in order to explain the weight. The weight here does not seem to be physical weight but metaphorical one. In the *Book of the Field of Intelligence*, before and after [T4], the relation between letters and qualities is described. In the science of letters, i.e., one aspect of the science of balance, Ǧābir gave weight to each letter and tried to understand things in the world by the weight of letters that their names have. Likewise, the weight that Ǧābir used in [T4] can be understood as a measure to grasp the magnitude of the body in the science of balance.

To clarify the balance of things, we need natures, precisely, we must know how much each nature (i.e., hot, cold, moist and dry) is contained in the thing. If the weight of the natures in a thing is changed, the thing changes from the present form to another. Those who want to transform something need to know the magnitude of the object. The magnitude in question depends on the weight of natures in the thing. This discourse can lead to the passage related to Galen in the *Fifth Nature* ([T6]) where the weight is described as a unit to measure the degrees of the faculty of attributes.

[21] يوضع [5099 ب] : بوضع [ك]

To sum up, before moving to Galen, we must note that the above-mentioned four references to Euclid [T1]-[T4] are all connected to Definition 4 of the *Elements V*. Albeit [T2] might not be relevant directly to Definition 4, it can be regarded at least as a reference to Euclid's *Elements V* since it deals with the magnitudes of two things and their relation. Apart from the *Elements V*, there are other references to Euclid. One of them is found in the *Compendia* [MS Istanbul Carullah 1721, f. 69b], where Euclid is mentioned in relation to an explanation of the final cause. This part was recently analysed by Wakelnig, who has shown that the passage with the name of Euclid does not go back to Euclid, but to Proclus' commentary on the first book of the *Elements*.[22]

All the references to Euclid that have been observed so far are quite short and fragmentary. However, there is a relatively long one. The ninth proposition of the *Elements I* is quoted in the *Fifth Nature.* Although its Arabic text is less clear if compared to the original meaning of the Greek Proposition (where it is shown how to divide a given angle equally into two parts), yet the citation plays an important role to demonstrate what Ǧābir wanted to say, i.e., the process of bringing something from potentiality to actuality.[23] After the citation of this Proposition, Ǧābir says that the essence of things exists on its own because geometrical magnitudes are true, even if this essence is not seen and not known in reality. Then he enters epistemological discourse, claiming that it is absurd to say that we cannot discern honey to be sweet until we taste it. I will come back to this point in Chapter 2.5.1 where the same book, the *Fifth Nature* is analysed.

Besides the aforementioned references to Euclid, the influence of Euclid can be found when one reads geometrical and numerical descriptions in the Corpus even if the name of Euclid is not mentioned.[24] Although most of them do not seem to derive directly from Euclid but from later interpreters and commentors of his work such as Hero of Alexandria and Proclus, yet the Corpus can be an informative source also for research into history of mathematics since it reflects the circulation of Euclid's *Elements* in the Arabic world.

Overall, the fact recognised anew by gathering references to Euclid in the Corpus is the frequent appearance of Definition 4 of the Euclid's *Elements V*. It is understandable that the *Elements V* dealing with ratio and proportion caught Ǧābir's interest because Ǧābirian theory of balance is all about ratio of the objects to which the theory is applied. Still, there remains a question why only Definition 4 was repeatedly used by Ǧābir in his several writings. To try to explain this, further research is required both into the transmission of Euclid's *Elements V* and into the theory of balance as designed by Ǧābir.

[22] See Wakelnig (2020). Proclean metaphysics seems to have been an important medium to transmit Eucledian mathematics to the later world because not only Ǧābir but also the Byzantine alchemical philosopher Christianos adopted the contents of Proclus' *Commentary on the Elements* as shown in Merianos (2022).
[23] The Arabic text of Proposition 9 of the *Elements I* cited in the *Fifth Nature* is edited in Appendix.
[24] See Kraus (1942), p. 152 & p. 199.

Galen

According to Kraus, the Ǧābirian *Book of Poison* frequently refers to Galen but do not give any specific title of Galen's works.[25] On this point, Alfred Siggel tried, when he made a German translation of this book,[26] to identify which Galenic books are intended when Ǧābir relied on the authority of the Graeco-Roman physician.[27] Judging from Siggel's observation, *On the Capacities of Simple Drugs (De simplicium medicamentorum [temperamentis ac] facultatibus)* is one of the most influential works of Galen in Ǧābir's *Book of Poison.*[28] Moreover, Kraus observes that the phrase "our book on simple drugs (*kitab-nā fī al-adwiya al-mufrada*)" is found in the *Book of Poison* several times.[29] The Ǧābirian *Book on Simple Drugs* is not extant, but Kraus maintains that it is certainly a compendium that relied on Galen's *On the Capacities of Simple Drugs*. In addition, Kraus pointed out that *On the Capacities of Simple Drugs* is also cited under the title of the *Book of Simple Drugs (Kitāb al-adwiya al-mufrada)* outside the *Book of Poison*, i.e., in another Ǧābirian work entitled the *Book of Result (Kitāb al-ḥāṣil)*, and that this Galenic work was utilised by Ǧābir in the exposition of his theory of balance.[30]

Therefore, the importance of Galen's *On the Capacities of Simple Drugs* in the Corpus is obvious. Nonetheless, it is not easy to trace its influence on the Corpus due to the lack of sufficient analysis of both pharmacological books, i.e., Galen's *On the Capacities of Simple Drugs* and the Ǧābirian *Book of Poison*. In fact, the latter, which seems to be the most related to Galen's pharmacological work in the Corpus, has not been fully examined. Indeed, it was explored by Siggel who published its German translation, but he only provided a facsimile of one of the Arabic manuscripts (i.e., MS Cairo Taymūr ṭibb 393) with his translation. Consequently, there has not been an Arabic critical edition of the *Book of Poison* yet. On the other hand, although the research into Galen's *On the Capacities of Simple Drugs* seems to have developed in the last ten years especially with increasing attention to the so-called Syriac Galen's palimpsest (containing the translation

[25] Albeit several medical works ascribed to Ǧābir are mentioned by Ibn al-Nadīm and in other Ǧābirian books as shown in Kraus (1943), pp. 155-160, Kraus affirmed that the *Book of the Poison* was the only medical work in the Corpus that had come down to us. See Kraus (1942), p. 326. This is true as a classification of books, but medical recipes and descriptions of remedy are often seen in the Ǧābirian works classified into alchemical ones, e.g., the *Seven Metals*. See 'Medical use of metals' in Chapter 2.3.
[26] Siggel (1958), pp. 10-201.
[27] The Galen's books that Siggel suggested as possible sources in the *Book of Poison* are: *De usu partium corporis humani liber IX, De Hippocrat. et Platonis decretis liber III, De simplicium medicamentorum temperamentis ac facultatibus liber III, VI and XI, De theriaca ad Pisonem, De febrium differentiis liber I, Hippocratis de acutorum morborum victu liber et Galeni commentarius IV, De temperamentis liber II, De semine liber I, De antidotis liber I, Hippocratis epidem. VI et Galeni in illum commentarius VI, De compositione medicamentorum secundum locos liber IX, Hippocratis de humoribus liber et Galeni in eum commentarius I* and *III, De locis affectis liber I, De theriaca ad Pamphil,* and *De venae sectione adversus Erasistratum*.
[28] Siggel recognised the influence of *De simplicium medicamentorum [temperamentis ac] facultatibus* in four different parts of the *Book of Poison*. See Siggel (1958), pp. 30, n. 3; 34, n. 2; 72, n. 2; 85, n. 1.
[29] Kraus (1943), p. 155, n. 6.
[30] Kraus (1942), p. 326.

by Sergius of Rēš ʿAynā'),[31] yet its Greek text is only available in Kühn's edition and there is no complete translation of it in modern languages.[32]

Galen's *On the Capacities of Simple Drugs* consists of eleven books, of which the first five books show the theoretical foundation of Galen's pharmacology according to the theory of the four qualities and their degrees.[33] There, Galen classified medicaments into four parts according to qualities (i.e., hot, cold, moist and dry) and divided those four categories further into four parts depending on the degree of the intensity of the four qualities. This classification was adopted by medical doctors after Galen among the Greeks and the Muslims. Ǧābir was also among those who absorbed this system of classification,[34] and even developed it further in his own style. Indeed, Ǧābir used Galen's *On the Capacities of Simple Drugs* to explain his theory of balance.[35] Hereunder, our focus will be on the theoretical foundation of this classification.

Although the main source of Ǧābirian theory of balance seems to be Galen's *On the Capacities of Simple Drugs*, Kraus presented the following passages from Galen's *On the Composition of Medicaments According to Kind (De compositione medicamentorum per genera)* to explain the postulate of Galen's pharmacological classification. The passages testify to the existence of the degree, as a kind of quantity, of faculty of qualities.

T5: Galen, *On the Composition of Medicaments According to Kind*, III, 2.[36]

Knowing faculties with precision completely differs from a mere knowing. For, just knowing is to recognise whether the medicine makes us dry, moist, cold or hot by nature, while knowing with precision is, in addition to that, to recognise the quantity of the faculty. (…)	τὸ δέ ἀκριβῶς ἐπίστασθαι τὰς δυνάμεις τοῦ μὲν (μόνον?) ἐπίστασθαι διαφέρει πάμπολυ. τὸ μὲν γὰρ μόνον ἐπίστασθαι γινώσκειν ἐστίν, εἰ ξηραίνειν τὸ φάρμακον ἢ ὑγραίνειν ἢ ψύχειν ἢ θερμαίνειν ἡμᾶς πέφυκε. τὸ δ'ἀκριβῶς ἐπίστασθαι πρὸς τούτῳ καὶ τὸ ποσὸν τῆς δυνάμεώς ἐστιν ἐγνωκέναι. (...)
That is why the physician must aim at [knowing] not only how disposition is (i.e., quality) but also how much it is (i.e., quantity) in itself as someone would say. Indeed, it is not usually said that there is quantity in quality, but at the same time the heat is said to be large or small. (…)	χρὴ τοίνυν τὸν ἰατρὸν ἐστοχάσθαι, μὴ μόνον τοῦ ποιοῦ τῆς διαθέσεως, ἀλλὰ καὶ τοῦ κατ' αὐτὴν ὡς ἂν εἴποι τις ποσοῦ. λέγεται μὲν γὰρ οὐ πάνυ τι κυρίως τὸ ποσὸν ἐν τῇ ποιότητι. λέγεται δ'οὖν ὅμως, ὅπως καὶ πυρετὸς μέγας καὶ μικρός. (...)

[31] See Afif, et al., (2017); Martelli & Raggetti (2016); Ventura (2019). Apart from its Syriac tradition, see Petit (2013).
[32] Kühn (1825), XI, pp. 369-892 & (1826) XII, pp. 1-377.
[33] Ventura (2019), p. 393.
[34] Kraus (1942), pp. 189-190.
[35] Kraus (1942), p. 326.
[36] Kühn (1827), XIII, pp.572-3. The omissions in the middle part of the passage follow the citation of this text in Kraus (1942), p.189, n. 2.

For, the quantity of dryness must always be in proportion to the quantity of moistness.	ἀνάλογον γὰρ ἀεὶ τῷ ποσῷ τῆς ὑγρότητος εἶναι χρὴ τὸ ποσόν τῆς ξηρότητος.

Quality and quantity clearly differ from each other. Accordingly, quality cannot contain quantity. Nevertheless, qualities can be felt stronger or weaker compared to each other in the qualities. Such differences among qualities can be explained by the presence of degrees of the faculty in each quality. Therefore, to comprehend qualities and use them in medicine effectively, pharmacologists or medical doctors must know the degree of the faculty that is analogically regarded as quantity in quality. There is so far no evidence that [T5] is cited somewhere in the Corpus. However, a parallel idea can be found in the *Fifth Nature*.

T6: Ǧābir, the *Fifth Nature* [ب 5099, 38a]

Among the presented knowledge that strongly needs practice, you know that part of the simple thing is equal to the whole of it, that attributes do not have weights, and that the categories are ten, as you knew, and they consist of one substance and nine attributes. The quality under which there are colours and the others, is an attribute. [Being] hot, cold, moist and dry are qualities. There is no doubt about it for a person who was trained that attributes do not have weight as we taught you. Then, the balance of natures must be absurd. It is like this, and the balance was only put metaphorically on the faculties. For, weight of the body is nothing but weight of the substance on which attributes are carried. We said “a dirham”, “a hundred dirhams”, “more” and “less” only in relation to the faculties.	ومن العلوم المتقدمة التي يحتاج إلى رياضة شديدة أن تعلم أن جزؤ البسيط مثل كلّه وإن الأعواض لا أوزان لها وإن المقولات كما علمت عشرة وهي جوهر واحد وتسعة أعراض والكيفية تحتها الألوان وغيرها وهي عرض فحار وبارد ورطب ويابس كيفية لا شك فيه عند ذي الرياضة فليس للأعراض وزن كما قد علّمناك فوجب أن يكون ميزان الطبائع باطلا وهو كذلك وإنما وضع الميزان استعارة على القوى وذلك أن وزن الجسم هو وزن الجوهر المحمول عليه الأعراض فقط وإنما قلنا درهم ومائة درهم وأكثر وأقل بالإضافة إلى القوى

First, Ǧābir introduced the ten categories, one of which is a substance and the rest, nine of them, are attributes. Quality (literally, how-it-is) is mentioned as one of the attributes. Attributes cannot have weight since the weight of a body means the weight of the substance that carries attributes. Then, the notion of balance of natures that mean qualities by Ǧābir must be in vain. To reconcile this view that attributes do not have weight with his idea that natures have balance, i.e., that hotness, coldness, moistness and dryness can be weighed, Ǧābir underlined that the balance is expressed with a metaphorical weight in natures. Here, the words ‘nature’ and ‘quality’ work as synonyms because both mean

hotness, coldness, moistness and dryness in the Corpus. If quality, one of the attributes, does not have weight in any meaning, the Ǧābirian theory of balance in four natures cannot function. As a matter of fact, the physical weight of the body is nothing but the weight of a substance bearing attributes. Therefore, Ǧābir gave qualities or natures 'imaginary weight' that is analogous to physical weight. When Ǧābir says whether natures are greater or fewer, he intends the degree of the faculty of natures. This idea of metaphorical weight reminds us of one of the passages that refer to Euclid, namely, [T4] from the *Book of Field of Intelligence*, where natures and magnitudes of bodies are discussed to save the science of balance.

Now, the focus will move to another point about the influence of Galen on the Ǧābirian corpus. In the *Fifth Nature,* Galen is referred to with his opinion that the spirit (or soul) follows the mixture of body. Among Galenian works, there is a treatise whose title is *That the Capacities of the Soul Follow the Mixtures of the Body (Ὅτι ταῖς τοῦ σώματος κράσεσιν αἱ τῆς ψυχῆς δυνάμεις ἕπονται*), which is commonly abbreviated after its Latin translation as *QAM*.[37] This treatise is one of Galen's writings that Kraus listed as cited in the Corpus.[38] In the following passage of the *Fifth Nature*, the opinion that psychic capacity depends on bodily mixtures is introduced as that of Galen.

T7: The *Fifth Nature* [ب 5099, 35a-b]

Then, it is clear that the intact basis is the fifth nature because we taught you that the fifth nature contains two parts. If what Galen said is right since the spirit follows the mixture of the body (*badan*) according to the explanation of the foolish, then the life is the fifth nature and it is, without doubt, superior. If what he said about it is right according to the explanation of the wise (lit. people who say the truth), that is, if mixture perishes, the spirit will perish, if it (i.e., the mixture) is balanced, it (i.e., the spirit) is balanced, and so on, it is the apparent fifth nature.	ثم ظهر أن القاعدة السالمة وهو الطبيعة الخامسة لأنا قد علمناك أن الطبيعة الخامسة متضمنة قسمين وإن كان ما قال جالينوس حقا فإن الروح تابعة المزاج البدن على تفسير الحمقاء فإذن [35ب] الحيوة هي الطبيعة الخامسة وهي بغير شك من فوق وإن كان ما قال به حقا على تفسير المحقين وهو إن كان المزاج فاسدا كانت الروح فاسدة وإن كان معتدلا كانت معتدلة وأمثال ذلك فهي الطبيعة الخامسة الظاهرة [39]

[37] *QAM* stands for *Quod animi mores corporis temperamenta sequantur*. Its English translation is in Singer (2013), pp. 374-409. Following Singer, I adopted 'capacity' as an equivalent to δύναμις in the title of *QAM*. However, I basically use 'faculty' to indicate δύναμις in the Galenian texts. See T5 above.

[38] Kraus listed eleven works of Galen that are cited in the Corpus besides Ǧābirian *Book of Poison*: *1. De pulsibus, 2. De pulsibus ad tirones, 3. De compositione medicamentorum secundum locos, 4. De simplicium medicamentorum [temperamentis ac] facultatibus, 5. De elementis secundum Hippocratem, 6. De usu partium, 7. De facultatibus naturalibus, 8. In primum movens immotum* (lost), 9. *De demonstratione* (lost), 10. *De propriis placitis, 11. Quod animi mores temperamenta corporis sequuntur*. See Kraus (1942), pp. 326-330.

[39] [T7] is transcribed in Kraus (1942), p. 330, n. 3. I deal with part of [T7] again as [FN10] in Chapter 2.5.1.

This citation is, Kraus says, less accurate than that in the *Compendia* where the view that the soul (*nafs*) follows the mixture of the body is introduced as Galen's.[40] Considering that the Greek original word is ψυχή in *QAM* (which is the supposed source of Galen's words in question), *nafs* is indeed more precise than *rūḥ* that is principally used as an equivalent of πνεῦμα. However, the replacement of *rūḥ* for *nafs* cannot be a crucial element to doubt the connection of [T7] with *QAM* since the confusion between *nafs* and *rūḥ* can occur in Arabic writings.[41]

The point of [T7] is how Ǧābir interpreted Galen's words and what conclusion Ǧābir reached with those interpretations. What Galen said is introduced by Ǧābir in two ways. Firstly, it means, according to the foolish, that the spirit follows the mixture of the body and the life is the fifth nature. Secondly, it means, according to the wise, that if the mixture disappears or is balanced, the spirit disappears or is balanced respectively, and the spirit is the apparent fifth nature.[42] Ǧābir might have thought that the first proposition that the spirit follows the mixture of the body is wrong, whereas the second proposition that the spirit disappears if the mixture disappears is right, considering that he combined the first proposition with the foolish and the second with the wise. However, both propositions can mean the same thing because the first proposition can be deduced from the second one. Nevertheless, Ǧābir seems to have reached different conclusions about the fifth nature from each of the propositions: the first proposition leads to the life as the fifth nature, and the second to the spirit as the apparent fifth nature.[43]

It is better to briefly confirm what the fifth nature is in order to understand [T7]. In the *Fifth Nature*, the fifth nature is said, in one place, to be the substance (*ǧawhar*) that is in all things which are analogous to the simple things such as every sphere, nature and star;[44] in another place, it is given the name of a basis like the substance and its meaning

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[40] Kraus (1942), p. 330, n. 5; cf. ibid. n.4, the *Compendia*:

[147a ج] وهذا هو الذي قال جالينوس من أجله أن النفس تابعة لمزاج البدن.

[177a ج] فإن جالينوس إنما غلط في هذه الموضع الغلط الذي صار به مثلا من قبل أنه يتوهم أن النفس تستحيل إلى الطبائع فقال إنها تابعة لمزاج البدن.

[41] At least in *Kalām*, i.e., Islamic theology, *rūḥ* can be used as synonym for *nafs*. According to Ghazālī, theologists, by using *rūḥ* to mean the soul, argued that the soul and the body are similar since both have corporeity and they are different only because the soul is rarefied (*laṭīf*) but the body is dense (*kaṯīf*), whereas philosophers denied the corporeity of the soul and called it the substance (*ǧawhar*). See Macdonald (1931), p. 317. On the other hand, there is a book dedicated to the distinction of these two concepts, which is *On the difference between rūḥ and nafs (Fī al-faṣl bayna al-rūḥ wa-al-nafs)* written by Qusṭā ibn Lūqā (820-912). See Gabrieli (1910).

[42] The last pronoun in [T7] is not clearly said to be the spirit but is indicated just as a feminine pronoun (*hiya*). Since a feminine subject right before the last phrase is read as the spirit, it is reasonable to continue to regard the next feminine pronoun as the spirit.

[43] It might not be so meaningful to try to catch such a subtle distinction between the first and the second propositions concerning what Galen said. That is because the text of the *Fifth Nature*, preserved in a single manuscript, is not always logically readable as Proposition 9 of the Euclid's *Elements I* quoted in this book does not keep an understandable logical structure. See [FN7] in Chapter 2.5.1. Nonetheless, I provisionally adopt this minute distinction just as an attempt to grasp what is written in the *Fifth Nature*.

[44] [5099, 34a ب]: اعلم أن الجوهر في جميع الأشياء التي تجرى مجرى البسائط كالأفلاك والطبائع والنجوم كلها هو الطبيعة الجامسة.

is to be like a substrate (*maʾḍūʿ*).[45] After these descriptions, Ǧābir says that the fifth nature is divided into two kinds, 'internal (*dāḫil*)' and 'external (*ḫāriǧ*)' and that we need to talk about the second one since the first was already mentioned. And then, the apparent (*ẓāhir*) fifth nature is said to be something that carries every specific difference like 'laughing' for the human and 'whinny' for the horse.[46] The reference to Galen comes after this. Therefore, the fifth nature mentioned by Ǧābir in relation to Galen is probably the external and apparent one.[47] Consequently, it can follow that Ǧābir said, based on what Galen said, that a kind of substance that carries specific differences is the life in one case, or is the spirit in another case.[48] This reference to Galen in the *Fifth Nature* is further analysed in Chapter 2.5.1.

Alexander of Aphrodisias

The Corpus preserves several excerpts from works attributed to Alexander of Aphrodisias, both his commentaries on Aristotle's works and his original writings. As for the commentaries, it is known that Alexander's commentary on Aristotle's *Topics* (*Ṭūbīqā*) is quoted in the *Compendia* and that another commentary on Aristotle's *On Coming-to-Be and Perishing* is included in the *Book of Morphology (Kitāb al-taṣrīf).* The latter was examined by Gannagé, who presented the critical edition of the Arabic text with French translation in her unpublished PhD dissertation and later published the English translation.[49] Except this commentary in the *Book of Morphology*, all other writings of

[45] ويجب عليك أن تبحث عن كل شيء في العالم بالطبيعة الخامسة وهو الذى يسمى القاعدة كالجوهر ومعناه كالموضوع. [5099, 34a ب]:

[46] [5099, 35a ب]:

وإذ قد أتينا على ما هي الطبيعة الخامسة فإنا نحتاج أن نقول في تمامها إذ كنا قد أوجبنا أن الطبيعة الخامسة شيئان أحدهما داخل والآخر خارج فيجب على ذلك أن تعلم أنا قد فرغنا من واحد منهما نحتاج الآن أن نقول في الثاني حسب ما قلناه في الأول إن شاء الله تعالى وحده العزيز اعلم أن الطبيعة الخامسة الظاهر هو جميع الحمل الفصلي الخاصّي كالضحاك للإنسان والصهيل للفرس.

[47] Ǧābir uses 'external' (*ḫāriǧ*) and 'apparent' (*ẓāhir*) as synonyms. Generally, the opposite of the apparent is something hidden or occult (*bāṭin*). Accordingly, it is not absurd to presuppose that the counterpart of the apparent (*ẓāhir*) fifth nature can be called the hidden (*bāṭin*) fifth nature, although the word *bāṭin* never appears in the *Fifth Nature*.

[48] It is not certain whether Ǧābir thought the life and the spirit, that work as substances of living things, as Galen's terms. However, it might be meaningful to mention that Galen considered pneuma to be the substance of the soul, and the pneuma in his theory can be virtually divided into two species: vital pneuma (ζωτικὸν πνεῦμα) and psychic pneuma (ψυχικὸν πνεῦμα). With these two kinds of pneuma, Galen explained physiological phenomena. Galen's theory of pneuma is described systematically in one of his works, *The Method of Remedy (Methodus medendi)*. On the other hand, there is a view that Galen divided pneuma into three kinds: natural, vital and psychic. According to Temkin, however, the word "natural pneuma (πνεῦμα φυσικόν)" barely appears in the Galenic opera. The division of pneuma into three kinds is a view formed by the interpreters who commented on Galen' writings. See Temkin (1951) esp. p. 182. Moreover, in addition to Galen's, the Stoic pneuma might be worth considering as a key concept that explains Ǧābirian usage of pneuma since Zosimos already applied the Stoic pneuma to his alchemical description. See Rinotas (2017).

[49] Gannagé (1998) and Gannagé (2005).

Alexander are mentioned only in the *Compendia*.[50] The writings referred to are five as follows:

1. 'On the Soul' (*Kitāb al-nafs*)
2. 'On the Providence' (*Fī al-ʿināya*)[51]
3. 'Book of the Intellect and What is Intelligible' (*Kitāb al-ʿaql wa al-maʿqūl*)[52]
4. Refutation of Galen concerning his attack against Aristotle's doctrine that everything that moves is moved by effect of the mover[53]
5. 'Treatise' (*Risāla*)[54]

I shall focus on the last one, i.e., Alexander's treatise cited in the sixth chapter of the *Compendia*. In 1942, Kraus claimed that we could not identify the cited treatise with any known writings attributed to Alexander. However, eighty years after this judgement, the treatise, which turned out to be two treatises, can be identified with Alexander's *Quaestiones 1.17* and *1.21* thanks to the progress of research into the Arabic tradition of Alexander. The treatises ascribed to Alexander in the *Compendia* include peculiar Arabic equivalents of basic words in Greek philosophy, which might have prevented us from noticing that their sources are *Q 1.17* and *Q 1.21*.[55] Hereunder, some points of both treatises are observed, paying special attention to some Arabic equivalents of Greek terms.

Quaestiones 1.17 in MS Istanbul Carullah 1721, ff. 162b-165b

The first treatise by Alexander cited in the *Compendia* is introduced, although it lacks the very title, with a kind of heading or a thematic phrase like the following:

T8: The *Compendia* [ج 162b4-6]

For it is strongly necessary that you know how form is in matter and [in] a substrate (*maʾḍūʿ*), that is, as is said, whether form is in matter as the thing which is carried or not.	وذلك أنه شديد الحاجة إلى أن تعلم كيف تكون الصورة في المادة والموضوع وكما يقول القوم أهي فيها كالشيء المحمول أو غير ذلك

In our passage, the sentence "how form is in matter" is reworded in a more detailed way in the latter part where it is said "whether form is in matter as the thing which is carried",

[50] See n. 14 in Chapter 1.1.
[51] The Arabic edition and French translation are in Thillet (2003).
[52] The edition is in Finnegan (1956) and in Badawi (1971).
[53] See Kraus (1942), p. 328.
[54] Kraus (1942), p. 325 : «Jābir se réfère plusieurs fois à une épître (*risāla*) d'Alexandre sans titre particulier et que nous n'avons pu identifier à l'un des écrits connus.»
[55] Kraus must have been able to access the Greek text of Alexander's *Quaestiones* as edited by Bruns in 1892 considering that Kraus mentioned Bruns's edition of Alexander's *De anima*. See Kraus (1942), p. 324, n. 4. Nevertheless, he did not identify the source of the treatise in the *Compendia*. This fact can be regarded as a proof that Arabic equivalents used in the quotations of Alexander's treatises are not ordinary or at least it is not easy to discern the connection between them and their Greek original terms.

which reminds us of three treatises that deal with a relevant subject: Alexander's *Quaestiones 1.8* "To [show] that form is not in matter as in a substrate (Πρὸς τὸ μὴ εἶναι τὸ εἶδος ἐν τῇ ὕλῃ ὡς ἐν ὑποκειμένῳ)",[56] *Q 1.17* "That form is not in matter as in a substrate (Ὅτι μὴ τὸ εἶδος ἐν τῇ ὕλῃ ὡς ἐν ὑποκειμένῳ)",[57] and *Q 1.26* "How form is in matter, whether in itself or accidentally (Πῶς τὸ εἶδος ἐν τῇ ὕλῃ, πότερον καθ' αὐτὸ ἢ κατὰ συμβεβηκός)".[58] Among these three treatises, only *Q I. 8* is extant in Arabic under the title "*fī anna al-ṣūra laysa fī al-hayūlā maḥmūla*", from which *maḥmūl* is understood as an equivalent of the phrase ὡς ἐν ὑποκειμένῳ. By comparing the contents of these three works of Alexander's *Quaestiones* with Alexander's treatise cited in the *Compendia*, it turned out that *Q 1.17* is its Greek source of the Arabic passage quoted in the Ǧābirian text. How form is in matter can be discussed in relation to how the soul is in the body. Usually, the soul is regarded as the form of the body that can be the matter of a living thing. As hylomorphism has a long history and cannot be depicted in a monotone, the word *maḥmūl* deserves our attention. For, the term derived from *ḥ-m-l* is a key to understand the transition of a philosophical notion from Greek into Arabic in a hylomorphic framework.

Although the word *ḥāmil* generally means 'to be pregnant, carrying, and a bearer', it is used as an equivalent of many kinds of Greek words. Some glossary databases show examples of *ḥāmil* as a possible equivalent of ὑποκείμενον.[59] For instance, in Proclus' *Elements of Theology*, especially in Proposition 72: "πάντα τὰ ἐν τοῖς μετέχουσιν ὑποκειμένων ἔχοντα λόγον ἐκ τελειοτέρων πρόεισι καὶ ὁλικωτέρων αἰτίων (all those characters which in the participants have the relative position of a basis proceed from more complete and more universal causes)"[60] is transformed to كلّ حامل يقوى على حمل أشياء كثيرة فإنّما يحدث عن علّة كلّيّة كاملة.[61] In the same Proposition 72, the phrase *al-ḥāmil al-awwal* is explained as *al-hayūlā*, that is, a transliteration of ὕλη (matter), which can relate to our purpose of exploring *ḥāmil* in hylomorphic contexts.[62]

On the other hand, the Greek word ὑποκείμενον is usually rendered as *maʾḍūʿ* in Arabic translations of Peripatetic works.[63] In fact, [T8] has *maʾḍūʿ* to mean something

[56] Ed. Bruns (1892), pp. 17.7-19.15.
[57] Tr. Sharples (1992), pp. 64-66; ed. Bruns (1892), pp. 29.30-30.22.
[58] Tr. Sharples (1992); ed. Bruns (1892), pp. 41.20-43.17.
[59] The online database *Glossarium Græco-Arabicum* (http://telota.bbaw.de/glossga/) shows us the original Greek words of *ḥāmil*: αἰμόρρους (Ps.-Plut. Placita); γαστήρ (Artem. Onirocr.), (Hippocr. Aer.); δίοσμος (Them. In De an.); ἔγκυος (Artem. Onirocr.); ἔχω (Hippocr. Aer.), (Artem. Onirocr.); καρποφορέω (Artem. Onirocr.); κυέω (Arist. Gener. anim.); κυίσκομαι (Hippocr. Superf.); ὀχέω (Arist. Phys.); συλλαμβάνω (Arist. Gener. anim.); ὕλη (Proclus El. theol.); ὑπόκειμαι (Proclus El. theol.); χρυσοφορέω (Artem. Onirocr.). Besides, according to Arabic, English, Greek and Latin Glossary of *The Great Introduction to Astrology* by Abū Maʿšar in Yamamoto, Burnett, and Pingree (2019), although some overlap with the words mentioned above, *ḥāmil* is used as a translation of ἔγκυος, περιφερόμενος, συνέλαβον, and ἐπιφέρεται.
[60] Ed. Dodds (1963) p. 68, l. 17-18; tr. ibid., p. 69.
[61] Ed. Endress (1973), p. ٢٤, l. 1-2.
[62] Ed. Endress (1973), p. ٢٤, l. 6-7: إذا أن الفاعل الأول هو فاعل ومُحْدِث للحامل الأول أعني الهيولى القابلة لجمنع الأشياء.
[63] For example, in Aristotle's *Analytica Posteriora* 90a12, τὸ ὑποκείμενον is translated with *maʿḍūʾ*.

similar to matter which can be laid under something else. An Arabic translator of *Q 1.8*,[64] however, did not choose *maʾḍūʿ* but *ḥāmil* to translate ὡς ἐν ὑποκειμένῳ, or perhaps *ḥāmil* replaced *maʾḍūʿ* at some point in the manuscript transmission of the text. *Maʾḍūʿ* is a more literal translation of ὑποκείμενον than *ḥāmil* since *maʾḍūʿ* is the same passive voice as ὑποκείμενον, whereas *ḥāmil* is an active voice. Accordingly, when ὡς ἐν ὑποκειμένῳ is replaced with *ḥāmil*, the voice of ὑποκείμενον is literally changed to the opposite, while the described situation remains the same. Considering this change of the voice, the Arabic translation *ḥāmil* can imply that the leading part in hylomorphic relation was transferred from something carried, which deserves the form, to a thing that carries something, which is equal to the matter.

Quaestiones 1.21 in MS Istanbul Carullah 1721, ff. 166a-168b

The second treatise cited in the *Compendia* is Alexander's *Quaestiones 1.21* "In what category movement [belongs] (Ἐν τίνι κατηγορίᾳ ἡ κίνησις)".[65] *Q 1.21* has two kinds of Arabic translation which are preserved in manuscripts irrelevant to any Ǧābirian works. Before describing *Q 1.21* cited in the *Compendia*, it is useful to briefly grasp the tradition of Arabic writings ascribed to Alexander in order to facilitate our identification of the treatise in the *Compendia* with *Q 1.21*.

Along with presenting the edition and the translation of Alexander's Arabic treatise *On Specific Differences*, Albert Dietrich provided the list of other twenty-eight Arabic works of Alexander in 1964 (D1-D28),[66] and then Josef van Ess rectified Dietrich's list and added other nine works to it (E29-E37) in 1966.[67] After that, a complete bibliography of Alexander's writings including the Arabic tradition was provided by Robert William Sharples in 1987 and it was supplemented in *Dictionnaire des philosophes antiques* edited by Maroun Aouad and Richard Goulet in 1989.[68] To this supplement, Gannagé added a few other discoveries recognised in 2005.[69] The fact that an Arabic translation of *Q 1.17* and *Q 1.21* is preserved in the *Compendia* as seen above is the latest information about the extant Alexander's works.[70]

To return to *Q 1.21*, its two kinds of Arabic version are called D2b and D8a

[64] It is not certain who translated *Q. I. 8*, but some Arabic translations of the *Quaestiones* are ascribed to Abū ʿUṯmān al-Dimašqī (d. c. 900AD); e.g., *Q. I. 2* in ed. Gätje (1967), *Q. I. 5* in ed. Ruland (1981), *Q. I.11a* in ed. Ruland (1979), and *Q. I. 21* (= D2b) in ed. Badawi (1947).
[65] Tr. Sharples (1992), 74-75; ed. Bruns (1892), 34.30-35.15.
[66] Since, when making the list, Dietrich did not count Alexander's treatise *On Specific Differences* that he analysed in his article in 1964, it follows that he actually showed that there were twenty-nine Arabic works attributed to Alexander.
[67] Dietrich (1964); van Ess (1966).
[68] Sharples (1987), pp. 1176-1243; Aouad & Goulet (1989), pp. 125-139.
[69] Gannagé (2005), pp. 4-6.
[70] When Hasnawi discussed the contents of D8a, he already knew that 'Alexander's treatise' was mentioned in the Compendia through Kraus (1942), p. 321, n. 2. See Hasnawi (1994), p. 64, n. 26. However, inaccessibility to the whole text of the cited Alexander's treatise might have prevented him to notify that the whole text of Alexander's treratise is preserved in the *Compendia*.

according to those secondary literatures.[71] The Arabic work quoted in the *Compendia* is D8a, which had not been recognised as an Arabic translation of the Greek *Q 1.21* until Hasnawi pointed it out in 1994: indeed, at a first glance, D2b and D8a do not look to be translations of the same work.[72] The dissimilarity between them can be confirmed by looking at such equivalents as shown in the table below:

Q 1.21	D2b	D8a
πάθος (affection)	*infiʿāl* (passivity / being affected)	*aṯar* (influence)
ἐνέργεια (activity)	*fiʿl* (activity)	*tamām* (perfection)
ἐντελέχεια (actuality)	*istitmām* (perfection)	*kamāl* (completion)

Following Sharples' translation, πάθος can be translated with 'affection', ἐνέργεια with 'activity' and ἐντελέχεια with 'actuality'. The Arabic equivalents to these Greek terms in D2b and D8a literally differ from each other. However, the meanings of *infiʿāl*, *fiʿl* and *istimām* in D2b are coherent with those of *aṯar*, *tamām* and *kamāl* in D8a respectively. These Arabic words in two kinds of translation vary literally but only superficially. They convey the same or at least consistent meanings of what the Greek text says. In contrast, there is an example where different translations of the same Greek word can cause a new conclusion that does not seem to have been intended in the original Greek treatise. This happened to εἶδος in *Q 1.21*.

The sentence including the word εἶδος is dependent on Aristotle's *Categories*. Therefore, it is useful to first seek the meaning of εἶδος in *Q. 1.21* compared with the corresponding sentence in the *Categories* that Alexander probably relied on.

> Aristotle's *Categories*, 9a28
> qualities involving affection, and affections, are the third genus of quality.[73]
> τρίτον δὲ γένος ποιότητος παθητικαὶ ποιότητες καὶ πάθη.
>
> Alexander's *Quaestiones*, *1.21*
> for qualities involving affection, and affections, are the third species of quality.
> τρίτον γὰρ εἶδος ποιότητος παθητικαὶ ποιότητες καὶ πάθη.[74]

These two sentences above are almost the same except that γένος in Aristotle's *Categories* is replaced by εἶδος in Alexander's *Q 1.21*. This εἶδος was translated with *nawʿ* (species)

[71] The Arabic texts are in Badawi (1947), p. 279 (D2b) and pp. 289-290 (D8a), the French translation is in Badawi (1968), pp. 151-152 (D8a). Some works of Arabic Alexander have subdivision numbers such as D2a and D2b since they turned out to be complex works that depend on more than two Greek original works of Alexander.
[72] The texts of Arabic D2b, D8a and Greek *Q 1.21* are compared in Hasnawi (1994), pp. 56-58.
[73] This translation is made following the translation of *Q 1.21* by Sharples. It can be translated in another way like "a third kind of quality consists of affective qualities and affections" in Barnes (1985) Vol. 1, p. 15.
[74] Ed. Bruns, p. 35.2-3; tr. Sharples (1992).

in D2b, while it was rendered as *ṣūra* (form) in D8a as follows:

T9.1: Citation from D2b

For, the movement is a kind of passivity and what is passive is nothing but passive by the presence of passivity and what is moved is moved by the presence of movement, then the movement is passivity, and passivity is quality. For, the third species of quality is passive qualities and passivity.	وذلك أن المتحرك إن كان انفعالا ما وكان المنفعل إنما ينفعل بحضور الانفعال، وكان المتحرك متحركا بحضور الحركة، فالحركة إذن انفعال، والانفعال كيفية. وذلك أن النوع الثالث من أنواع الكيفية هو الكيفيات الانفعالية والانفعالات[75]

T9.2: Citation from D8a

We say that the movement is a certain influence and what is influenced is nothing but influenced by an influence and what is moved is moved by movement. If it is like this, then the movement is a certain influence. The Philosopher said in the *Book of Categories* that the influence is the third form of quality.	فنقول: إن الحركة أثر من الآثار والمؤثَّر به إنما يكون بأثر مؤثر والمتحرك بحركة يكون متحركا؛ فإن كان ذلك كذلك كانت الحركة إذًا أثرا من الآثار. وقد قال الفيلسوف في كتاب المقالات إن الأثر هو صورة ثالثة[76] من صور الكيفية

If the term *ṣūra* as an equivalent of εἶδος in D8a does not mean hylomorphic form but form as shape, it can play the same role as *nawʿ* in D2b and simply mean 'species' or 'genus' as Hasnawi interpreted *ṣūra* in his analysis of D8a.[77] In contrast, Ǧābir seems to have understood this *ṣūra* as hylomorphic form since he concluded, after quoting D8a, that the movement is 'form', which does not seem to mean 'shape'.

T10: The *Compendia* [ج 166b18-19]

For, if the movement is a certain influence and the influence is form, the movement is also the form.	وذلك أنه إن كانت الحركة أثرة ما والأثرة صورة كانت الحركة صورة أيضا.

Thus, according to how εἶδος is read, the point of the argument can be largely changed. It remains unclear whether Ǧābir chose D8a intentionally or he simply did not know D2b. However, the fact is that Ǧābir adopted D8a not D2b, which will relate the problem of dating the translation of Alexander's *Qaestiones*, and it will ultimately become one of the clues about the composition date of the *Compendia*. As for the contents, Ǧabir connected the movement with the form through the middle term, i.e., the influence/passivity. The

[75] Ed. Badawi (1947), p. 279. 5-8.
[76] I read *ṯāliṯa* (third) instead of *ṯābita* (fixed / stable) in ed. Badawi (1947), p. 289.
[77] Hasnawi translated the sentence in question with «la passion es tune troisième espèce de la qualité» in Hasnawi (1994), p. 62.

idea that movement is form seems to have been infiltrated into Ǧābir's own hylomorphic theory. In the first chapter of the *Compendia*, where Ǧābir maintained his own theory of form, he speaks as follows:

T11: The *Compendia* [ج 8b11-12, 17-19, 25-26; ب 5312, 75a17-19, 75b4-6, 12]

Since it became clear, I say that the form (*al-ṣūra*) is two primary forms. This is an argument the philosophers did not state, but, because I intended the utmost clarity, I mentioned it relying on its great symbolism. The first (*al-ūlā*) [form], which is the perfect one, is a thing before the knowledge.[78] (…) The second form (*al-ṣūra al-ṯāniya*) is something imperfect, but some sort of what makes something perfect. This is an efficient cause for receiving [form] in matter, and it is the movement. For, the movement is a certain form and perfection, and this movement which is said to be a certain form and perfection is the first movement which is the movement of celestial spheres. (…) Since it became clear, I say that the origin of the coming-to-be of all in this world is this movement.	وإذ قد بان ذلك فأقول إن الصورة صورتان أوّلتان، وهذا قول لم تطلقه[79] الفلاسفة، ولكن[80] لمّا كنت أتعمّد غاية الإيضاح ذكرت ذلك على رمز كبير له. فأما الأولى وهي التامة فهي التي[81] تكون من قبل العلم. ... وأما الصورة الثانية فهي الناقصة إلا أنها متمّمة ما. وهذه هي السبب الفاعل بالقبول في المادة وهي الحركة. وذلك أن الحركة صورة ما وتمام، وهذه الحركة التي تقال لها صورة ما وتمام هي[82] الحركة الأولى التي هي حركة الأفلاك، ... وإذ قد بان ذلك فأقول: وإن[83] أصل كون ما في هذا العالم كله هو هذه الحركة.

Ǧābir says that there are two kinds of form: the perfect and the imperfect. The second one is, despite being imperfect itself, what makes something else perfect. This second form is said to be the first movement. Here is an equation between form and movement. Without any further explanation in these passages, Ǧābir claimed that form is movement. If it is asked where the source of this idea is, it will lead us to the sixth chapter in the same book, in which Ǧābir quoted and commentated on Alexander's treatises. Alexander's doctrine that combines form with movement might have been attractive for Ǧābir, who was trying to incorporate the celestial effects into the process of coming-to-be in this world. In the *Compendia*, there are also references to Alexander's work *On the Providence*, which

[78] The phrase 'min qabli al-ʿilmi (before the knowledge)' can be read as 'min qibali al-ʿilmi (on the part of knowledge)' as well.

[79] تطلقه [ج] : يطلقه [5312 ب].

[80] ولكن [5312 ب] : ولكني [ج].

[81] فهي التي [5312 ب] : – [ج].

[82] الحركة. وذلك أنّ الحركة صورة ما وتمام، وهذه الحركة التي تقال لها صورة ما وتمام هي [5312 ب] : – [ج].

[83] وإنّ [5312 ب] : – [ج].

discuss the influence of celestial bodies on the sublunar world.[84] Alexander seems to have been a useful source for Ǧābir to give authority to his own theory or, possibly, it might have even formed Ǧābirian own hylomorphism.

Thus, focusing on Euclid, Galen and Alexander of Aphrodisas, how the Corpus is under the influence of ancient Greek knowledge has been exemplified in this chapter. The Corpus is not only a receiver, but it was also received by the later authors. The next chapter will seek the influence of the Corpus on late Byzantine alchemy.

[84] Alexander's *On the Providence* is referred to in [ج 11a, 31a & 144b], see Kraus (1942), p. 324, n. 7, e.g., [ج 11a]; [ب 5312, 78b]:
وما اختص الإسكندر الأفروديسي في كتابه في العناية أن الفلك التاسع لا عناية له بهذا العالم عن قصد ولكن ليس شيء في هذا العالم يخرج عن عنايته ولكن عنايته به بالعرض.

1.4. Ǧābirian influences on Byzantine alchemy

From the viewpoint of the Graeco-Arabic studies, it deserves to be emphasised that the Ǧābirian corpus was not only under the influence of ancient Greek works but, the other way round, it also had an influence on Greek writings which here means Byzantine alchemical texts. While the former point – i.e., the relationship of the Corpus with ancient Greek thoughts – has been well-known after Kraus' throughout investigations,[1] the latter – the influence of the Corpus on Byzantine alchemy – has been little examined. In this regard, a Byzantine anonymous alchemical treatise, *The Work of Four Elements*, is a proper material for the investigation. Before moving to its details, however, it is better to sketch a general view of the connection of Arabic alchemy to Byzantine alchemy so that the position of the *Four Elements* among several pieces of evidence that show the relation between two linguistic traditions in alchemy can be recognised.

Since Byzantine alchemy itself still represents a field that has not been studied sufficiently, quite a few facts remain unclear to discuss its connection with Arabic alchemy.[2] Despite such a poor situation of research, Maria Mavroudi pointed out that four Byzantine alchemical texts contain traces of Arabic alchemy.[3] Two of them are alchemical recipes on the tempering of copper and 'Indian iron' preserved in the tenth-century Byzantine manuscript *Marcianus* gr. 299,[4] where some ingredients are referred to by Arabic names. At the beginning of the first recipe of the two, the term θουθία – perhaps zinc oxcide – is used.[5] This cannot be neglected to find a connection of this Greek recipe with Arabic alchemy because the term θουθία does not occur in any of the ancient alchemical texts, and its presence can be regarded as a trace of the Arabic word *tūtiyāʾ*.[6] Apart from these two texts on iron, other two recipes that mention Arabic elements are found in thirteenth-century and later manuscripts (e.g., MSS *Parisini* gr. 2325 and 2327): one titled "Method through which the sphere-shaped hail is brought to perfection, fabricated by the Arab Salmanas,[7] famous in <the field of alchemy>" on the making of artificial pearls,[8] and another recipe attributed to "the wise Ishmaelites" on the making of

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[1] Kraus (1942) & (1943).
[2] See Mavroudi (2002), pp. 400-401, n. 28. More recent research into the relationship between Arabic alchemy and Byzantine alchemy performed by medieval Greek-speaking scholars is in Roberts (2022).
[3] In this paragraph, the influence of Arabic alchemy on Byzantine alchemical texts is described mainly based on Mavroudi (2002), pp. 400-403.
[4] MS *Marcianus* gr. 299 was dated to the tenth century in Mavroudi (2002), p. 35 & p. 107, n. 50. As the oldest known compendium of alchemy, the codex is said to have been copied at the beginning of the tenth century in Pérez Martín (2018), p. 45, n. 36. More recently, the same codex is considered to have been produced sometime in the second half of the tenth century in Roberts (2020), p. 25.
[5] Berthelot explained θουθία as a substance that was sublimed and found at a higher part of furnace, and almost identified it with zinc oxide. See *CAAG*, III, pp. 330-331; Mavroudi (2002), p. 402, n. 34.
[6] *Tūtiyāʾ* is mentioned again when *ḫārṣīnī* is dealt with in Chapter 2.4.
[7] Kraus supposed that the alchemist Salmanas might be identified with Salm (or Sālim) al-Ḥarrānī, the director of 'the House of Wisdom' in Baghdad under the reign of al-Maʾmūn (r. 813-833). See Kraus (1942), p. 39, n. 3.
[8] Ed. *CAAG*, III, pp. 364-367.

artificial emeralds.[9] Thus, at least four recipes clearly indicate that there were Byzantine contacts with Arabic alchemy after the tenth century and earlier than the fourteenth century which is the supposed time when these recipes are written. In addition, already in the eighth century, there was an interaction for the embassies of each state – Byzantine and Arabic region – to have tried to impress the others through various ways including alchemical operations: al-Mansūr's ambassador ʿUmāra b. Ḥamza visited the Byzantine court and saw the emperor Constantine V (r. 741-775) perform transmutation of metals with dry powder, i.e., elixir.[10]

All four recipes above-mentioned are indeed precious to prove Arabic influence on Byzantine alchemy, but they do not give us any information about whether the Ǧābirian corpus circulated in Byzantine alchemical milieux and, if this was the case, how it was transmitted. On this point, the *Four Elements* precedes other Byzantine texts because it has an undeniable connection with the Ǧābirian *Book of Thirty Words*, through its Latin version, i.e., the *Liber de triginta uerbis*. Hereafter, its contents and possible sources are overviewed (1.4.1), and then, the influence of Ǧābir on Byzantine alchemical texts is surveyed with a broader sight of Byzantine texts besides the *Four Elements* via relevant Latin alchemical writings (1.4.2 - 1.4.4).

1.4.1. *The Work of Four Elements*

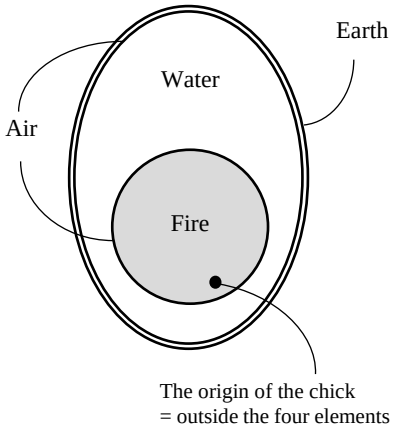
1.4.1.1. Egg as a symbol of the four elements

Among the alchemical anonymous works that were presumably written in the Byzantine Empire,[11] there is a short Greek treatise called *The Work of Four Elements* which is devoted to the distillation of eggs to divide them into the four elements (water, air, fire and earth). Both eggs and the four elements are used as symbols of various substances that share, to some extent, common features with others.[12] At the beginning of the text,[13] a preliminary operation is described: eggs – both the white and the yolk – are mashed and heated on low flame. Then, white water comes out from them. After the removal of the white water, oil is added, and the fire is made stronger. The substances that remain on the plate are called burnt copper and Asian *magnēsia*. Following this preliminary procedure, the first element Water, i.e., divine vinegar or divine water, is distilled. The second operation is related to Air, where oil is put on quicklime, rotten and distilled. The

[9] Ed. *CAAG*, III, pp. 350-364. "The wise Ishmaelites" is mentioned in ibid. p. 358.
[10] Strohmaier (1991), esp. p. 22; Mavroudi (2002), p. 403, n. 40.
[11] The Greek text of *The Work of Four Elements* is edited by M. Berthelot & C.-É. Ruelle in *CAAG* (1888), vol. 2, pp. 337-342, and reproduced in Appendix of this dissertation with an English translation. For a French translation, see *CAAG*, vol. 3, pp. 322-327.
[12] As for egg distillation and symbolism, a representative bibliography is found in Leontsini & Merianos (2016), p. 220 n. 78; p. 221 n. 79.
[13] In this paragraph, I overview the contents of the *Four Elements*, of which Greek text and English translation are found in Appendix.

produced divine oil can turn burnt iron into gold. The third operation corresponds to Fire, that is, burnt copper or ashes on the plate that are the remainder after the eggs were burnt in the preparation. If it is pounded under the sunlight, moistened and dried, it can make silver look gold. The fourth element, Earth, is powdered quicklime or shells of eggs, which is ground with natron and water, washed with syrup, dried up and pounded. And then, it is mixed with the same amount of water as the eggs which might be identified with the eggs from which the shell – Earth – was taken. The moistened powder is heated, dried and again pounded. The latter procedure, i.e., moistening, heating and drying, is repeated many times. There, found is a pale green substance that can whiten copper. The recipes for each element except Fire are followed by the name list of the element in question. After the operation for the fourth element Earth is depicted, the unification of the separated four elements is prescribed with description of quantity. These are the contents of the *Four Elements*.

The idea of reducing natural materials to the four elements probably derives from the Empedoclean theory where all bodies in this world are constituted of the four elements and the different proportion of their mixture in each individual makes a variety of species. Depending on this theory, alchemists thought that they could transform base metals into gold only by separating, purifying and recombining their elements in the correct proportion. The reason why eggs are distilled in the recipe can also stem from Empedocles, who compared the world to an egg.[14] In the same intellectual stream, the Greek alchemists adopted the term ‘egg’ as a symbol of material bodies in the world. Moreover, according to the *Turba Philosophorum*, i.e., a Latin alchemical writing whose original work was written in Arabic around the ninth century,[15] Empedocles regarded the white of an egg as Water, the membrane as Air, the yolk as Fire and the shell as Earth (See Fig. 1 above).



[Fig. 1, Four Elements in the Egg]

The Assembly of Philosophers (R106).[16]

[14] Colinet (2000), p. 174.
[15] Plessner (1954).
[16] Empedocles in *The Assembly of Philosophers* (R106) (≠ DK): dixit: significo posteris quod aer est tenue aquae et quod non separatur ab ea; quod si non esset, terra sicca super aquam humidam non maneret. [. . .] dixit quod aer absconditus in aqua, quae sub terra est, est qui fert terram, ne mergatur in aquam, quae est sub terra, et prohibet ne terram humectet aqua. aer igitur factus est complectens et inter diversa separans, aquam sc. et terram, ac inter adversaria, aquam sc. et ignem, factus est igitur concordans et separans, ne se invicem destruant. [. . .] exemplum eius est ovum, in quo quatuor coniuncta sunt. eius cortex apparens est terra et albedo aqua; cortex vero tenuissima cortici iuncta est separans inter terram et aquam, sicut significavi vobis, quod aer est separans terram ab aqua. rubeum quoque ovi est ignis; cortex, qui rubeum continet, est aer aquam separans ab igne, et utrumque unum et idem est. aer tamen frigida separans, terram

> He (i.e., Pandolfus, that is, Empedocles) said: I declare to posterity that air is the most rarefied water and that it is not separated from it. If it did not exist, the earth would not remain dry above the moist water [. . .]. He said that the air hidden within the water that is found below the earth is what supports the earth so that it does not fall into the water that is found below the earth and what prevents the water from moistening the earth. Thus air was established as an entity that encompasses and that causes separation among things that are different, viz. water and earth, and that causes both harmony and separation among things that are contraries, viz. water and fire, so that they do not destroy each other. [. . .] The example of this is the egg, in which four things are united. Its visible shell is the earth and the white is the water; the very thin membrane that adheres to the shell is what causes separation between earth and water, as I have indicated to you that air is what separates the earth from the water. Then the yolk of the egg is the fire: the film that contains the yolk is the air that separates the water from the fire: the two are one and the same thing. Only, the air that separates the cold elements, viz. earth and water, from each other is denser than the upper air. The upper air, by contrast, is more rarefied and more subtle; it is likewise nearer to the fire than the lower air is. Thus there are four things in the egg: earth, water, air, and fire; the leaping point in the middle of the yolk, which is the chick, is outside of these four. For this reason, all the philosophers in this exquisite art [i.e. alchemy] have described the egg and have chosen it as an example for their work.

Combined with the four elements, four portions of the egg work as the classificatory devices that indicate core materials in alchemical recipes. However, the correspondence between each part of the egg and the four elements is not obvious in the *Four Elements* where Water is regarded as divine vinegar or divine water, Air as oil, Fire as burnt copper or ashes of burnt eggs except the shell, and Earth as all-powered quicklime or shells of eggs. Thus, Water and Air are not even mentioned in connection to any part of eggs. On the contrary, Fire and Earth are associated with part of eggs, but Fire is the remaining matter after both white and yolk of eggs were burnt, and it does not correspond exactly to the yolk. Only Earth has the same ascription to the shell of eggs as the legendary Empedocles described in the *Turba Philosophorum*.

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videlicet et aquam, ab invicem, spissior est aere altiore. aer vero altior est rarior et subtilior; est namque igni propinquior aere inferiore. in ovo igitur facta sunt quator: terra, aqua, aer et ignis; saliens autem punctus, his exceptis quatuor, in medio rubei qui est pullus. ideoque omnes philosophi in hac excellentissima arte ovum descripserunt ipsumque exemplum suo operi posuerunt.

The correspondence between the four elements and parts of eggs

	Water	Air	Fire	Earth
Turba Philosophorum	Egg white	Egg membrane	Egg yolk	Egg shell
The *Work of Four Elements* (in the name list)	---	--- (Egg yolk)	Burnt egg =White & Yolk	Egg shell

The more confusing fact is that the yolk of eggs is mentioned in the name list of Air which is, on the other hand, combined with the membrane of eggs by Empedocles. Hence, it is not easily supported that the four elements in the *Four Elements* correspond to each part of an egg as specified in the *Turba Philosophorum*.

1.4.1.2. Sources of the *Work of Four Elements*

The composition date of the *Four Elements* has not been determined.[17] Marcellin Berthelot and Charles-Émile Ruelle, after saying that its date cannot be precisely established, tentatively consider this treatise as written after the seventh century and, therefore, relatively modern.[18] On the other hand, Saffrey regarded it as one of the treatises written before Zosimos.[19] More recently, Colinet hypothesised that this treatise might have been composed in the twelfth century, showing its partial dependence on the Ğābirian *Book of Thirty Words*, which is the third book of the Ğābirian *Books of Seventy*. It is not certain whether the author of the Greek *Work of Four Elements* had directly read the Arabic *Book of Thirty Words* or indirectly got to know it through its Latin translation, but, Colinet says, the latter is more probable.[20] The Arabic *Books of Seventy* were translated into Latin under the title of the *Liber de septuaginta*. Although the Arabic *Book of Thirty Words* is counted as one of the *Books of Seventy* in the Corpus, a Latin version of the *Book of Thirty Words* is not included in the *Liber de Septuaginta*. It was known to the medieval Latin world independently under the title of the *Liber de triginta uerbis*, which is in fact mentioned by Roger Bacon (c. 1219-1292).[21] Colinet already compared the *Four Elements* with the Latin and Arabic *Book of Thirty Words* and confirmed its dependence on the Arabic text probably by the medium of its Latin version.[22] Therefore,

[17] Colinet (2000), p. 167.
[18] *CAAG*, vol. 3, p. 322, n. 5.
[19] Saffrey (1981), AG, I, p. XIV.
[20] Colinet (2000), pp. 177-178.
[21] Colinet (2000), p.173. E.g., the citation from Bacon's *Speculum secretorum* is in 1.4.2.1.
[22] The comparison of the *Four Elements* with Arabic and Latin *Book of Thirty Words* is described in Colinet (2000), pp. 174-177. The Latin edition of the *Liber de triginta uerbis* is in Colinet (2000), pp. 179-187. The Arabic edition and its French translation of the *Book of Thirty Words* are in Lory (1988), pp. 39-50 and Lory (1988), pp. 131-142, respectively. Colinet might not exactly be an Arabist, but she sufficiently analysed the Arabic text with support from Arabists, P. Lory and J. Michot. See Colinet (2000), p. 174, n. 35.

our survey this time does not repeat her analysis.[23] Instead, another Byzantine alchemical text is on the table to see Ǧābirian influence on the Byzantine era.

1.4.2 *The Sacred and Divine Art of Chrysopoeia* (or 'Anonymous of Zuretti')

The Work of Four Elements is not the only text that shows the influence of the Corpus on Byzantine alchemy. *The Sacred and Divine Art of Chrysopoeia* (the *Chrysopoeia*) is another example which is also an anonymous work written in the Byzantine cultural milieu, perhaps in Southern Italy, Calabria, presumably around 1300.[24] It was once edited by Zuretti in 1930, that is why it is also called the 'Anonymous of Zuretti', and reedited by Colinet in 2002 with abundant information of its possible Latin sources, some of which have an Arabic origin such as the *Liber de septuaginta* and the *De aluminibus et salibus.*[25] The *Chrysopoeia*, constituted of a hundred chapters, is a composite work in which many sources, mainly Latin texts, are intricately mingled together, but the aim of its author is simple: base metals are ill compared with the perfect one – gold – and should be cured with remedies – spirits. This idea is supported by the belief that all metals have the same composition.[26] In the introductory part of the *Chrysopoeia*, main materials are concretely referred to as follows: the metals (μέταλλα / σώματα) are six – gold, silver, iron, tin, copper and lead.[27] The spirits (πνεύματα) are four – mercury, sulphur, arsenic and salammoniac.[28] Some chapters of the *Chrysopoeia* are assigned to other substances such as vitriol, alum and borax which work like metals and spirits in alchemical operations. Besides, the 'naturals' (φυσικά), called Philosophers' stones, constitute another category of substances. It is said that although there are many stones, only three stones – human blood, hair and eggs – are enough for elixir.[29] The nomenclature of eggs is used in Chapter 66 of the *Chrysopoeia* where, however, there is no one-to-one correspondence between each part of eggs and each of the four elements as shown in the *Four Elements*.

1.4.2.1. Distillation to separate the four elements

Through a hundred chapters of the *Chrysopoeia*, the author explains operations concerning metals, spirits and stones. There are six operations or preparations:

[23] Although the details of Arabic and Latin texts are not discussed here, a closer comparison between the Byzantine, Arabic and Latin versions is available in the notes of comments on the translation of the *Four Elements* in Appendix.
[24] Colinet (2002), pp. LXXXIV-LXXXV. That is why Colinet explored the fourteenth-century manuscripts for its sources.
[25] Colinet shows also Greek sources but less than the Latin ones in Colinet (2002), pp. LXIII-LXIV.
[26] Colinet (2002), p. LXXXVI.
[27] Chapter 1 of the *Chrysopoeia* in Colinet (2002), p. 6, 5-7. These six metals are called μέταλλα (e.g., ibid., p. 7, 15) and σώματα (e.g., ibid., p. 10, 17) in this text.
[28] Chapter 2 of the *Chrysopoeia* in Colinet (2002), p. 8, 22-23.
[29] Chapter 2 of the *Chrysopoeia* in Colinet (2002), p. 9, 1-3.

purification (or washing), calcination, ceration, solution, coagulation and reduction.[30] Among them, the second operation, which is given different names according to what it is applied to, provides an interesting description that can provide some evidence for the influence of Ǧābir on the *Chrysopoeia*. Calcination is a name of the second operation for metals. The same operation for spirits is sublimation, and for stones it is distillation.

The Sacred and Divine Art of Chrysopoeia, Chapter 4

The second operation is particular and proper to every species: that is, for stones, it is distillation through an alembic. For spirits, [it is] sublimation, and for bodies (i.e., metals) calcination. Distillation is the separation of the four elements from others that are in the stones.	Δευτέρα ἐργασία ἐστὶν ἰδιάζουσα καὶ γνησία ἑκάστῳ τῶν διαφορῶν, ὅτι τῶν μὲν λίθων ἐστὶν ἡ καταστάλαξις ἡ δι᾽ἄμβικος, τῶν πνευμάτων ἡ ἀνάβασις, καὶ τῶν σωμάτων ἡ τιτάνωσις. Καὶ καταστάλαξις μέν ἐστι διάκρισις τῶν τεττάρων στοιχείων ἀπ᾽ ἀλλήλων τῶν ἐν τοῖς λίθοις.[31]

Here, the distillation described in the *Four Elements* may well be recalled. It was an operation of distilling eggs and separating them into the four elements.[32] Eggs were originally expressed as stones in the Arabic and Latin possible sources of the *Four Elements*. Accordingly, the idea of distillation as separation of the four elements in stones could have derived from the Arabic or Latin *Book of Thirty Words*. In fact, this passage referring to the distillation in the *Chrysopoeia* has a corresponding Latin text, Roger Bacon's *Speculum secretorum* in which the *Liber de triginta uerbis* is mentioned.[33]

Roger Bacon's *Speculum secretorum*

The second operation is particular, proper and diverse for anything in itself: for, in stones, it is distillation, in spirits, [it is] sublimation, and in bodies (i.e., metals), calcination. Moreover, in the *Liber de triginta uerbis* it is shown what is distillation namely, distillation is parting or separation of the four elements one from another.	Secunda operatio est specialis et propria et cuilibet per se diuisa, quia lapidum est distillatio, spirituum sublimatio, corporum calcinatio. Quid autem sit distillatio docetur in libro de 30. uerbis, distillatio enim est segregatio siue separatio 4. elementorum ab inuicem.[34]

[30] Chapter 4 of the *Chrysopoeia* in Colinet (2002), p. 10, 10-15: 4. Ἰστέον ὅτι ἕξ εἰσιν αἱ ἐργασίαι, ἤγουν οἱ προευτρεπισμοί, οἵ πᾶσιν τοῖς προειρημένοις ἁρμόζουσιν, τοῖς σώμασι καὶ τοῖς πνεύμασι – δηλονότι καὶ τοῖς σώμασι καὶ τοῖς λίθοις· προκάθαρσις, εἰτοῦν τοῦ ἀλλοτρίου προαπόπλυσις, τιτάνωσις, κήρωσις, λύσις, σύνπηξις καὶ εἰς τὴν πρώτην αὐτῶν τῆξιν ἡ ἐπανάκαμψις καὶ τελείωσις.
[31] Ed. Colinet (2002), p. 11, 1-5.
[32] See the text of the *Four Elements* and its translation in Appendix.
[33] R. Bacon, *Speculum secretorum*, Bacon (1603) SM, p. 401: Notandum igitur quod 6. sunt operationes siue praeparationes, quae exercentur circa opera praedicta: et prima harum est ablutio uel mundificatio tam spirituum quam corporum et lapidum, et haec operatio communis est, tamen lapides non debent ablui, nisi tantum capilli, et istud totum docetur in libro ablutionum, qui est de 70. uerbis.
[34] Bacon (1603) SM, pp. 401- 402.

The phrase "in the *Liber de triginta uerbis* it is shown what is distillation" is found only in Bacon's *Speculum secretorum*, not in the *Chrysopoeia*. Nevertheless, considering the similarity of the texts cited from these two books, nothing seems to deny that the *Liber de triginta uerbis* is the source of the reference to the distillation of stones and their separation into the four elements described in the *Chrysopoeia*. Moreover, there is another possible evidence that the author of the *Chrysopoeia* might have been acquainted with the *Liber de triginta uerbis* or at least with its basic idea that oil replaces air among the four elements. For, in another place of the *Chrysopoeia*, it is clearly said that stones have, in their inside, the nature of the four elements, namely, earth, water, air and fire and that oil is in the place of air.[35] In both Arabic and Latin *Book of Thirty Words*, the second element is described as oil (*duhn* / oleum) instead of air as in the *Four Elements*.

Although the *Liber de triginta uerbis* circulated as an independent work apart from the *Liber de septuaginta*, the Arabic *Book of Thirty Words* was originally the third treatise of the *Books of Seventy*. Taking this fact into account, it might be informative in some sense to pay attention to the influence of the *Liber de septuaginta* on the *Chrysopoeia*. According to Colinet, 62.59 % of the *Chrysopoeia* depends on other precedent texts, i.e., its source texts. Among them, only 1.64 % stems from the *Liber de septuaginta*, of which the imported parts to the *Chrysopoeia* are about washing and sublimation of quicksilver, sulphur and orpiment, about sublimation of salammoniac,[36] about distillation of silver,[37] and about oil.[38] The low percentage – 1.64% – might imply that the *Liber de septuaginta* had a moderate impact on the *Chrysopoeia*. Still, it is certain evidence for the influence of Ǧābirian alchemy on Byzantine alchemical texts because the *Liber de septuaginta* has been confirmed as a Latin version of the Arabic *Books of Seventy*, [39] though many others of the *corpus geberianum* are not recognised as Latin translation of Arabic Ǧābirian writings but Latin original works. The highest percentage, 21.49 %, as a source of the *Chrysopoeia* is marked by Roger Bacon's four works including the *Speculum secretorum* which mentions the *Liber de triginta uerbis* as seen in the previous citation. Therefore, it can be said that the influence of Ǧābir keeps itself hidden in the background of other Latin texts than Ǧābirian texts themselves and might be greater than perceived on the surface. After the four works of Roger Bacon, the second-highest percentage, 14.40 %, is occupied by *De aluminibus et salibus*. Considering that the highest one is by the sum of Bacon's four writings, *De aluminibus et salibus* virtually has the highest percentage as one single work. That means that *De aluminibus et salibus* can be recognized as the most influential work on the *Chrysopoeia* and worth observing for our purpose – that is, to find the influence of the Corpus on posterity.

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[35] Chapter 2 of the *Chrysopoeia* in Colinet (2002), p. 9, 6-9.
[36] Book 60 of the *Liber de septuaginta* in Berthelot (1906), p. 358.
[37] Book 34 of the *Liber de septuaginta* in Berthelot (1906), p. 347.
[38] Book 30 of the *Liber de septuaginta* in Berthelot (1906), p. 339.
[39] It should be noted that there is no full overlapping in contents between the Arabic *Book of Seventy* and the Latin *Liber de septuaginta* in spite of the general confirmation of their connection.

1.4.3. *De aluminibus et salibus*

In 1929, Robert Steele published the edition of the *De aluminibus et salibus* in his paper titled "Practical chemistry in the twelfth century. RASIS *de aluminibus et salibus*, translated by GERARD OF CREMONA". George Sarton commented on it as follows:

> That text was extremely interesting because it revealed a new aspect of mediaeval alchemy, not the allegorical, mystical, esoterical and bombastic aspect which the word "alchemy" ordinarily evokes, but a practical and modest aspect anticipating modern chemistry. The scope of that treatise is larger than the title "on alums and salts" indicates; it really deals with most of the chemicals known to honest experimenters about the end of the tenth century.[40]

Various traditions of the extant Latin text show the presence of Ǧābir in this text. Steele collated two manuscripts, MS Paris BN lat. 6514 and MS London BM Arundel 164. This edition is called (P). Its contents are in order as follows: on spirits and metals, on glasses and stones, on vitriol, and on alum and salt. In addition to them, known are other two manuscripts preserving the longer version with additional contents that are on glasses and stones: MS Palermo, BC, 4Qq A10 ff. 233a-243b; MS Oxford BL Digby 119, ff. 167b-176a.[41] Although the *De aluminibus et salibus* is attributed to al-Rāzī (865-923/924) in MS Paris BN lat. 6514, this attribution was denied later by Ruska, who found fragments of its Arabic original text, *Kitāb al-šubūb wa al-amlāḥ*, in MS Berlin Sprenger 1908, ff. 19a-30b and published its edition in 1935. Ruska suggests that the author of the Arabic original version of the *De aluminibus et salibus* is, considering geographical allusions found in this work, a Spaniard who flourished in the eleventh or twelfth century, and that the author seems to have gained his knowledge from the writings ascribed to Ǧābir, al-Rāzī and the Egyptian circle of alchemy. Colinet, following Ruska's view but adding her original sight with emphasis on Ǧābir's influence, says that this is a practical treatise like al-Rāzī's writings but also inspired by Graeco-Egyptian alchemy, as well as, to a greater extend, by Ǧābirian theory.[42] According to these remarks by Ruska and Colinet, the *De aluminibus et salibus* is undeniably under the influence of Ǧābir.

Its Arabic original was translated many times into Latin, and consequently, other two types of its Latin version besides (P) have come down to us. Ruska identified the *De aluminibus et salibus* with the *De mineralibus liber* which is a component of the *Compendium alchemiae* ascribed to Joannes Garlandius and published in 1560 and 1571.[43] The *De mineralibus liber* was reprinted in Ruska (1935) and called (G) as another Latin version of the *De aluminibus et salibus.* (G) has the same contents as (P) has but in

[40] Sarton (1936), p. 144.
[41] Colinet (2002), p. XLIII.
[42] Colinet (2002), p. XLII.
[43] Colinet (2002), p. XLII-XLIII, n. 139.

different order, opening with spirits and metals. Another version of the *De aluminibus et salibus* was found by Ruska in 1934, i.e., before he published the edition of its Arabic original and the reprint of (G). It is the first book of the *Liber claritatis* ascribed to Geber, the edition of which was already published by Darmstædter in 1928.[44] This version is an adaptation of the *De aluminibus et salibus* rather than its translation. However, it has the same chapters as the longer version of (P) in order.[45] Accordingly, the rich Latin tradition of the text can be summarized as follows:

1. (G) *De mineralibus liber* ascribed to John of Garland
Edition in Joannes Garlandius (1560) and (1571) [Reprint in Ruska (1935)]
Contents: On spirits and metals, on glasses and stones, on vitriol, and on alum and salt.

2. (P) *De aluminibus et salibus*
Edition of the short version in Steele (1929)
Contents (short version): On vitriol, on alum and salt, and on spirits and metals
Contents (long version): On vitriol, on alum and salt, on spirits and metals, and on glasses and stones

3. *Liber claritatis, I* ascribed to Geber
Edition in Darmstædter (1928)
Contents: On vitriol, on alum and salt, on spirits and metals, on glasses and stones

Thus, the *De aluminibus et salibus*, the Arabic origin of which is probably in some way related to the Corpus, circulated through several forms in the Latin world. As a matter of fact, its texts are cited in the *Speculum naturale* of Vincent of Veauvais and the *Opus minus* of Roger Bacon.[46] As for its influence on Byzantine alchemy, the *Chrysopoeia* reveals it well since the *De aluminibus et salibus* is the single Latin alchemical text that influenced the contents of the *Chrysopoeia* the most, as we have already discussed on the basis of Colinet's analysis. Now, since our ultimate purpose is to trace Geber's or Ǧābir's name in the tradition of Latin and Byzantine alchemy, one of the passages adopted into the *Chrysopoeia* from the *De aluminibus et salibus* deserves to be examined, since it is a text that brought a Greek name of Ǧābir.

1.4.4. Διάμπερ

[44] The Latin edition in Darmstædter (1928) depends on MS Bologna lat. 164 (153).
[45] Colinet (2002), p. XLIV.
[46] The *De aluminibus et salibus* cited in the *Opus minus* of Roger Bacon is (G) version. See Colinet (2002), p. XLIII.

The Greek name of Ǧābir, i.e., Διάμπερ, is mentioned only once in the *Chrysopoeia*. It is in Chapter 54 titled "Sublimation of Arsenic. Other Methods".[47] Although there seems to be no other example of Διάμπερ used as Geber in other extant Greek texts, it is not deniable that Διάμπερ indicates Geber. This clearly emerges from the comparison of the Greek text including Διάμπερ with the passage from the *De aluminibus et salibus* that was suggested by Colinet as its source.

The Sacred and Divine Art of Chrysopoeia, Chapter 54. 2

Geber said that arsenic, if it is boiled in almond oil or another oil, it will be very beautiful, [he said] that when it is sublimed, it turns white and, when it is not sublimed, it turns black, and [he said] that vinegar makes it beautiful and it conquers mercury when it is mingled with it threefold.	Εἶπε δὲ Διάμπερ ὅτι τὸ ἀρσενικόν, ἂν βράσῃ ἐν ἐλαίῳ ἀμυγδαλίνῳ ἢ ἐν ἑτέρῳ ἐλαίῳ, ἔστι καλὸν λίαν, καὶ ὅτι, ὅταν ἀναδιδασθῇ, λευκαίνει, ὅταν δὲ οὐκ ἀναδιδασθῇ, μελαίνει, καὶ ὅτι τὸ ὄξος καλλύνει αὐτό, καὶ κρατεῖ τὸν ἑρμῆν, ὅταν συμμιγνύται αὐτῷ τριπλασίως.[48]

Corresponding texts from the *De aluminibus et salibus* [49]

(G) [Ruska (1935), pp. 55-56] In arsenicis est anima, et est mineralis. Eius natura est calida et humida, et est duorum colorum, scilicet rubri et pallidi. (...) Et de eius proprietatibus accidit, quod aliud albificat, sed non se ipsum, quando exaltatur, et denigrat, quando non exaltatur, et comburit, dum vivit. (...) Et dixit Geber filius Haien, quod Deus sibi auxiliaretur,	(P) [Steel (1929), pp. 19-20] Arsenicum quidem anima et est minerale ; et caliditas et humiditas est natura illius ; et secundum duos modus, rubeum et citrinum ; (...) Et de proprietatibus quidem ejus est quod albificat aliud quando sublimatur, et denigrat quando non sublimatur; et adhurit dum permanet vivum. (...) Dixit autem GEBER filius AYEN, in libro

[47] Ed. Colinet (2002), p. 3, 21: 54 Ἀνάβασις ἀρσενικίου, καὶ ἄλλως, καὶ ἄλλως.

[48] Ed. Colinet (2002), p. 89, 18-22. Underlines are mine to indicate the resemblance between this Greek text and the following Latin texts.

[49] Colinet presented the Latin text of the *De aluminibus et salibus* by changing the order of the sentences at one point so that its correspondence to the *Chrysopoeia* can be easily discerned as follows: Et dixit Geber quod ... quando arsenicum decoqueretur in oleo amararum amygdalarum uel in alio oleo, erit ualde bonum... Et ... accidit quod aliud albificat ... quando exaltatur et denigrat quando non exaltatur... Et dixerunt alii quod acetum meliorat eum... Tenet etiam uiuum argentum et cornmiscetur ei... Et eius condimentum est tribue modis... (G); Dixit autem Geber ... quod ipsum quando decoquitur cum oleo de amigdalis amaris et alio uenit ultimum... Et ... est quia albificat alium quando sublimatur et denigret quando non sublimatur... Existimauit secta quod acetum rectificat ex eo rectificationem ... et ipsum quidem ligat argentum uiuum in corpore et complet ipsum... Et ipsius quidem regimen est secundum tres modos... (P). See Colinet (2002), p. 89. The Latin texts presented here in the columns are basically as they are in Ruska (1935) and Steel (1929). However, there is an exception that follows Colinet's choice of variants in (G), i.e., "acetum meliorat eum" which is instead written as "ipsum arsenico mira opera" in Ruska (1935). The reason of this change that I made is to show the connection between Latin and Greek texts clearer. There is another Latin edition with English translation in Arbuthnott (2013) which is quite different from the Latin texts that Colinet (2002) presented for this comparison with the Greek Διάμπερ text.

<in libro de> spoliationibus, dixit inquam : quando arsenicum decoqueretur in oleo amararum amygdalarum vel in alio oleo, erit valde bonum. (...) Et dixerunt alii, quod acetum meliorat eum ; et intellige haec! (...) Tenet etiam vivum argentum et cornmiscetur ei, quando fuerit cum eo frater suus. (...) Et eius condimentum est tribue modis...	*Denudatorum* quod ipsum quando dequoquitur cum oleo de amigdalis et alio venit ultimum. (...) Et existimavit secta quod acetum retificat ex eo rectificationem ; (...) et ipsum quidem ligat ydroargiron in corpore, et complet ipsum quoniam cum eo est frater. (...) Et in ipsis quidem regimen est secundum tres modos...

The passage of the *Chrysopoeia* is not an exact citation of the *De aluminibus et salibus* but rather an arranged extract.[50] Nevertheless, the dependence of the *Chrysopoeia* on the *De aluminibus et salibus* seems stable owing to the coincidence between them, and as a result, Colinet confidently translated Διάμπερ with Geber. In general, the name of Geber can both refer to the so-called Latin Geber, i.e., pseudo-Geber, and the Latinised name of Ǧābir. To see whether this Geber – then rendered as Διάμπερ in the Byzantine text – has connection to Ǧābir in the Arabic world or only to the Latin pseudo-Geber, the title of Geber's book specified in the above citation from the *De aluminibus et salibus* is a clue. Its Arabic source text shown below confirms that both titles, the *Liber de spoliationibus* (G) and the *Liber denudatorum* (P), are Latin translations of the same Ǧābirian *Book of Extracts (Kitāb al- muǧarradāt)*.[51]

On Alums and Salts

Arsenic is a soul, it is mineral, and its nature is hotness and moistness. It is, on [its] two aspects, red and yellow. (…) One of its properties is that it whitens the Venus (i.e., copper) when it is sublimed, and it makes [copper] black when it is not sublimed. It burns as long as it is alive. (…) Ǧābir said in the *Extracts* that if it is cooked by bitter almond oil and others, it will reach the extremity. (…) It coagulates the slave[52] in the body and fixes it when its brother is with it. (…) Its operation depends on three kinds of sublimation.	والعلم نفس وهو معدن وطبعه الحرارة والرطوبة وهو على ضربين أحمر وأصفر (...) ومن خواصه يبيض الزهرة إذا صعد ويسود إذا لم يصعد ويحرق ما دام حيا. (...) وقال جابر في المجردات إنه إذا طبخ بدهن اللوز المر وغيره جاء غاية. (...) وهو يعقد العبد في الجسد ويثبت به إذا كان معه أخوه (...) وتدبيره على ثلثة أنواع التصعيد ...[53]

[50] Colinet (2002), p. 286. n. 408.
[51] Since *ǧarrada* may mean "to strip naked" as well as "to make extracts from a book" as said in Hormyard (1923), p. 51, both Latin titles of the *Muǧarradāt* are reasonable.
[52] Ruska translates *ʿabd* with Quecksilber and mentions Sklaven in a footnote in Ruska (1935), p. 85.
[53] Ed. Ruska (1935), p. 39.

Thus, Διάμπερ definitely has its roots in Ğābir of the Arabic world. This is one of the examples that indicate how the *Chrysopoeia* is under the influence of the Corpus even if this influence does not come directly from Arabic writings but through Latin intermediaries.

In this way, the *Four Elements* and the *Chrysopoeia* proves that the inflow of the Corpus into Byzantine alchemy surely existed. The *Chrysopoeia* is considered to have been composed around 1300 in southern Italy, Calabria, owing to the geographic provenance of its manuscripts, the reference to Italian authors and various linguistic features as Zurretti, the first editor of the Byzantine text, already remarked.[54] On the other hand, the geographic origin of the *Four Elements*, possibly written in the twelfth century, is difficult to specify because this short text does not give us enough information to determine it. However, Colinet implies that it had some relation to the south Italian intellectual culture,[55] where Greek and Arabic writings were translated into Latin under the reign of the Kingdom of Sicily in the twelfth century.[56] In 1301, Charles II, the King of Naples, allocated funds to a bishop to translate Greek medical works into Latin. In relation to this, it is not interdicted, Colinet says, to imagine this prelate might have been the author of the *Four Elements*.[57] In summary, South Italy was an important crossroad of the Corpus and Byzantine alchemy. Moreover, this Italian region has another notable connection to Ğābir. The *Summa perfectionis*, one of the Latin texts of the so-called *Corpus Geberianum*, was turned out to be written by Paul of Taranto – South Italy – owing to Newman's research published in 1991. Indeed, this does not mean direct influence of Ğābir on the Latin text composed there, but it shows that the authority of Ğābir was infiltrated into South Italy under the name of Geber.

In addition, once our sight goes beyond Byzantine alchemy and includes Latin world as well, al-Andalus should be mentioned as another important region for the transmission of the Corpus to posterity. For, as seen, the Arabic *On Alums and Salts*, which is under the influence of Ğābirian alchemy, is supposed to be written by a Spaniard. Furthermore, another Ğābirian work, i.e., the *Compendia*, which was frequently referred to in Chapter 1.3 to present absorption of ancient Greek thoughts into the Corpus, is one of the sources of the *Aim of the Sage* – an Arabic original text of the *Picatrix* – composed by Mslama al-Qurtubī in Andalusia. Thus, the Corpus is such a rich material that reflects translation activities not only from Greek into Arabic but also from Arabic into Latin and again into Greek.

In this chapter, the description of distillation process was a central theme since it is one of the main contents of the *Four Elements*, where the four elements are generally thought to be constituted of four qualities (hot, cold, moist and dry) in an Empedoclean-Aristotelian tradition. In the previous citation from the *De aluminibus et salibus*, the

[54] Colinet (2002), pp. XXII & LXXXV.
[55] Colinet (2000), p. 177.
[56] Ito (1993), reprint (2006), pp. 205-206.
[57] Colinet (2002), pp. LXXXV-LXXXVI.

nature of arsenic was described as hot and moist. Here, nature is expressed by qualities. Nature is an obscure word that also appears in the *Four Elements*. Accordingly, the concept of nature is a target of our research in the next chapter.

1.5. Nature in Alchemy

Nature is in general a convenient collective term to express something fundamental, ubiquitous and vague. It is complicated to define what 'nature' is in the Corpus because this term has several meanings, which are in line with its use in the Greek philosophical tradition. It might be better to trace the usage of the terms φύσις and *ṭabīʿa* and to try to define it before exploring the concept of 'nature' in specific alchemical texts written in Greek and Arabic. However, it does not seem feasible to give a clear definition of 'nature' because the scale of the question 'what the nature is' is so profound and complex. Therefore, instead of presenting a definition, in this paragraph I roughly describe some general characteristics of 'nature': in the Corpus, 'nature' (*ṭabīʿa* / *ṭabʿ*)[1] is used as a synonym of 'quality' (*kayfiyya*), precisely, the four qualities, i.e., hot, cold, moist and dry. In addition, Ǧābir also means, by 'nature', more general characters or features that are not confined to the four qualities. On the other hand, besides attributes such as quality and character, nature represents substantial existence which is opposed to artificial products. The nature in the latter sense was used since ancient times. When pre-Socratic philosophers such as Parmenides and Empedocles investigated phenomena or things themselves in the world, the poems as outcome of their investigation were called or referred to in the later tradition as *On Nature (Περὶ φύσεως)*. Although these are just a few examples of how the word nature (φύσις / *ṭabīʿa*) was used, they show that nature has been an object of sciences for a long time in both corporeal and incorporeal directions. Consequently, sciences have been affected to some degree by obscurity that is inherent in the concept of nature. Alchemy is not an exception. In this chapter, starting with *The Work of Four Elements*, the key term 'nature' in several alchemical writings is overviewed.[2]

The *Four Elements* is indeed a technical text on alchemical operations, but it encompasses a few theoretical descriptions as well. Nature is mentioned in the abstract explanation of the process, i.e., paragraphs [W4] and [W8]. The following two citations are the only references to nature in this work, where it is hard to catch what the term 'nature' precisely means.

The Work of Four Elements

[W4] (…) It whitens the body of *magnēsia*, that is, burnt copper. It brings outside the nature which is hidden inside. This is the nature which conquers the [other] nature, transforms natures, makes	[4] (…) Τοῦτο λευκαίνει τὸ σῶμα τῆς μαγνησίας, ἤγουν τὸν κεκαύμενον χαλκόν, τοῦτο φέρει ἔξω τὴν φύσιν τὴν ἔνδον κεκρυμμένην· αὕτη ἐστὶν ἡ φύσις ἡ νικῶσα τὴν φύσιν, ἡ μεταλλαττουσα τὰς

[1] When I cite any text of the Corpus, I translate *ṭabīʿa* with 'nature' and *ṭabʿ* with 'natural quality' to show the difference of the original words. However, both terms seem to have the same extension in meaning.
[2] 'Nature' is investigated in Part II, especially in 'Nature of the seven metals' in Chapter 2.3 and, as for the fifth nature, in Chapter 2.5 - Chapter 2.5.2.

[them] smooth, puts [them] in chains, makes [them] conceive, and brings [them] into the world. That is the nature through which everything is completed.	φύσεις, καὶ λειοῦσα, καὶ δεσμέουσα, ἡ ἐγκυοῦσα καὶ τίκτουσα· ἡ δι'οὗ τὸ πᾶν ἀποτελεῖται.[3]
[W8] (…) For, if you work these [substances] in order to bring the nature which is hidden inside to the outside, then you will reach the mystery of philosophers. (…)	[8] (…) ἐὰν γὰρ ἐργάσῃς αὐτὰ ὥστε φέρειν τὴν φύσιν ἔξω τὴν ἔνδον κεκρυμμένην, τότε ἔφθασας τὸ μυστήριον τῶν φιλοσόφων.[4] (…)

The paragraph [W4] starts with the name list of divine vinegar and divine water, i.e., Water as the first element.[5] Since the above citation from [W4] follows such a name list, τοῦτο at the beginning means the divine water, which whitens burnt copper. This whitening process is explained by bringing the hidden nature from the inside of the burnt copper to the outside. Following that, such alternation of natures is expressed in several ways like "bringing hidden nature into the world", which is a necessary procedure for everything to be completed. As for [W8], it opens with an introduction of spirits and fluids that philosophers called pearls and stones. These substances have great powers. When those powers are successfully used, and the hidden nature is brought to the outside, the mystery of philosophers is expected to be revealed. Hereunder, first, some conventional phrases that express the alternation of natures are briefly examined. And then, it is explored what the hidden nature is.

1.5.1. Nature conquering over nature

I. Doctrine of Sympathy and Antipathy

"Nature which conquers over (νικῶσα) nature" in [W4] is a popular phrase in the Greek alchemical writings along with the similar phrases 'Nature masters (κρατεῖ) nature' and 'Nature delights (τέρπεται) nature'.[6] In particular, this threefold aphorism is repeatedly used in the books *On the Making of Purple and Gold* and *On the Making of Silver* ascribed to ps.-Democritus, who put one of these three kinds of phrase at the end of every short recipe.[7] This aphorism is a heritage from the master of ps.-Democritus, presumably Ostanes, and a summary of his master's work.[8] These expressions are also used as in the

[3] *CAAG*, II, p. 338, 17-20.
[4] *CAAG*, II, p. 340, 2-5.
[5] The whole Greek text and translation of the *Four Elements* is in Appendix.
[6] See *CAAG*, II, p. 43, 20-21 (tr., III, p.45); *CAAG*, II, p. 427, 6-8 (tr., III, p.408); *CAAG*, II, p. 277, 5-6 (tr., III, p. 266).
[7] The Greek text and its translation of these two books are presented in Martelli (2014), pp. 78-115.
[8] The identification of ps.-Democritus' master as well as the authenticity of the aphorism as the master's words has uncertainty. See Martelli (2014), pp. 213-214.

following short text *On the Divine Water* ascribed to Zosimos.

5. *On the Divine Water* [9]	V. Περὶ τοῦ θείου ὕδατος
That is the divine and great mystery, and what is sought. For, it is all (τὸ πᾶν) [of the world]. [It has] two natures, [but it is] one substance (οὐσία). For, one attracts (ἕλκει) the other, and one masters (κρατεῖ) the other. This is the silver-like water, the hermaphrodite, the constant fleer, the weighed down into individuals, and the divine water, which everyone does not perceive and its nature is scarcely visible. In fact, it is not a metal, not water that always moves, not a [solid] body since it is not seized. It is all (τὸ πᾶν) in everything because it has life and spirit, and it is also destructive. It is the [agent] who perceives and [it] has gold and silver. The power (δύναμις) has been hidden, but it is ascribed to *Erotulos*.	Τοῦτό ἐστι τὸ θεῖον καὶ μέγα μυστήριον, τὸ ζητούμενον· τοῦτο γάρ ἐστι τὸ πᾶν. Δύο φύσεις, μία οὐσία· ἡ γὰρ μία τὴν μίαν ἕλκει καὶ ἡ μία τὴν μίαν κρατεῖ. Τοῦτο τὸ ἀργύρειον ὕδωρ, τὸ ἀρσενόθηλυ, τὸ φεῦγον ἀεί, τὸ ἐπειγόμενον εἰς τὰ ἴδια, τὸ θεῖον ὕδωρ, ὃ πάντες ἠγνοήκασιν, οὗ ἡ φύσις δυσθεώρητος. Οὔτε γὰρ μέταλλόν ἐστιν, οὔτε ὕδωρ ἀεὶ κινητόν, οὔτε σῶμα, οὐ γὰρ κρατεῖται. Τοῦτό ἐστι τὸ πᾶν ἐν πᾶσι· καὶ γὰρ ζωὴν ἔχει καὶ πνεῦμα, καὶ ἀναιρετικόν ἐστιν. Τοῦτο ὁ νοῶν καὶ χρυσὸν καὶ ἄργυρον ἔχει. Ἡ μὲν δύναμις κέκρυπται, ἀνάκειται δὲ τῷ Ἐρωτύλῳ.

The divine water is one in number as the substance of everything in the world, but it encompasses two natures. One of these natures attracts the other, and one conquers the other. These phrases are like refrain, yet they can be interpreted as a way to express the doctrine of sympathy and antipathy, which explains combination and separation of bodies in the physical world according to Michèle Mertens, who commented on these common expressions and provided three types of relation which possibly correspond to each action of the nature:[10]

(1) τέρπω (delight) / ἕλκω (attract): one has an affinity to another.
(2) νικάω (conquer): one imposes its properties on another and removes properties of the latter.
(3) κρατέω (master): one prevents the action of another substance by neutralising the latter.

After paying attention to these phrases of the nature in the text *On the Divine Water* by Zosimos, Mertens notes that it is difficult to say, with more precision, what the natures are in the thought of Zosimos. However, it is certain that the nature plays a role as one of

[9] *On the Divine Water*, ed. Mertens (1995), p. 2; cf. tr. ibid. p. 2.
[10] Mertens (1995), p. 168. On the origin and the range of these phrases, see Bidez & Cumont (1938), esp. I, pp. 203-204.

the elementary principles.[11]

Following these expressions, the great mystery, i.e., divine water, is explained in more detail: nobody perceives (πάντες ἠγνοήκασιν) it and its nature is almost invisible (δυσθεώρητος). Its imperceptibility here does not mean invisibility but difficulty of understanding. For, since it is said to be the silver-like water in another place, it must be visible but beyond our comprehension. Concerning the reason why its nature is almost invisible, there could be two kinds of interpretation: it might be because its nature does not appear outside, or because the ambiguity of nature – its being hermaphrodite and similar to both gold and silver – prevents judgement on what it really is. In any case, the concept of nature itself means something incomprehensible. As for the enigmatic word at the end of the quoted passage, i.e., *Erotulos*, it can be interpreted as the planet Mercury in my opinion on the ground that the description of the divine water in this text implies the divine water to be mercury (quicksilver). However, according to the analysis by Mertens, *Erotulos* is the name of a stone,[12] but the overall meaning of our text as a whole remains obscure.

II. Prime matter

Although the nature itself was not grasped through Zosimos' text *On the Divine Water*, yet in the same text there is a noteworty description concerning nature: the divine water has two natures, but it is one substance. Provided that the divine water is all (τὸ πᾶν) in everything in the world as written in the text, the divine water can be called the first matter and ultimately its substance could be the first principle. In fact, alchemists adopted the idea that all bodies are constituted of the same fundamental material that serves as the substrate to different qualities.[13] Here, recalled is the citation from [W4], where it is said that everything is completed through such actions of nature as prevailing over and transforming other natures. The change of natures should require a substrate for the change, i.e., something that does not change but sustains the shift of natures. This notion derives from pre-Socratic philosophers,[14] and can be traced back to ideas such as Plato's χώρα and Aristotle's πρώτη ὕλη.[15]

Zosimos' text *On the Divine Water* and the anonymous the *Four Elements* are definitely different, and they cannot be mingled, but given that the idea of the prime matter was widely accepted among alchemists, it is not surprising to find the same notion in distant texts as long as those texts convey the alchemical knowledge. After all, alchemy is a science that pursues the principles for everything changeable. Precisely, those

[11] Mertens (1995), pp. 168-169.
[12] Mertens (1995), pp. 171-172.
[13] Mertens (1995), p. 167.
[14] The One is the All – ἓν τὸ πᾶν – is a formula expressing unity in diversity, the origin of which is the pre-Socratic fragments. Xenophanes of Colophon (ca. 570-460 B.C.) sensed beneath the diversity of phenomena an underlying unity in both matter and spirit, and in his works one might, then, expect to find the earliest literal expression of the Unity of the All. See Sheppard (1962), p. 92.
[15] See Festugière (1950), pp. 234-236, esp. p. 235.

principles are a pair of natures and substance, i.e., changing elements and the first existence that sustains the shift of the natures.

1.5.2. Hidden Nature

I. *The Philosopher Synesius to Dioscorus: Notes on Democritus' Book*

To return to the citations from the *Four Elements*, it was repeatedly said that hidden nature is brought outside.

> From [W4]: It brings outside the nature which is hidden inside.[16]
> From [W8]: For, if you work these [substances] in order to bring the nature which is hidden inside to the outside, then you will reach the mystery of philosophers.[17]

These phrases imply that there are two kinds of nature: the hidden and the apparent. This distinction of nature was already found in the writings attributed to Zosimos and Ps.-Democritus,[18] where likewise the explanation of nature itself is not explicitly given to the readers. The following text cited from *The Philosopher Synesius to Dioscorus: Notes on Democritus' Book* is a discourse upon nature that precedes a recipe for divine water in which mercury is used.

> Dioscorus. How can I become intelligent, my philosopher? I want to learn the method from you; for, if I try to follow what has been said, I will not have any benefit from that.
> - Listen to him speaking, O Dioscorus, and sharpen your mind, Dioscorus. Look at how he says: "Turn their nature inside out: for nature is hidden inside".
> - O Synesius, what transformation is he speaking about?
> - He speaks about the transformation of bodies.
> - And how can I turn it [i.e. nature] inside out? How can I lead the nature outside?
> - Sharpen your mind, O Dioscorus, and turn your attention to how he speaks: "Therefore if you perform the right treatments, you lead the nature outside: Chian earth and asteritēs, white cadmia," and so on. Look at how perceptive are the remarks of this man, how he hinted at all white substances in order to show the whitening process. Therefore this is what he said, Dioscorus: "Mix the bodies with mercury, file them finely and add any other mercury: for mercury attracts everything to itself. Let it macerate for three or four days and put it in a vessel [placed] not on hot ashes with a high flame, but in ashes at a milder temperature

[16] *CAAG*, II, p. 338, 17-18.
[17] *CAAG*, II, p. 340, 2-5.
[18] Colinet (2000), pp. 170-171. Zosimos, *CAAG*, II, p. 223, 24-25 (tr. III, p. 198); Pseudo-Democritus, *CAAG*, II, p. 46, 17-18 (tr. III, p. 50).

> [this is the kērotakis]. During this application of heat, a glass instrument that has a breast-shaped protuberance is fitted onto the vessel. Put it on the top of the vessel and turn it upside down; collect the water going up through the breast and keep it for the fermentation." This water is called divine water, and this is how to turn [the bodies] inside out. Through this method you lead the hidden interior nature outside; this is called the melting of bodies. This water after being macerated is called vinegar and Aminaios wine and similar names.[19]

The philosopher, Synesius, suggests transmuting bodies so that the hidden nature is carried outside. The listener, Dioscorus, asks Synesius how the nature is brought to the outside, but the answer is "make your spirit sharp" and the concrete recipe follows it. Thus, the concept of nature is not elucidated.

It is certain that nature is a significant notion in all three texts mentioned so far in this chapter, but almost nothing about it is explained there. Nevertheless, a few things concerning nature turn out by integrating all information from these texts: leading hidden nature outside is always related to divine water, which is a crucial material for the transmutation of bodies, i.e., metals. It tells us the significance of divine water in alchemy. The divine water is an agent that brings the potential power from the inside of the objects to the outside. Probably the nature was just an explanatory notion for the transmuting process, and it was not necessary for practitioners to theoretically pursue for what the nature is. Nature was nature as it appeared in the texts. That was enough for them. Yet, the definition for the key term may be required as long as alchemy is considered to be a science. Therefore, I continue to explore the concept of nature in alchemical texts, by expanding my textual record with other relevant alchemical sources no matter which language they were written in.

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[19] *The Philosopher Synesius to Dioscorus: Notes on Democritus' Book*, tr. Martelli (2014), pp. 129 & 131; ed. ibid. pp. 128 & 130: Διόσκορος. Καὶ πῶς ἔχω νοῆσαι, φιλόσοφε; Τὴν μέθοδον παρὰ σοῦ βούλομαι μαθεῖν· ἐαν γὰρ ἀκολουθήσω τοῖς εἰρημένοις, οὐδὲν ὀνήσομαί τι παρ᾽ αὐτῶν.
- Ἄκουσον, Διόσκορε, αὐτοῦ λέγοντος καὶ ὄξυνόν σου τὸν νοῦν, Διόσκορε, καὶ βλέπε πῶς λέγει· ἔκστρεψον αὐτῶν τὴν φύσιν· ἡ γὰρ φύσις ἔνδον κέκρυπται.
- Ὦ Συνέσιε, τίνα ἐκστροφὴν λέγει;
- Τὴν τῶν σωμάτων λέγει
- Καὶ πῶς αὐτὴν ἐκστρέψω; Ἢ πῶς φέρω τὴν φύσιν ἔξω;
- Ὄξυνόν σου τὸν νοῦν, Διὸσκορε, καὶ πρόσεχε πῶς λέγει· ἐὰν οὖν οἰκονομήσῃς ὡς δεῖ, φέρεις τὴν φύσιν ἔξω· γῆ Χία καὶ ἀστερίτης, καδμία λευκὴ καὶ τὰ ἑξῆς. Βλέπε πόση παρατήρησις τοῦ ἀνδρός πῶς πάντα τὰ λευκὰ ᾐνίξατο, ἵνα δείξῃ τὴν λεῦκῶσιν. Ὃ λέγει οὖν, Διόσκορε, τοιοῦτόν ἐστι· βάλε τὰ σώματα μετὰ τῆς ὑδραργύρου καὶ ῥίνισον εἰς λεπτόν, καὶ ἀναλάβανε ὑδράργυρον ἑτέραν· πάντα γὰρ ἡ ὑδάργυρος εἰς ἑαυτὴν ἕλκει. Καὶ ἔασον πεφθῆναι ἡμέρας τρεῖς ἢ τέσσαρας· καὶ βάλε αὐτὴν εἰς βωτάριον ἐπὶ θερμοσποδιᾶς μὴ ἐχούσης τὸ πῦρ διάπυρον, ἀλλὰ ἐπὶ θερμοσποδιᾶς πραείας [ὅ ἐστι κηροτακίς]. Ταύτῃ οὖν τῇ ἀναδόσει τοῦ πυρός, συναρμόζεται τῷ βωταρίῳ ὑάλινον ὄργανον ἔχον μαστάριον· ἐπὶ τὰ ἄνω προσέχων, [καὶ] ἐπικέφαλα κείσθω· καὶ τὸ ἀνερχόμενον ὕδωρ διὰ τοῦ μαζοῦ δέχου καὶ ἔχε εἰς σῆψιν' τοῦτο λέγεται ὕδωρ θεῖον, αὕτη ἐστὶν ἐκστροφή· ταύτῃ τῇ ἀγωγῇ φέρεις ἔξω τὴν φύσιν τὴν ἔωδον κεκρυμμένην· αὕτη καλεῖται λύσις σωμάτων. Τοῦτο ὅταν σαπῇ καλεῖται ὄξος καὶ οἶνος Ἀμιναῖος καὶ τὰ ὅμοια.

II. The *Four Elements* and Ǧābirian *Books of Seventy*

Since the *Four Elements* is under the influence of Ǧābir, it is reasonable to search the Corpus for any alternative answer to the meaning of nature and its definition. Colinet says that the idea of bringing the inside nature to the outside is common and systematised among Arabic alchemists.[20] Indeed, this is the very idea that repeatedly appears in the Corpus, especially in the *Seven Metals*, where each metal is described with their apparent and innermost natures: hot, cold, moist or dry.[21] By analogy, the nature mentioned in the *Four Elements* can be the same four qualities as described in the *Seven Metals*. However, since the connection between the *Four Elements* and the Ǧābirian *Seven Metals* has not been confirmed, it seems to be better to trace this Greek concept of nature by exploring other Arabic texts that are more closely related to the *Four Elements* than the *Seven Metals*, that is, the Ǧābirian *Books of Seventy*.

Among the *Books of Seventy*, the *Book of Thirty Words* as a possible source of the *Four Elements* unfortunately has no part that corresponds to [W4] and [W8] that is the passages where the nature is referred to. Therefore, it cannot be asserted that this concept of nature in the *Four Elements* comes from the Ǧābirian alchemy. Rather, one might say that the *Four Elements* shows some connections not to Arabic alchemy but to the ancient Greek alchemical tradition, which seems so direct that Saffrey counted the *Four Elements* as one of the works written before Zosimos.[22] Thus, it can be thought that the concept of nature, especially the hidden nature, might have been transmitted directly from ancient Greek alchemy to the Byzantine alchemy. Still, as far as the *Four Elements* has been proved to be under the influence of the Ǧābirian *Book of Thirty Words*, it is worth to examine how nature is described in the *Four Elements* by relying on the Corpus. The theory of separating a substance into elements and recomposing them in different proportions was systematised by some Arabic authors, in particular by Ǧābir in the *Books of Seventy*, where the theory is applied to eggs, blood and hairs.[23] Furthermore, even before Colinet demonstrated that the *Four Elements* partially depends on the Ǧābirian *Book of Thirty Words*, Kraus had declared that the relations of this treatise with some parts of Ǧābirian doctrine are undeniable, saying that not only the theoretical principle and the technical appellation but also the list of proportions of mixture prescribed in the *Four Elements* corresponds to those exposed by Ǧābir in the *Books of Seventy*.[24]

III. Nature in the Ǧābirian *Book of Ten*

[20] Colinet (2000), pp. 170-171.
[21] See Chapter 2.3.
[22] Halleux (1981), p. XIV (Preface by Saffrey). After presenting the affinity between *The Work of Four Elements* and ancient Greek alchemical texts, Colinet expresses sympathy with Saffrey's opinion to some extent. See Colinet (2000), pp. 167-169.
[23] Colinet (2000), p. 171. Eggs, blood and hairs are said to be Philosophers' Stones in the *Sacred and Divine Art of Chrysopoeia* in Colinet (2002), p. 9.
[24] Kraus (1942), II, p. 39.

Instead of the *Book of Thirty Words* which does not contain the description of nature, the *Book of Ten*, – another book of the *Books of Seventy* – gives us a text concerning the relation between nature and four elements. Although the *Book of Ten* that introduces the way to prepare the elixir for ten days, is also a practical text like the *Book of Thirty Words*, yet it is more explanatory even about theoretical principles because it includes some presupposed questions and the answers to them as exemplified in the text below.

Ǧābir, the *Book of Ten*[25]

Someone might ask and say: "Which is better, the purification of Fire with Water distilled either from the dry stone or with a watery one?" We would say to him: "Of course, with a liquid one." If he said: "What is the proof of that?", we would say to him: "the soundness of the natures." If he said: "What is the soundness of natures concerning that?", we would say: "It necessarily derives from our first discourse which is confirmed unanimously by philosophers that Water is cold and moist. We have already showed to you that Water that derives from a liquid thing is colder than the one derived from a dried thing."	فأما إن سأل سائل فقال: أيهما أصح، التطهير للنار بالماء المستقطر من الحجر المجفف أو من المائع؟ قلنا له: بل من المائع. فإن قال: ما الدليل في ذلك؟ قلنا له: صحة الطبائع. فإن قال: ما صحة الطبائع في ذلك؟ قلنا: قد وجب من كلامنا الأول باجماع الناس الفلاسفة قاطبة أن الماء بارد رطب، وقد أريناك أن الماء من الشيء المائع أبرد من الشيء الجاف.

Here, it should be known that, in the Ǧābirian *Books of Seventy*, a stone is a key word in alchemical operations instead of an egg as in the Byzantine text. When asked which option is appropriate, Ǧābir answers by drawing attention to the natures which are obviously identified with the four qualities: hot, cold, moist and dry. In addition, to grasp what the hidden nature is and how it comes to the outside, the following citation from the same *Book of Ten* is helpful.

Ǧābir, the *Book of Ten* [26]

If we pound and give it (i.e., Earth) this cold and moist Water to drink – it (i.e., Earth) is at the origin cold and dry –, there should be the coldness, moistness and dryness in it (i.e., Earth), one of the elements. The dryness, when [the Earth] is given to drink, [goes to] the inside of Earth, [while] the coldness and the moistness [are] onto the outside, along a bit of the hotness inside [of Earth] with the dryness.	فإذا أسحقناها وسقيناها هذا الماء البارد الرطب وهي في الأصل باردة يابسة، فقد وجب أن يكون فيها من العناصر برودة ورطوبة ويبوسة، اليبوسة تكون عند التسقية حينئذ في داخل الأرض والبرودة والرطوبة في الظاهر، ويسير من الحرارة في الباطن مع اليبوسة. وقد صح أن

[25] Ed. Lory (1988), pp. 96, 22 - 97, 4; cf., tr. Lory (1983), pp. 193, 24 -194,1.
[26] Ed. Lory (1988), pp. 97, 20 - 98, 5; cf., tr. Lory (1983), pp. 194, 32 -195,12.

It is correct that the thirstiness is necessarily attached to Earth. It makes the dryness stronger in the thing (i.e., Earth). Then if we dry it with a light heat, as if we burn the dryness which is inside the Earth, then it (i.e., the dryness) will become stronger and appear onto the outside of the stone while the moistness will come into its inside.	التعطيش للأرض لازم وهو تقوية اليبوسة في الشيء. ثم إنا جففناها بالسخونة اليسيرة، فكأنا ذكينا اليبوسة التي في باطن الأرض فقويت وظهرت إلى ظاهر الحجر وبطنت الرطوبة إلى داخله.

Earth is originally cold and dry on its outside, but when being soaked, its dryness enters the inside of Earth and the moistness appears onto the outside instead. A little hotness is also inside Earth. The thirstiness is mentioned as well, but it could mean a kind of the dryness, or rather, a certain proneness of earth to receive moisture. Thus, an element has four qualities, of which two are outside and the other two are inside. In this case, soak is an operation of exchanging the dryness for the moistness on the surface of Earth.

This process in the *Book of Ten* can be an explanation of the nature in the *Four Elements* where the nature was hidden inside an element and was brought to its outside. Although the historical connection of these two texts has not been indicated, their theoretical structures regarding the nature are so similar that they seem to belong to the same stream of alchemical tradition.

1.5.3. Nature or Quality

Although there is no reference to the hidden nature, the oneness of the substance that persists during the transmutation is explicitly presented in another Greek text on the transmutation of the four elements, i.e., the *Chapters of Zosimos to Theodore*,[27] which are constituted of sixteen chapters. Their attribution to Zosimos is uncertain, because, Zosimos is not mentioned in two out of the three manuscripts that preserve the text.[28] Considering the actual state of the text, Mertens conjectures that this collective text is likely to be a summary of another summary extracted from Zosimos' authentic writings.[29] Thus, its authenticity including the composition date is fogged in, but this text deserves to be dealt with since, according to Kraus, the terminology used in it reminds us of that used by Ǧābir, such as ποιότητες (*ṭabāʾiʿ*) and οὐσία (*ǧawhar*).[30] When things change

[27] Ed. *CAAG*, II, pp. 215-218; tr. *CAAG*, I, pp. 208-211.
[28] Mertens (1995), p. LX-LXI. Although one manuscript explicitly mentions the name of Zosimos, the chapter referring to Zosimos is called the fifteenth, not the sixteenth as is in other two manuscripts.
[29] Mertens (1995), p. LXIV.
[30] Kraus (1942), p. 37, n. 7. Apart from Kraus' view, it is also worth mentioning that, outside the alchemical texts, the idea that the substance (οὐσία) is, as matter (ὕλη), a substrate of quality (ποιότητες) was already attested in an ancient text regarded as words by a Stoic philosopher Posidonius (135BC - 51BC). See n. 32 in Chapter 2.5.

into the opposite condition, qualities (ποιότητες) become opposite and the substance (οὐσία) cannot be opposite. This thought fits the relation between natures (*ṭabāʾiʿ*) – changeable qualities – and substance (*ǧawhar*) – an unchangeable base for the changes – in the Ǧābirian corpus.

In the last chapter of this Greek text, it is explained that the transmutation of each element to the opposite occurs by changing its quality, not its substance. The substance of the four elements is unchangeable and remains one. That is why the elements can turn into the opposite only by exchanging their qualities between the inside and the outside.

The *Chapters of Zosimos to Theodore*	*CAAG*, II, p. 218, 13-25.
As for the transmutation of the four elements into each other, the [elements] transmuted from Earth and Water not only become Fire but also are carried up because Fire is ascending. It does not take the likeness by chance but by the art and its form. Things that were at first Earth and Water become Fire later and are carried up. Only by quality (ποιότης), the elements become opposite to one another, not by substance. For, substance (οὐσία) is not opposite to substance in so far as [it is] substance. For that, philosophers also called substances four characters (lit., what was written). By the unity of substantiality, they drag the coated medicament from the outside [into the inside]. As the elements that are dissolved into themselves achieve all, the art [does the same]. As the four transmuted positions conquer the previous mixtures, the arts of the transmutation conquer the natures (φύσεις).[31]	16] Περὶ τῆς τῶν τεσσάρων στοιχείων εἰς ἑαυτὰ μεταβολῆς, καὶ ὅτι οὐ τὰ μόνον ἀπὸ γῆς καὶ ὕδατος μεταβαλλόμενα πῦρ γίνονται, ἀλλ᾽ ὅτι καὶ ἀναφέρονται· ἀνωφερὲς γὰρ τὸ πῦρ· ταύτην δὲ τὴν εἰκόνα οὐκ εἰκῆ λαμβάνει, ἀλλὰ διὰ τὴν τέχνην καὶ τὰ ταύτης εἴδη. Ὅτι πρῶτον γῆ ὄντα καὶ ὕδωρ, ὕστερον γίνονται πῦρ, καὶ ἄνω φέρονται· καὶ ὅτι τῇ ποιότητι μόνῃ τὰ στοιχεῖα ἐναντιοῦνται ἀλλήλοις, καὶ οὐχὶ τῇ οὐσίᾳ· ἡ γὰρ οὐσία τῇ οὐσίᾳ οὐκ ἔστιν ἐναντία, καθὸ οὐσία. Διὰ τοῦτο καὶ οὐσίας ἐκάλεσεν τὰ τέσσαρα γράμματα ὁ φιλόσοφος τῇ ἑνώσει τῆς οὐσιότητος ἑλκούσας τὸ ἔξωθεν διαχριόμενον φάρμακον. Καὶ ὅτι ὥσπερ τὰ στοιχεῖα εἰς ἑαυτὰ ἀναλυόμενα πάντα κατεργάζεται, οὕτω καὶ ἡ τέχνη· καὶ ὥσπερ αἱ τέσσαρες τροπαὶ μεταβαλλόμεναι νικῶσιν τὰς προτέρας χράσεις, οὕτω καὶ αἱ τέχναι ταῖς μεταβολαῖς νικῶσι τὰς φύσεις.

This text also has the word nature (φύσις) as the last word. It might be possible to interpret this nature as quality or any features of the objects in transmutation. However, on the ground that quality (ποιότης) is already mentioned as a different term from nature in the same text, it seems more probable that the nature here means an antonym of art (τέχνη). In fact, it is not that the art itself conquers quality in the manipulated materials, but the art is the means to make quality conquer other quality. The agents and their objects should

[31] *CAAG*, II, p. 218, 13-25.

be of the same dimension. The homogeneity between agents and objects is a major premise for the manipulation through the art as mentioned with reference to Definition 4 of the Euclid's *Elements V* not a few times in the Corpus.[32] Moreover, this premise seems to be reflected also in the traditional aphorism, i.e., 'nature conquers over (νικῶσα) nature'. The point of this phrase is perhaps that the subject and the object should be homogeneous. Therefore, the nature that is conquered by the art in the *Chapters of Zosimos to Theodore* does not seem to be the synonym of quality but an antonym of art (τέχνη). This meaning of nature is different from that in the three Greek texts already mentioned (i.e., the *Four Elements*, Zosimos' *On the Divine Water*, and *Notes on Democritus' Book*), where natures work as qualities that come and go between the inside and the outside of metals to transmute them. Considering that Ǧābir usually means qualities by the word 'natures', this Greek alchemical text seems literally unrelated to the Corpus. However, despite the difference of the words, qualities (ποιότητες) here play the same role of natures (*ṭabāʾiʿ*) as changeable elements held in the substance (οὐσία / *ǧawhar*). In this sense, Kraus found the similarity between this Greek text and the Corpus.[33]

To sum up the investigations into Byzantine, Arabic and ancient Greek texts, different features are found in φύσις and *ṭabīʿa* though both are equally translated with 'nature'. On the premise that the concept of nature is ambiguous and has mainly two directions of meaning as mentioned at the beginning of this chapter, i.e., features of things and things themselves as material entity, the nature in question is the former that can be equal to quality. Both φύσις and *ṭabīʿa* can be described as features or qualities that shift between the outside and the inside of things. However, φύσις is not explicitly associated with the four qualities in ancient Greek or Byzantine texts, whereas *ṭabīʿa* in the Corpus is clearly combined with the four qualities. A possible reason that prevented φύσις – being substantial – from connecting to quality (ποιότης) is the dominance of Aristotelian thought that quality is an attribute and never identified with substance. Considering that alchemists called the sages who possess the secret knowledge 'philosophers' – whoever they were –, it does not seem misdirected to take into account the influence of ancient Greek philosophy on alchemy. To be precise, the alchemists themselves, from their beginnings, consider themselves philosophers as they see themselves as researchers of nature, i.e., philosophical issue, and therefore as continuers of the Greek philosophical tradition. Ǧābir, on the other hand, flexibly altered Aristotelian common knowledge in

[32] See T1-T4 in Chapter 1.3.

[33] Now, I return to the attribution of the *Chapters of Zosimos to Theodore*, Mertens considered this text to be perhaps a summary of another summary extracted from Zosimos' authentic writings. If this Greek text was composed in early Byzantine period, the presence of similarity between this text and the Corpus would mean that Ǧābir was influenced by Byzantine alchemy. Since I emphasised the influence of the Corpus on late Byzantine alchemy in Chapter 1.4., it is probably better to state here that the direction of influence between Byzantine alchemy and Arabic alchemy could have been fluid and the Corpus has value as the text to be analysed by paying attention to the influence of early Byzantine alchemy, not only to its influence on late Byzantine alchemy.

spite of his great dependence on ancient Greek ideas. By calling the four qualities ‘nature’ (*ṭabīʿa*), Ǧābir virtually corporealised the qualities – hot, cold, moist and dry – which function as basic material elements – fire, air, water and earth – in the Corpus.

The concept of nature in alchemy is still not easily defined but leads us to a kind of compromise. Instead of having a brief definition of nature, another way is to pile up its fragmentary descriptions in the Graeco-Byzantine and Arabic alchemical texts. The outcome might be more confusing because the passages extracted from a wide range of texts can involve inconsistency. However, collecting such obscurity in the usage of nature might rather bring real figure of nature. To closely examine how the concept of nature is used in the Corpus, suitable materials are the *Seven Metals* where metals are defined with their natures. From the next chapter, these seven books are explored focusing on some Ǧābirian concepts associated with the word ‘nature’ along with relevant themes that are necessary to seize the whole characteristics of the *Seven Metals*.

II. Texts and Contents

2.1 Textual tradition of the *Books of Seven Metals*

Each title of the *Seven Metals* has one of the seven metals: gold, silver, copper, iron, tin, lead and *ḫārṣīnī*. These seven books, as the last one of the main collections of the Corpus, were supposedly composed in the tenth century.[1] Going through all the seven books, it is striking to see how broad the range of their contents are. The seven books treat several kinds of alchemical and philosophical theories – natures and properties of each metal, balances of their natures, similarity and oppositeness, dualistic classification of metals such as father and mother, astrological balance, and a substrate of everything in the world – and a variety of practical recipes not only for alchemical issues such as dyeing, ink and transmutation of metals but also for medical ones, namely, medicine for eye disease, headaches, and anxiety. Within each book, these topics are arranged relatively at random. Indeed, the descriptions of each metal in terms of natures and properties are situated at the beginning of each book – that carries the name of each specific metal as title – but each book is not always dedicated only to a single metal. For example, all seven metals are dealt with together when the metallic medicament for eyes is explained in the *Gold* and the *Copper*. Besides, in the *Ḫārṣīnī*, iron is often mentioned in relation to *ḫārṣīnī*. The distinguished feature of these seven books is that, between the topics mentioned above, cross references to other parts of the corpus frequently appear.[2] In Appendix, such descriptions are titled 'bibliographical information', where another Ǧābirian collection, the *Books of Balances*, is often mentioned and the *Books of Seventy* are referred to as well. The most notable feature of the transmission is that part of the *Copper* is almost the same text as the *FN* that is one of the *Books of Balances*. Both the *Seven Metals* and the *FN* have not been edited. This time, their partial edition is presented in Appendix. Moreover,

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[1] The structure of the Corpus is overviewed in Chapter 1.1. The *Book of Mercy*, the *112 Books*, the *Books of Seventy*, the *Books of Balances*, the *500 Books* and the *Seven Metals* are the main collections of the Corpus. Since the *Seven Metals* refer to the *Books of Seventy* and the *Books of Balances* but not to the *500 Books*, it might be natural to think that the *Seven Metals* were written before the *500 Books*. However, Kraus did not affirm it but left it open which collection was written earlier. See Kraus (1943), p. 112. Instead, he considered that the composition date of the *Seven Metals* was in the same period as the *Compendia* which presupposes what is described in all the *Books of Balances* and refers to many of the *500 Books*. See Kraus (1943), p. XXXIV. The only Ǧābirian work that mentions the *Seven Metals* is the *Third Book of Principles* which is classified by Kraus as an alchemical treatise outside any collections or perhaps as one that belongs to the *500 Books*. See Kraus (1943), pp. 112, 117 & 126. This is another possible clue which can indicate that the *Seven Metals* were written before the *500 Books.*

[2] The bibliographical information usually includes recommendation for careful reading the *Seven Metals* like "we already elucidated it in other ones of the *Books of Balances*. Know that we composed these seven books to reach, by them, the great issue. We made this book the chief of them. Therefore, you should gather these seven books and study them as we instructed you"; [ب 35b]:

قد بينا لك ذلك في غير كتاب من كتب الموازين واعلم أنا قد ألفنا هذه الكتب السبعة لتوصل بها إلى أمر عظيم وجعلنا هذا الكتاب أميرها فينبغي أن تجمع هذه الكتب السبعة وتدرسها كما نأمرك.

Chapter 2.3 to 2.6 have the translation of the most passages among them, which were selected according to the themes that our research focuses on.

Hereunder, three existing manuscripts of the *Seven Metals* are introduced (2.1.1). In addition, the order of the seven books are described (2.1.2) since it shows the relation among the three manuscripts. And then, some Arabic texts are presented to show the features of the manuscripts (2.1.3). Lastly, another manuscript that contains the *FN* is observed (2.1.4) because it is an indirect witness of the *Copper*.

2.1.1. Information of the manuscripts

The *Seven Metals* are preserved in the following three manuscripts:[3]

1 [ب] MS Paris BnF Arabe 2606

This manuscript has 163 folios numbered by a Western hand. Along with that, there is another foliation by an Eastern hand, from ١ to ١٦١ which correspond to the folios 2 to 162. Each folio (215x135mm) has 16 lines. The script is a *nasḫ*, and the book titles and the incipits of the subdivisions are rubricated.[4] It is dated in the sixteenth century according to Vajda.[5] The margin is almost blank except that corrections and short captions are sometimes seen there. The contents are twenty-six alchemical treatises and two excerpts ascribed to Ǧābir b. Ḥayyān.[6]

2 [ق] MS Cairo Ṭalʿat, kīmiyāʾ wa ṭabīʿa 187

This manuscript of 125 folios, no sign of foliation, has 23 lines per page (153x197mm) in a *nasḫ*. The book headers are rubricated. The incipits of the subdivisions are also rubricated or marked with a red line above the letters. The title page has a note by its past owner, which is dated 1149AH/1736AD. However, the copy date is uncertain. Kraus

[3] From here forward, I use the abbreviations [ب], [ق] and [ط] to indicate each of the three manuscripts.

[4] I have not seen the original manuscript in colour but only its black-and-white digital image provided on the website Gallica. Nevertheless, I here describe the titles and the incipits are written in reddish ink on the ground that Vajda says that the title is ruby (titre rubriqués).

[5] The description of [ب] basically depends on Vajda (1940-1969), *Notices des manuscrits Arabe 2600 à 2627*, p. 19.

[6] Gallica provides the information of [ب] and adds another two titles to the list of 26 treatises indicated by Vajda. The added 27 and 28 treatises begin with "قال جابر عليه الرحمة في رسالة الاختلاط" and "قال جابر في كتاب المحن عليه الرحمة" respectively. This type of the beginning is different from that of the other books which directly start with their book titles. [ب 2a] says that the number of the treatises is twenty-one but, on the same folio, shows twenty-four titles, which correspond to those twenty-four treatises that are written in the list excluding 10, 17, 27 and 28. The reason why twenty-four titles are reduced to "twenty-one treatises" is probably because 16 and 23 are regarded, for being the second book of the same title, as the same book of 15 and 22 respectively, and 26 are not counted owing to not being *kitāb* but *ṣifa*. 27 and 28 are principally not regarded as books.

suggested that it was probably written in the tenth or the eleventh century Hegira (the sixteenth or the seventeenth century A.D.).[7] The folios 11a-12a have a full marginal note, but the margins of other folios are blank except that few corrections and notes are sometimes found.[8] Its contents are almost the same as [ب] has, but unlike it, several verses of Ǧābirian alchemical poems are added to this manuscript.

3 [ط] MS Ṭehran Mağlis 729[9]

This manuscript contains 111 folios numbered by an Eastern hand. Each folio includes 12 lines from the beginning to 14a. After 14b, there are usually 11 lines a page, but irregularly some folios have over 20 lines. The script is a *taʿlīq* style. Some of the book titles and the headings are marked with lines and rubricated. Some folios have margins filled with long notes written in small letters, and the amount of the marginal notes is more than that in the other two manuscripts. Still, there are many folios with blank margins. The copy date is not certain. The contents are the *Seven Metals* ascribed to Ǧābir and some other writings on talismans, elixir and balances.

The texts that each manuscript contains are listed up in the chart below. The MSS [ب] and [ق] have almost the same choice and order of texts, all of which are attributed to Ǧābir. On the other hand, [ط] completely differs from the other two manuscripts in contents. Even the only common elements, i.e., the *Seven Metals*, have the texts in a different order.

List of the treatises in the three manuscripts

	[ب]	[ق]	Title	Kraus no.[10]		[ط][11]	Title
1	2b-	1b-	كتاب الذهب	947	1	0b-14b	رسالة عمل

[7] The writing date is judged by Kraus. See Kraus (1943), p. 185.

[8] Due to the regulation of the Egyptian National Library, I was not able to get the whole digital images of [ق] but have only ff. 1a-49a. Therefore, this description of the margins is just for the first part of the manuscript up to 49a. I greatly appreciate what Flora Vafea and Bojidar Dimitrov did for me to obtain the images of this manuscript. Although the collection including this manuscript is called "Ṭalʿat, kīmiyāʾ" in Kraus (1943), p. 185, its precise name is "Ṭalʿat, kīmiyāʾ wa ṭabīʿa" according to Vafea who could consult the manuscript catalogue at the Library.

[9] The information of [ط] is found in the manuscripts catalogue of Tehran Mağlis Library. See Iʻtiṣāmī (1311 AH/1933AD); reed. (1390AH/2012AD).

[10] The numbers in this column represent Kraus' numbering of the Corpus in Kraus (1943). The collection name is also shown in the parentheses. For instance, 'CXII 32' means it is the thirty-second work of the *112 Books*, '500' indicates that it belongs to the *500 Books*, 'LXX' is the *Books of Seventy*. As for the information about collections of the Corpus, see Chapter 1.1.

[11] The folios [ط 15a-17b] and [ط 91a-110b] are constituted of several short writings without any title. The online catalogue of the parliamentary library of Iran provides information of every part from 2 to 9 of [ط], but that of 1 and 10 is not found there.

2	10b-	7a-	كتاب الفضة	948			الطلسم في الكشف السر المهم لأبو العباس قمرى(؟)
3	21a-	14b-	كتاب النحاس	949			
4	38a-	26a-	كتاب الحديد	950		Some notes in 15a-17b	
5	44b-	31a-	كتاب الرصاص القلعى	951			
6	50a-	34b-	كتاب الأسرب	952			
7	56a-	39a-	كتاب الخارصيني	953	2	18a-	كتاب الأسرب
8	59b-	42a-	كتاب الإيجاز	954	3	25b-	كتاب القلعى
9	60a-	42b-	كتاب أولاد الأسرب	955	4	32b-	كتاب الحديد
10	62b-	44b-	باب بليناس	955b	5	41a-	كتاب الذهب
11	63b-	45a-	الثاني من كتاب الحروف	956	6	52b-	كتاب النحاس
12	68b-	49a-	كتاب العواليم	1056	7	66a-	كتاب الخار
13	74b-	53a-	كتاب التنويب	38 (CXII 32)	8	71a-	كتاب الفضة
14	80b-	58a-	كتاب الكبير	46 (CXII 40)	9	85a-	رسالة المقياس في إقامة الوزن بالقسطاس
15	92b-	67a-	كتاب الواحد الأول	11 (CXII 5)			
16	94b-	68a-	كتاب الواحد الثاني	12 (CXII 6)			
17	96a-	69a-	كتاب الروح في الموازين	1009	10	95a-110b	رسالة در أعمال حل وعقد وسحق وحرق وتكليس
18	101b-	73b-	كتاب الزيبق الشرقي[12]	470 (500)			
19	105a-	77a-	كتاب الزيبق الغربي[13]	471 (500)			
20	108b-	79a-	كتاب نار الحجر[14]	472 (500)			
21	112b-	82a-	كتاب أرض الحجر[15]	473 (500)			
22	115b-	84b-	كتاب التراكيب الأظعم الأول	52 (CXII 46)			
23	119a-	86b-	كتاب التراكيب الأظعم الثاني	77 (CXII 67)			
24	134b-	97a-	كتاب العهد	1053			
25	139a-	100a-	كتاب الرحمة الكبير[16]	5			
26	156b-	112a-	صفة عمل الاسرنج	—			
(27)	162a-	115b-	رسالة الاختلاط	ext. 180 (LXX58)			

[12] Ed. Berthelot & Houdas (1893), III, pp. 180-186.
[13] Ed. Berthelot & Houdas (1893), III, pp. 187-193.
[14] Ed. Berthelot & Houdas (1893), III, pp. 193-201.
[15] Ed. Berthelot & Houdas (1893), III, pp. 201-224.
[16] Ed. Berthelot & Houdas (1893), III, pp. 132-160. However, this edition is based on MS Leiden 1264. Cf. Kraus (1943), p.5.

(28)	162b	116a-125b	كتاب المحن	ext. 177 ([ق] also has an extract of 1143 (Ǧābirian alchemical poems))

2.1.2. The order of the *Seven Metals*

The MS [ط] has a different order of the *Seven Metals* from [ب] and [ق]. The order of the books in [ب] and [ق] can be regarded as original one because the *Iron* testifies that it is their composition order.

T1: The *Iron* [ب 38b] [ق 26b] [ط 33a-33b]

The first one that we composed is the *Book of Gold*, and then the *Book of Silver* follows it. Then, [it is followed] by the *Book of Copper*, by the *Book of Iron* – this [book], the *Book of Tin*, the *Book of Lead* and then the *Book of Ḫārṣīnī*.	فأول ما ألفنا كتاب الذهب ثم يتلوه كتاب الفضة ثم بكتاب النحاس ثم بكتاب الحديد وهو هذا ثم كتاب الرصاص القلعى ثم كتاب [ط-33ب] الأسرب ثم كتاب الخارصيني

Then, why did the order in [ط] occur in this way? Kraus says that [ط] classifies the books according to the order of the planets.[17] In fact, each title of the seven books refers to the name of the corresponding planet in [ط] while the titles in [ب] and [ق] do not mention the planets. In addition to these two types of order, the *Copper* introduces the third order according to which disciples should read these books.

T2: The *Copper* [ب 35b-36a] [ق 24b] [ط 62b-63a]

That is, you begin with the *Book of Lead and Tin*, the *Book of Iron and Ḫār*, the *Book of Silver and Gold*, and then, this *Book* [*of Copper*].	وهو أن تبدأ بكتاب الأسرب والقلعى ثم كتاب الحديد والخار [ب-36أ] ثم كتاب الفضة والذهب ثم بهذا الكتاب

The book order according to the planets in [ط] is relatively similar to the third order, i.e., the educational arrangement as in [T2]. Considering the composition order of the seven books as said in [T1], [ب] and [ق] seem to preserve an original text of the *Seven Metals* while [ط] might have an interpreted version of that in [ب] and [ق]. However, there is another witness that is inconsistent with [T1]. After mentioning three other forms of lead in the *Gold*, Ǧābir says that this is already dealt with in the *Lead*.

[17] Kraus (1943), p. 111. The order of the planets here means a geocentric spherical order, that is, from the farthest to the earth: Saturn, Jupiter, Mars, Sun, Venus, Mercury, and Moon.

T3: The *Gold* [ب 8b] [ق 5b] [ط 49a]

We finished [dealing with] this in the *Book of Lead* related to it and in the other books of ours. Know that.	وقد فرغنا من هذا في كتاب الأسرب المنسوب إليه وفي غيره من كتبنا فاعلم ذلك

[T3] indicates that the *Lead* had existed before the *Gold* was actually written. However, the *Gold* should have been composed first if [T1] is prioritised. Thus, [T3] implies that there is still a possibility that the order in [ط] might have been a real composition order where the *Lead* comes first and [ط] might preserve original text as written for the first time. On the other hand, the precedence of the *Lead* could have been mentioned in the *Gold* just because Ǧābir might have already had in mind the third order for educational purpose when he wrote the *Gold* as the first book, and he could have supposed that learners should read the *Lead* before the *Gold*.

Three orders of the books

	(1) [ب], [ق] and [T1]: Original	(2) [ط]: Planetary		(3) [T2]: Educational
1	كتاب الذهب	كتاب الأسرب	الزحل	كتاب الأسرب
2	كتاب الفضة	كتاب القلعى	المشتري	كتاب القلعى
3	كتاب النحاس	كتاب الحديد	المريخ	كتاب الحديد
4	كتاب الحديد	كتاب الذهب	الشمس	كتاب الخار
5	كتاب الرصاص القلعى	كتاب النحاس	الزهرة	كتاب الفضة
6	كتاب الأسرب	كتاب الخار	العطارد	كتاب الذهب
7	كتاب الخارصيني	كتاب الفضة	القمر	كتاب النحاس

In this way, it is not simply affirmed which order of the seven books is the original one. Yet, to make an edition of the Arabic text, it should be decided which is a real composition order even if it is provisional. I adopted the first order that found in [ب], [ق] and [T1] because there is one more evidence that supports the order. At the end of the *Ḫārṣīnī*, Ǧābir clearly says that the *Ḫārṣīnī* is the last one of the seven books.[18] Now, suppose that [T1] presents correct information. Then, according to the order of the seven books, it is possible to consider the [ط] version to be a revision of [ب] and [ق].

2.1.3. Features of the manuscripts

[18] وقد تممنا في هذا الكتاب وهو الكتاب الخار آخر الكتب السبعة :[ب 59b] ; see the *Ḫārṣīnī* in Appendix.

The original order of the seven books is presumably the one preserved in [ب] and [ق] which are almost always have the same text, whereas [ط] often differs from [ب, ق] in terms of the style of the text. Hereunder, I present two examples of their difference. This is eventually to show which manuscript is appropriate as a principal text that I rely on in editing procedure.

In the first example [T4], the expressions are slightly different between [ب, ق] and [ط], but their meanings are compatible. This kind of minor difference is often found.

T4: The *Gold* [ب 10a] [ق 7a]	[ط 52a]
فإنه إذا حمى والزرنيخ عليه أسود سوادا لا يزول عنه بل يزيد	فإنه إذا حمى على النار بالزرنيخ أسود شديدا ولا يزال السواد يزيد
In fact, when it (i.e., alum)[19] is heated and the arsenic is on it, it turns black that does not go away from it but increases.	In fact, when it (i.e., alum) is heated on fire with the arsenic, it turns strong black and the black does not cease increasing.

The second example [T5] shows almost the same texts between [ب, ق] and [ط]. However, a few different words are used, e.g., *ʿadam* and *ʿawiz*. Since they are literally different words but have a similar meaning, the difference is not crucial and both sentences convey the same contents.

T5: The *Gold* [ب 10a] [ق 7a]	[ط 51b]
وأما من أراد أن يعرف الأشياء بالقياس قبل التجربة فهو إما عجز عن العمل وإما عدم الإمكان للنفقة	وأما من أراد أن يعرف الأشياء بالقياس قبل التجربة إما عجزا عن العمل أو عوز الإمكان للنفقة
As for the one who wished to recognise things by deduction before a practical experience, he is either incapable of the operation or has no possibility to afford it.	As for the one who wished to recognise things by deduction before a practical experience, he is either incapable of the operation or lacking for possibility to afford it.

Generally, during the collation of the three manuscripts, [ط] gave an impression that it is more explanatory than [ب, ق], and also more details are found in [ط] than the other two, especially about astrological knowledge.[20] The latter fact can be explained by that each

[19] The subject here, although not mentioned in this sentence, is alum considering the contents before this citation.

[20] In the latter part of the *Ḫārṣīnī*, the relation of each sign of zodiac is explained in [ط] longer than that in [ب, ق].

metal is associated with a specific planet in the book titles only in [ط] version, whose composer seems to have focused on the connection between metals and planets. Moreover, features of [ط] compared with [ب, ق] appear in their margins. Not a few margins are blank in all three manuscripts, but [ط] has relatively many marginal notes, some of which are a short note to correct the text, but large parts of them are long commentaries on the contents. On the other hand, [ب] and [ق] have few commentaries. In the margins of [ب] and [ق], found are principally corrections of the texts and subtitles for each part of the texts. In this way, [ط] seems more informative than [ب, ق] not only in the body of the text but also in the margins. However, it does not mean [ط] is superior to [ب] and [ق]. The MS [ط] sometimes lacks a whole sentence and even some paragraphs that are preserved in [ب] and [ق].[21] This could have been a result of revising the original text which was supposedly closer to the text in [ب, ق] than that in [ط] on the ground that [ب, ق] might keep the original composition order of the seven books. Therefore, when I make an Arabic edition of these books, I basically rely on the text of [ب, ق] and regard the different words in [ط] as variants.[22]

The next question is which manuscript, [ب] or [ق], deserves to be a principal text in edition. When [ب] and [ق] have any different word in their texts, one of them does not usually make sense. Its clear example is found in the *Copper*. Concerning this part, there is no corresponding text in [ط].[23]

T6: The *Copper* [ب 24b-25a] [ق 17a]

Then, we go back to the description of the soul (the sun [ق]) since we already talked about natures and qualities in terms of what is about it sufficiently in this place. We say that the soul has no weight, no definition, no quality. Despite that, it has apparent actions. By those actions, its being (*wuǧūd*) and its coming-to-be (*kawn*) are shown. It is apparent and clear in the animal, the plant and also the mineral. What we need here is to refer to the soul which is in mineral.	ثم لنرجع إلى صفة النفس (الشمس [ق]) إذ كنا قد تكلمنا في الطبائع والكيفيات بما فيه كفاية في هذا الموضع فنقول إن النفس لا وزن لها ولا حد ولا كيفية ولها مع ذلك أفعال ظاهرة يستدل بتلك الأفعال على وجودها وكونها وهي ظاهرة بينة في الحيوان وفي النبات وفي المعدنية أيضا

[21] The lack of a sentence in [ط] is found in many places through the seven books. The biggest lack of paragraphs is in the middle of the *Copper*, which partially corresponds to another Ǧābirian book, the *FN*.

[22] When they are too different to be combined into one edition, I present two kinds of edition, separating [ب, ق] from [ط] as in the *Lead* in Appendix.

[23] See Chapter 2.2: the table of contents of the *Seven Metals*.

Suppose that the underlined word is represented with X. The author, Ǧābir, suggests going back to X and starts to talk about the soul. X is the soul in [ب] and the sun in [ق]. Considering the contents, X is undoubtedly the soul. Right before [T6], Ǧābir explains four seasons with relation to the heat of the sun in the *Copper*. It can be imagined that a copyist was simply influenced by the memory of الشمس (the sun) when he encountered an obscure shape of the word, which probably means النفس (the soul) and resembles الشمس in shape of letters.

Another example of the difference between [ب] and [ق] is found in the *Ḫārṣīnī*. [T7] is a description of *ḫārṣīnī* after Ǧābir explained that *ḫārṣīnī* softens iron.

T7: The *Ḫārṣīnī* [ب 57a] [ق 40a] ([ط 76b])[24]

It bears [the ability to] work in itself in [its] portion because it is substantial in nature.	وذلك إنما يحمل بذاته (نباته [ق]) في القطع عملا [<ط-76ب9] فإنه جوهري الطبع

The phrase, *bi-ḏāti-hi*, in [ب] is replaced in [ق] with '*nabāt-hu* (its plant)' which neither can have a reasonable meaning nor can work grammatically. Indeed, it is not affirmed that [ب] is always correct against [ق] since sometimes [ق] offers a correct option when [ب] is grammatically incorrect, but, judging from several cases such as [T6] and [T7], [ب] seems a little more reliable than [ق]. Consequently, I set [ب] as an original text that should be prioritised over [ق] and [ط] when I edit the *Seven Metals*.

2.1.4. Information of the manuscript of the *Fifth Nature*

As shown in the table of contents in Chapter 2.2, not a short length of the text of the *Copper* overlaps with another Ǧābirian work, the *FN*. Therefore, it is meaningful to analyse their relation for a better understanding of the internal relation among Ǧābirian writings. Their comparison in terms of contents comes in Chapter 2.5.2. Now, MS Paris BnF Arabe 5099, a single manuscript of the *FN*, deserves to be observed as an indirect witness of the *Copper*.

[ب 5099] MS Paris BnF Arabe 5099

This is a composite of two different manuscripts. For, the folios are numbered up to 269 in western Arabic numerals, but the folios after 65a have another numbering in eastern Arabic numerals. Precisely, the folios from 65 to 71 are written as ٢٠٣ to ٢٠٩, and the

[24] [ط] recurs with فإنه جوهري الطبع. This sentence [ط 76b9-] is, however, in the *Silver*, not in the *Ḫārṣīnī*.

folios from 72 to 269 correspond to ١ to ١٩٩.[25] According to Gannagé, the first part until 64b is a recent copy of which completion may not be earlier than the beginning of the nineteenth century.[26] The second half after 65a is earlier than the first because it is dated 1023AH/1614AD on 95a. The script is as a whole a *nasḫ*, 26 lines a page (290x190mm), and the book titles and the incipits of the subdivisions are rubricated.[27] The margin is almost blank in the first part except 52a-52b. In the second part, some corrections and short notes are found in the margins, but the space is mostly vacant. Almost all of the contents are known as Ǧābirian works as shown in the list below.

Folio	Title of the works in [ب 5099]		Kraus (coll.)
1b-	كتاب بلينيوس في صنعة الطبيعة و سرائر الخليقة	*Book of Balīnūs on Making Nature and Secrets of Creation*	
7a-	تفسير كتاب العلل	*Commentary on Book of Reasons*	
34a-	كتاب الطبيعة الخامسة[28]	*Book of the Fifth Nature*	396 (KM 94)[29]
39a-	كتاب ميدان العقل[30]	*Book of Arena of the Intellect*	362 (KM 60)
42b-	كتاب الموازين[31]	*(Small) Book of Balance*	980
46b-	كتاب السر المكنون[32]	*Book of the Hidden Secret*	389-391 (KM 87-89)
56b-	الجزء الأول من كتاب الأحجار على رأي بلياس[33]	*The First part of the Book of Stones According to Balīnās*	307 (KM 5)
63a-	كتاب الراهب[34]	*Book of Monk*	630 (500)
64a-	كتاب السهل	*Book of Facility*	497 (500)
65a-	كتاب السمك	*Book of Fish*	631 (500)
66b-	كتاب القادر	*Book of Power*	530 (500)

[25] The folio numbers ١ and ١٩٩ are not actually written because the upper part of the folios is cut off. Nevertheless, the folios are obviously ١ and ١٩٩ judging from their continuous relation with the adjacent folios.

[26] Gannagé says that the watermark on the folio 15 has a date that begins "18..", which means the first part of this manuscript was written in the nineteenth century. See Gannagé (2005), p. 84. However, I was not able to find such a watermark in the folio 15 as far as I saw a digital image of this manuscript.

[27] As for the colour reference, I am in the same situation as I dealt with [ب]. See n. 4 in this chapter. The description of [ب 5099] basically depends on Vajda (1940-1969), *Notices des manuscrits Arabe 5080 à 5114*, pp. 27-34.

[28] The first half of the *FN* is edited in Appendix. Its analysis is in Chapter 2.5.1.

[29] KM means *Kutub al-mawāzīn (Books of Balances)*.

[30] Ed. Kraus (1935), pp. 206-223.

[31] Ed. Berthelot, Duval & Houdas (1893), III, pp. 105-131. However, this edition is based on MS Leiden 1263 that preserves the same text as MS Paris 5099. See Kraus (1943), p. 123.

[32] Ed. Kraus (1935), pp. 333-340 (Selected edition).

[33] Ed. Kraus (1935), pp. 126-157.

[34] Ed. Kraus (1935), pp. 528-532.

67b-	كتاب الماجد[35]	*Book of the Glorious*	706 (500)
70a		An alchemical recipe	
70b-	كتاب الذهب لجابر من خط الكاشغري تعليق خط الطغرائي	*Commentary of Ṭugrā'i on Ǧābir's Book of Gold*	
71b		Alchemical note in Persian	
72a-	الجزء الثاني من موازين الأحجار على رأي بلياس[36]	*The Second part of Balances of Stones According to Balīnās*	308 (KM 6)
81a-	الجزء الثالث من كتاب الأحجار على رأي بلياس	*The Third part of Book of Stones According to Balīnās*	309 (KM 7)
87a	blank		
87b-	الجزء الرابع من الأحجار على رأي بلياس[37]	*The Forth part of Stones According to Balīnās*	310 (KM 8)
95b-	كتاب الحاصل[38]	*Book of the Result*	323 (KM21)
117a	كتاب الصفوة	*Book of the Elite*	384 (KM 82)
117b	blank		
118a-	كتاب الميزان الصغير[39]	*Small Book of Balance (it seems to start in the middle)*	369 (KM 67)
128a-	كتاب التصريف[40]	*Book of Morphology*	404 (KM 102)
148a-b	blank		
149a-	كتاب التجمع[41]	*Book of Concentration*	398 (KM 96-2)
171b	blank		
172a-	كتاب القديم[42]	*Book of Eternal*	981(probably 500)
174a	كتاب الصافي	*Book of Pure*	640 (500)
174b-	كتاب البيان[43]	*Book of Explanation*	785 (500)
176a-	كتاب الحجر[44]	*Book of Stone*	553 (500)
181a-	قال ذو النون	*Poem of Du al-Nun (al-Misri)*	
183a-	كتاب النور[45]	*Book of Light*	17 (CXII 11)

[35] Ed. Kraus (1935), pp. 115-125.
[36] Ed. Kraus (1935), pp. 158-195.
[37] Ed. Kraus (1935), pp. 196-205.
[38] Ed. Kraus (1935), pp. 53-541.
[39] Ed. Kraus (1935), pp. 425-459.
[40] Ed. Kraus (1935), pp. 392-424 (Selected edition).
[41] Ed. Kraus (1935), pp. 341-391 (Selected edition up to f. 162a). The manuscript lacks the beginning and the end of the book as Kraus pointed it out.
[42] Ed. Kraus (1935), pp. 542-547 (Selected edition collated with MS Damascus. See Kraus (1943), p. 180).
[43] Ed. Holmyard (1928), pp. 5-12.
[44] Ed. Holmyard (1928), pp. 15-42.
[45] Ed. Holmyard (1928), pp. 45-47.

183b-	كتاب الإيضاح[46]	*Book of Explanation*	195 (X 3)[47]
185b-	كتاب الأسطقس الأس على رأي الفلاسفة لجابر بن حيان الأول من الثلاثة[48]	*The First Book of Element of Foundation*	6 (CXII 1)
188a-	كتاب الأسطقس الأس على رأي الديانة لجابر وهو الثاني[49]	*The Second Book of Element of Foundation*	7 (CXII 2)
191b-	كتاب الأسطقس الأس الثالث المؤلف على رأي الصناعي الجدلي[50]	*The Third Book of Element of Foundation*	8 (CXII 3)
194a-	تفسير كتاب الأسطقس[51]	*Commentary on the Book of Element*	9 (CXII 3a)
195b	blank		
196a	كتاب الكمال	*Book of Perfection*	10 (CXII 4)
196a-	كتاب التجريد[52]	*Book of Abstraction*	399 (KM97)
199a	كتاب المنفعة[53]	*Book of Utility*	fragment of 973
199a-	كتاب الرحمة الصغير[54]	*Small Book of Mercy*	969
201a-	كتاب الملك[55]	*Book of King*	1985
203a-	كتاب الواضح في فك الرموز والفاضح في هتك الكنون	*Book of clarification in separating symbols and degradation in tearing covers*	Might be related to 973.
209b-	blank		
211a-269a	Incomplete work	The text seems to lack the beginning and the end.	

Compared with [ب 5099] of which most parts are already edited,[56] the three manuscripts [ب], [ق] and [ط] that contain the *Seven Metals* are relatively untouched. The table of contents of these seven books is presented in the next chapter, which will make it clearer that the *FN* in [ب 5099] is another witness of the *Copper*.

[46] Ed. Holmyard (1928), pp. 51-58.
[47] 'X' means the *10 Books* which are related to the *Books of Seventy*. See Kraus (1943), p. 62.
[48] Ed. Holmyard (1928), pp. 61-76.
[49] Ed. Holmyard (1928), pp. 79-96.
[50] Ed. Holmyard (1928), pp. 99-111.
[51] Ed. Holmyard (1928), pp. 115-125.
[52] Ed. Holmyard (1928), pp. 127-143.
[53] Ed. Holmyard (1928), pp. 143-144.
[54] Ed. Berthelot & Houdas (1893), III, pp. 99-104; ed. Holmyard (1928), pp. 147-157.
[55] Ed. Holmyard (1928), pp. 161-172.
[56] See the footnotes linked to the Arabic titles in the list above.

2.2. Table of contents of the *Books of Seven Metals*

The following list shows the contents of the seven books.[1] [ط] has a complicated structure. To be precise, in the *Silver*, 'letters of silver' comes at the beginning of the book in [ب, ق] while it appears in the middle of the book in [ط]. The text on 'similarity and oppositeness' and 'talismans and occult properties', which follows 'letters of silver' in [ط], is preserved in the *Ḫārṣīnī* in [ب, ق]. In the *Copper*, most part of the text in [ب, ق] does not have a corresponding text in [ط] but partially corresponds to another Ǧābirian work, the *Fifth Nature*, instead. The text on 'mercury' is found in the *Copper* of [ب, ق] and, on the other hand, in the *Ḫārṣīnī* of [ط]. The only place where [ق] and [ط] have the same text that [ب] does not have is the text on 'children of lead' at the end of the *Lead*. A distinguished feature of these seven books is that, through the whole books, we can often find the description of the importance of these seven books and their relation to other Ǧābirian books, which are titled 'bibliographical information' in the list.

Book of Gold	[ب]	[ق]	[ط]
Bibliographical information	2b	1b	41a
Nature of gold	2b	1b	41a
Gold ink	3a	2b	42a
Notification of gold	4a	2b	42b
Gold plate against fear	4a	2b	43a
Medicaments for eyes	4a	2b	43a
Non-superiority of gold in dyeing	4b	2b	43b
Kohl	5a	3a	44a
Copper as a substitute for gold	5a	3a	44a
Didactic remarks	5a	3a	44b
Camphor water	5b	3b	45a
Gold making	5b	3b	45a
Alchemical recipes according to Ḥarbī [2]	6a	3b	45b
Occult properties as part of talismans	6b	4b	46b
Dyeing recipes	7a	4b	46b
Bibliographical information	8a	5a	48a
Variations of lead	8a	5b	48b
Resemblance of metals to gold	8b	5b	49b
Dyeing metals	8b	6a	49b
Sharp water	10a	6b	51b
Drinks for yellow bile	10b	7a	52a

[1] The subtitles in this table are just for convenience to overview the whole contents and not actually written in the manuscripts. The edited Arabic texts of the coloured sections are found in Appendix.
[2] Ḥarbī is said to have been Ǧābir's teacher.

Book of Silver	[ب]	[ق]	[ط]
Basmala[3]	10b	7a	71a5-71a9
Letters of silver	10b	7a	77b8-
Bibliographical information	11b	7b	78b6-78b9, 71a9-
Nature of silver	11b	8a	71b
Medical use of silver	13a	9a	73b
Silver ink	13b	9b	74a
Bibliographical information	14a	10a	75a
Gold making	14b	10a	75b
Bibliographical information	15a	10b	76b
(Similarity and oppositeness) (Talismans and occult properties)	(57a-57b)	40a-40b)	76b9-77b8 (in *Ḫārṣīnī*)
Balances and the appetite of the soul	15b	10b	78b9-
Classification of headache	16a	11a	79a
Usefulness of the opposite	16b	11b	80a
Remedies for headache	16b	11b	80a
Colour change as alchemical remedy	17b	12a	81a
Remedies for migraine	18a	12b	81b
Symptoms of the blood and the phlegm	18b	13a	82b
Similarity and oppositeness	19b	13a	82b
Remedies for the four humours	19a	13a	82b-85a
Book of Copper	[ب]	[ق]	[ط]
Basmala	21a	14b	53a1-6
Bibliographical information	21a	14b	---
Nature of copper (1)	21b	14b	---, 54b5-
Kohl	22a	15a	55a
Tūbāl	22a	15b	55b
Bibliographical information	22b	15b	56a
Balance [Copper 0.1]	23a	16a	---
The soul (introduction) [Copper 0.3 - 0.4]	24a	16b	---
Four natures and four seasons [Copper 0.5]	24b	17a	---
The soul [Copper 0.6]	24b	17a	---
Substance [Copper 1 - 9.1]	25a	17b	= *FN*
Bibliographical information [Copper 9.2]	27a	19a	---
Logic ‘in relation’ [Copper 9.3 - 12]	27b	19a	(partially =*FN*)
Principles and basis [Copper 13 - 18]	28b	19b	(partially =*FN*)
Bibliographical information	29b	20b	---, 53a6-53b
Mercury	30b	21a	67b8-68a4 (in *Ḫārṣīnī*)

[3] Every book has basmala at the beginning, but only basmala in the *Silver* and the *Copper* is mentioned in the table of contents to signify the change of folios in [ط] between basmala and the next topic.

2.2. Table of contents of the *Seven Metals*

Verdigris and *isfīdāǧ* (lead oxide, ceruse)	---	---	53b
Nature of copper (2)	30b	21b	54a8-54b4, 57a8-58a
Gold making	31b	22a	58a
Bibliographical information	32b	22b	59a
Gold making	33a	23a	59b
Tūtiyāʾ	34a	23b	60b
Remarks of ancient Greek thinkers	35a	24a	61b
Bibliographical information	35b	24a	62b
Dyeing metals	36a	24b	63a
Book of Iron	[ب]	[ق]	[ط]
Bibliographical information	38b	26a	32b
Nature of iron	38b	26b	33b
Occult properties of iron	39b	27b	34b
The opposite to iron	40a	27b	35b
Four humours	40b	28a	35b
Transmutation of metals	41a	28a	36b
Soluble bodies	41b	28b	37a
Seven metals and seven planets	42a	28b	37b
Moistness in stones	42a	29a	37b
Theory of balance	42b	29a	38a
Theory of occult properties	43b	30a	39a
Book of Tin	[ب]	[ق]	[ط]
Nature of tin	45a	31a	25b
Occult properties of tin	45a	31a	26a
Tin as a substitute for silver	45b	31b	27a
Mixture and imperfection	46a	31b	27a
Father and mother classification	46a	31b	27b
Pairing in mixture	47b	32b	29a
Colour appearances in mixture	48a	33a	31a
Softness and hardness in metals	49a	34a	31a
Substrate of metals	49a	34a	31a
Bibliographical information	49a	34a	31b
Book of Lead	[ب]	[ق]	[ط]
Nature of lead	50a	34b	18b
Occult properties of lead	50b	35a	19a
Mixture of metals	51b	36a	20a
Subject and predicate	52a	36a	20b
Transmutation of metals	52b	36b	21b
Astrological description	53a	37a	22a
Celestial motion and terrestrial generation	54b	38a	24a
Children of lead	---	39a	25a
Book of Ḫārṣīnī	[ب]	[ق]	[ط]
Introduction	56a	39a	66a

Origin of *ẖārṣīnī*		56a	39b	66b
Nature of *ẖārṣīnī*		56b	39b	66b
Burning *ẖārṣīnī*		56b	39b	67a
Softening iron		56b	40a	67a
(Mercury)		30b-31a	21a-21b	67b8-68a4 (in *Copper*)
Mercury (continued)		---	---	68a4-68a9
Similarity and oppositeness	Citation from the text on the science of talismans in the *Iẖrāğ*	57a	40a	76b9-77a9, 77b4-77b8, 77b3-77b4 (in *Silver*)
Talismans and occult properties		57b	40b	77a9-77b2 (in *Silver*)
				68a9-
Astrological description		58a	41a	68b
Bibliographical information		59a	41b	70a
Constellation and colours		59a	41b	70a

The contents of each book are varied but share the same theme to some extent with other books. In the following chapter, the *Seven Metals* are overviewed according to thematical classification with the analysis of some texts.

2.3 Thematical overview of the *Books of Seven Metals*

The *Seven Metals* necessarily cover an extensive knowledge since, Ǧābir says, they are the cream of the *Books of Balances* which consist of encyclopaedic texts.[1] Consequently, the *Seven Metals* contain most of the seven kinds of Ǧābirian science as described in the *Iḫrāǧ*.[2] In this chapter, I overview the seven books according to some themes, starting from the practical ones and expanding to the theoretical ones, most of which are dealt with in more than two books of the seven. Owing to the necessity of the cross reference for collecting information under the same theme, the overview below does not exactly follow the order of the seven books as it is, but roughly in the same order, i.e., from the *Gold* to the *Ḫārṣīnī*. For, the seven books have such a tendency as the former books (e.g., the *Gold* and the *Silver*) are more practical whereas the latter ones (e.g., the *Lead* and the *Ḫārṣīnī*) are more theoretical in contents. Hereunder, dyeing (i.e., alchemy), medicine, nature of metals, dualistic theories (e.g., similarity and oppositeness), the theory of occult properties and talismans are investigated in this order. Moreover, in the course of that, it will be discussed how Ǧābir uses the concept of nature, that was the first question in our research into the *Seven Metals*.

Dyeing

Alchemy, although not easily defined, involves dyeing since its beginnings.[3] Especially for chrysopoeia – a narrower meaning of alchemy, changing colour of metals is a crucial way to achieve the aim. The *Seven Metals* have several recipes for golden colour. In one of such recipes, sharp water (*māʾ ḥarīf*) plays a key role. Although it is not specified what the sharp water is, it is probably a symbolic name of an acid fluid like divine water which frequently appears in Greek alchemy. Along with the sharp water, alum (*šabba*)[4] works as another colour-changing factor as shown in T1 below:

T1: Sharp water in the *Gold*, [ب 10a-b] [ق 6b] [ط 51b-52a]

Know that the sharp water whitens everything that is red and reddens	واعلم أن الماء الحريف يبيض كل شيء أحمر ويحمّر

[1] فاعرف فضل هذه الكتب على سائر كتب الموازين خاصة فإنه زبدة كتبي في الموازين بل زبدة كتبي كلها الموازينية وغيرها in the *Gold*, [ب 8a].

[2] See Chapter 1.2.

[3] The difficulty in defining alchemy is presented in Martelli (2014b) where one can see that dyeing – changing colours not only of metals but also other substances – is the technical field that alchemy deals with in its origins. "A broader interest in different dyeing techniques" was "attested by the most ancient alchemical writings (first to fourth century AD)" in Martelli (2014b), p. 2.

[4] Alum (شبة) is written without dots on the last letter in all three extant manuscripts, two of which have almost always *tā marbūta* written with clear two dots. Therefore, it can be read as brass (شبه). However, I adopted alum rather than brass because alum is often used in a dyeing process in general.

كل أبيض بطول الطبخ وشدة النار ويخلط ماء الحريف الأشياء بعضها ببعض ويدخل بعضها ببعض ويمزج بعضها ببعض ويصل إلى إقعار الأجساد وداخلها وإنه يحل الزجاج إذا حمى وغمس فيه مرارا حتى يتكلس ثم يسحق سحقا جيدا ويغمر به ويدفن في بئر سرجين أو نداوة بلا سرجين فإنه ينحلّ في أحد وعشرين يوما ماء يضرب إلى الصفرة وإن هذا الماء إذا دخل على التركيب أو البرادات البيض حمّرها وعلى الحمر بيّضها

والتجربة يا أخي أقضى بالحق [ق-7أ] وتبلغ إلى صحة الدعوى أو بطلانها وأما من أراد أن يعرف الأشياء بالقياس قبل التجربة فهو إما عجز عن العمل وإما عدم الإمكان للنفقة

فليعلم أن الشبة إذا سبك بالزجاج [ط-52أ] ثلث دفعات أخرجه ذهبا لا يشك فيه أحد في المحك والحمى إلا يسيرا من سواد يظهر عليه وخفة في الوزن مخالف ثقل الذهب وهذه الألوان عن الشبة بأن يحمى عليه بالنار مطليا بالزرنيخ حماء دائما فإنه يرزن ويزول السواد عنه وإن طلى بالتوتياء والزرنيخ الأحمر المبلولين بالخل أيضا في نقي السواد عنه لأن الزرنيخ يأكله وينبغي لعامله أن يصير عليه فإنه إذا حمى والزرنيخ عليه أسود سوادا لا يزول عنه بل يزيد ثم يبتدئ وينسلخ قليلا قليلا حتى يحمّر حمرة صافية الآن ذهبية فاعلم ذلك [ب-10ب] إن شاء الله تعالى

everything that is white by continuous cooking over a high flame. The sharp water blends some things with the other, makes them penetrate one into the other, mixes one with the other and reaches the depth of the bodies and their inner part. [Know] that it dissolves glass if the glass is heated and immersed in it several times until it is calcinated, and then it is ground thoroughly, covered with it (i.e., the sharp water) and buried in a pit full of manure or dew without manure. It is dissolved in twenty-one days, and the water tends to yellow. [Know] that if this water is poured over the compound or white filings, it will redden them, and [if it is poured] over the red [things], it will whiten them.

The practical experience, O my brother, is decisive [to discern] the truth, and leads to the correctness or falsity of the allegation. As for the one who wished to recognise things by deduction before a practical experience, he is either incapable of the operation or has no possibility to afford it.

It should be known that alum, if it is smelted with glass three times, it will make the glass gold in a way about which nobody can doubt at the test with the touchstone and the heat, except for a bit of black that appears on it and for its light weight opposed to the heaviness of gold. These colours [are derived] from alum by heating it with constant fire along with arsenic all the time, and this becomes stable and the black colour goes away. It must be coated with *tūtiyāʾ* (i.e., zinc oxide) and red arsenic – both of which are moistened with vinegar – when the black is cleansed from it, because arsenic consumes the black, and its agent necessarily overcomes it. For, when it is heated with the arsenic on it, it turns black that does not go away but increases, and then it begins to shed its skin little by little until it turns bright red, Now, it is gold-like. Know that if sublime God wills.

This citation includes two recipes. The first one is for dyeing in red or white with sharp water, and the second is for producing golden colour with alum. Glass, another crucial substance for the recipe, is a rather vague reference as well as the sharp water, but it might possibly represent silicon dioxide (SiO_2) that is a chief ingredient of glass in general.[5] Heated glass is immersed in sharp water. This process – heating and immersion – is repeated "until it is calcinated (*ḥattā yutakallasa*)".[6] The repeated process should be stopped at some point before the phase of immersion in water. For the calcination means to remove volatile components by heating, and the last process must be heating, not immersion, to obtain a dried outcome. After some other passages, the sharp water becomes yellow and can change colours of things from white to red, and vice versa. In the second recipe, it is said that alum makes glass look gold. However, it is arsenic that plays a key role to remove black colour that occurs on the surface of the glass after smelting the glass and alum. The black surface on the glass does not go away straightforward. It once becomes extremely black and then it is peeled off to look reddish gold. *Tūtiyāʾ* (or tutty), which is used together with red arsenic, is not totally identified but is probably zinc oxcide.[7]

Ink

Besides this kind of colour changing recipes shown above, there is another type of recipes for colour. It is not to change colours but to shift the state of pigments from solid to fluid, i.e., the recipe for ink.[8] Transforming state of matter is also a core operation of alchemy. There are two recipes for ink in the *Seven Metals*. One for golden ink is found in the *Gold* and the other for silvery ink in the *Silver*.

T2: Gold ink in the *Gold*, [ب 3a-b] [ق 2a-b] [ط 42a-b]

Ink with which one writes is made from it (i.e., gold). An inkpad with which one	وقد يكون منه حبر تكتب به ويكون منه كرسفة

[5] In some texts of the *Books of Seventy*, glass is counted as a metal in addition to the other six metals. Von Lippmann believed that this glass is yellow amber [Kraus (1942), p. 21, cf. Von Lippmann (1919), I, p.373]. Considering this, although the *Seven Metals* do not include glass in metals, it is never denied that the glass in question might be something similar to metals or at least different from what is indicated by 'glass' today.
[6] If another meaning of *takallasa* is adopted here, it is translated 'until it is calcified'. However, this recipe does not seem to mean the production of silica chloride (SiO2-Cl) (i.e., calcified grass). Even if so, being 'calcified' might simply mean that something like salt appears on the surface of the glass as a result of the melt of the glass since it is said "it (i.e., sharp water) dissolves glass", instead of indicating a strict meaning of calcification.
[7] *Tūtiyāʾ* is mentioned again in relation with *ḫārṣīnī* that is another zinc-related substance and a main subject in Chapter 2.4.
[8] The ink has a rich history, and there are various traditions of recipes for ink not only in the Arabo-Islamic world but also Babylonia, the Graeco-Roman and Byzantine region and the Syriac milieux. See Zerdoun Bat-Yehuda (1983) in which a fundamental study on inks is presented. More recent research into inks is found in Schreiner & Oltrogge (2011) and Raggetti (2021).

writes is also made from it. Likewise, we will talk about silver, [but] since it (i.e., silver) is far from it (i.e., ink) in everything, it does not become ink nor an inkpad until it is calcinated.

As for the inkpad, it is made by [the following process]: gold is taken, thrown into a firm crucible and blown upon. When it (i.e., the gold) is smelted, put a lead plate on the crucible for an hour. Then, break it and make it ground powder (*turāb*).

If you wish, operate on it (i.e., gold) in an easier way than this. It is [operated] by coating the inside of the crucible with ground litharge, with calcinated lead, with excellent antimony or [with] what is compared to something like red lead and its brothers like the children of lead. Then it (i.e., gold) should be casted into the crucible. Thus, it is calcinated and become powder (*turāb*) which is calm and beautiful yellow-coloured.

When it becomes like that, it should be soaked in dissolved gum water, be thrown onto soft wool or rough cotton – with which one writes as one writes from an inkwell – and be polished after it becomes dry. The writing [with it] produces [the colour of] gold which is better than any other good and amazing things to see.

As for dissolving it (i.e., gold) to make it ink – with which one writes as he writes with [ordinary] ink –, it (i.e., dissolution) produces beautiful gold-yellow writing. For, ammonia dissolves whatever is dissolved and annihilates a filing with it until it becomes fluid. Sometimes alkali salt –noble and described in our books of balances –, is associated with ammonia. For, it (i.e., alkalic salt) belongs to what dissolves gold and silver. If we said that it (i.e., alkali salt) dissolves the seven soluble bodies as it (i.e., ammonia) dissolves it (i.e., body), it would be true [that the alkalic salt is analogous to ammonia]. Know that.

يكتب بها أيضا وكذلك نقول في الفضة فإنها نائيته في كل شيء ولا يكون حبر ولا كرسفة [ب-3ب] حتى يتكلس

أما الكرسفة فإنها تكون بأن يؤخذ الذهب فيلقى في بوطقة وثيقة وينفخ عليه فإذا انسبك أطبق على البوطقة طبق من أسرب ساعة فإنه يكسره ويجعله ترابا ينسحق

وإن شئت فاعمل به ما هو أسهل من هذا وهو بأن يطلى داخل البوطقة إما بالمرتك المسحوق أو بالأسرب المكلس أو بالكحل الجيد أو ما يجري مجرى ذلك مثل الأسرنج وإخوانه [ط-42ب] من أولاد الأسرب ثم يسبك فيها فإنه يكلس ويصير ترابا أصفر اللون رزينا حسنا

وإذا صار كذلك عجن بماء الصمغ المحلول وطرح على صوفة لينة أو قطنة خشنة ويكتب منها كما يكتب من الدواة ثم صقل بعد جفافه فإنه يخرج الكتابة ذهبا أحسن من كل حسن عجيب المنظر

وأما حله ليكون حبرا يكتب به كما يكتب بالحبر فيخرج الكتاب أصفر ذهبيا حسنا فإن يحل النوشادر بأي حلول كان ويسحق البرادة به حتى يصير ماءً وربما قرن بماء النوشادر ملح القلى المكرم الموصوف في كتبنا الموازينية فإنه مما يحل الذهب والفضة. لو قلنا إنه يحل الأجساد السبعة الذائبة مثل حله لكان ذلك حقا فاعرفه

If it (i.e., the solid dye described in the above recipe) is dissolved, one can write with it as he writes with [ordinary] ink. It will bring, after being polished, shining gold. Recognise these principles. Know whatever we are indicating by this description because there is usefulness in the knowledge of what you want. You will recognise it if sublime God wills.	فإذا انحل كتب به كما كتب بالحبر فإنه [ق-2ب] يخرج بعد صقاله ذهبا يلمع فاعرف هذه الأصول واعلم أي شيء نومئ بهذا الوصف [ب-4أ] فإن الفائدة في معرفة ما تريده وأنت تعرفه إن شاء الله تعالى.

Pigment, i.e., gold powder, is produced first and then it is made fluid so that it can be used for writing. Gum water, ammonia and alkalic salt are introduced as effective solvent which makes pigment fluid for writing. At the beginning of [T2], it is implied that silver can be ink as well as gold if it is calcinated. In the *Silver*, silver ink recipe is followed by the description of how to calcinate silver.

T3: Silver ink in the *Silver*, [ب 13b-14a] [ق 9b-10a] [ط 74a-75a]

The ink with which one writes as he writes with [ordinary] ink is made from silver, and the inkpad with which one writes like the inkpad in the inkwell is [also] made of it.	وقد يكون من الفضة حبر يكتب به كما يكتب بالحبر ويكون منه كرسفة يكتب بها كما تكون كرسفة الدواة
It is divided into two parts. As for dissolving it (i.e., silver) for writing with it, it is [dissolved] with ammonia water, borax water or both of them together, by [doing the following]: The filing [of silver] is taken, dipped in these fluids by an enough amount and ground until it is about to be dry out. Then it is moistened again and ground. It is done with it (i.e., the filing) all the time endlessly by an enough amount until the filing is dissolved and it becomes pure water. If it becomes like this, write with it and polish the writing completely, and the writing of the ink will remain shining with being polished and clear.	وذلك ينقسم فيها قسمين أما حلّها لأن يكتب بها فبماء النوشادر أو بماء البورق أو هما جميعا بأن تؤخذ البرادة وتسقى من هذين المائين بمقدار الكفاية وتسحق حتى تكاد تجفّ ثم ترطب أيضا وتسحق يفعل بها ذلك دائما أبدا بمقدار الكفاية [ط-74ب] حتى ينحل البرادة وتصير ماء رائقا فإذا صارت كذلك كتب بها وصقل المكتوب صقالا بليغا فإنه يبقى مكتوبها يلمع مصقولا بينا
As for the inkpad, it is made by [the following process]: first, silver is calcinated, the calcinated [silver] is dipped in the water of dissolved and purified Arabic gum, and after its dissolving, [it is dipped] in tragacanth water in the same way.	وأما الكرسفة فتكون بأن يكلس الفضة أولا ثم يعجن الكلس بماء الصمغ العربي المحلول المصفى بعد حله بماء الكثيراء كذلك
It is increased in the gum water little by little until it is dissolved and becomes water. It is	ويزاد في ماء الصمغ على ترتيب حتى ينحل

put in a container. It is intended [to be poured] into as soft wool as possible, or [into] a kind of rough cotton. Make it (i.e., the inkpad) as you make ink. Pour that water, which flows out from the calcinated [and dipped silver], into it (i.e., the container) until it fills the wool.
Then, take the ink with a pen and write with it as one writes with an inkwell and an ink. If you dry the writing, it should be polished lightly again. In the same way, the description of calcinating silver will become clear.
As for calcification of silver for this operation, it (i.e., silver) must be smelted with crystal, carnelian, turquoise or one of these jewels. The stone with which silver is calcinated should be twice as weight as it (i.e., silver), be spread on top and underneath it, and be smelted with strong fire. Then, it is burnt in a crucible and the whole of it becomes pounded powder.

ويصير ماء ويجعل في قارورة [ب-14أ] وتعمد إلى صوفة ألين ما يقدر عليه أو قطنة خشنة من القطن فتجعلها كما تجعل المداد وتصب عليها ذلك الماء الخارج من الكلس حتى تستوي في الصوفة ثم تستمد منها بالقلم وكتب به كما يكتب بالدواة والمداد فإذا جفّت الكتاب يصقل أيضا صقلا خفيفا فإنه تبين كذلك صفة تكليس الفضة

فأما تكليس الفضة لهذا العمل فينبغي أن تسبك بالبلور أو بالعقيق أو بالفيروزج أو بواحد من هذه الجواهر وليكن ذلك الحجر الذي تكلس به بوزنها مرتين تفرشه فوقه وتحته نصفا ونصفا ويسبك بنار صلبة فإنه يحترق في البوتقة ويصير الجميع ترابا منسحقا [ط-75أ]

In the same way as the recipe for gold ink does, the recipe for silver ink has two parts, i.e., dissolution of the metal and preparation of ink pad, but the presentation order is reverse: the way to dissolve silver is described before how to make the inkpad. The solvents used in each recipe are the same, precisely, ammonia and alkalic salt although alkalic salt is specified as borax in the recipe for silver ink. Moreover, the fact that the silver ink recipe is accompanied by an explanation of calcinating silver shows the consistency between the *Gold* and the *Silver* because, at the beginning of the gold ink recipe, the necessity of calcination of silver for ink making was mentioned by saying “silver does not become ink nor an inkpad until it is calcinated”. The other books than these two do not have ink recipes.

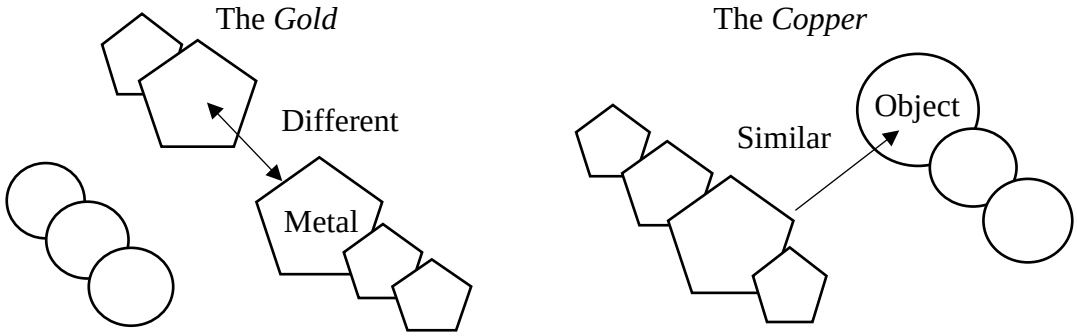
Medical use of metals

Provided that dyeing recipes, which concern dyes and pigments, including ink, can be considered as recipes concerning crafts, there is another branch of recipes – medical recipes – in the *Seven Metals*. Metals can work as medicaments by being combined with other ingredients such as plants. The *Silver* provides remedies for several types of headaches and for diseases caused by each of the four humours. In addition, the *Gold* and the *Copper* introduce the usefulness of metals to eye diseases as medicaments called

kohl,[9] of which descriptions in the two books are almost the same as shown below:

T4: Kohl in the *Gold*, [ب 5a] [ق 3a] [ط 44a]		In the *Copper*, [ب 22a] [ق 15a-b] [ط 55a-b]
You should know that gold, silver, copper, two kinds of lead (*raṣāṣayn*: i.e., lead and tin), iron and *ḫār*, all of them are included in kohl. Each of them has an effect that the others do not have. Gold makes the eye clear, strengthens it and drives away unpleasant symptoms from it as we said in a deviation. Silver dries moist things in the eye. Copper cleanses harsh disease derived from the moist thing from the eye and destroys eye mucus. Two *raṣāṣ* (i.e., lead and tin) are useful for dirty eyes and strengthen sight. Iron and *ḫār* dry moist things, remove an itch and pus, and pull out leucoma with amazing faculty.	ويجب أن تعلم الذهب والفضة والنحاس والرصاصين والحديد والخار كلها تدخل في الأكحال فيعمل كل واحد منها عملا لا يعمله غيره أما الذهب فيجلوا العين ويقويها ويدفع عنها النوازل كما ذكرنا في الميل وأما الفضة فتنشف ما في العين من الرطوبات وأما النحاس فينقى الداء الغليظ من الرطوبة عنها ويأكل أرماصها وأما الرصاصين فينفعان العيون القشفة ويقويان الناظر وأما الحديد والخار فينشفان الرطوبات ويبريان الجرب والسبل ويقلعان البياض بقوة عجيبة	ويجب أن تعلم وأن الفضة والذهب والنحاس والرصاصين والحديد والخار يدخله كلها في الأكحال فيعمل كل واحد منها عملا لا يعمل إلا جزء مثله أما الفضة فينشف ما في العين من الرطوبات والذهب يجلوها [ط-55ب][ق-15ب] والنحاس ينقى الداء الغليظ الرصاصين ينفع العيون القشفة وتقوى الناظر والخار والحديد ينشفان الرطوبات ويبريان الجرب والسبل والبياض فيها بقوة قوية

The text about the effects of metals on eye diseases in the *Gold* has a few more details than that in the *Copper* does, and some words are put in a different order between two texts. However, they look so similar as a whole that it is natural to think that one is a copy of the other or they have the same source text.



[9] Kohl basically means anitimonium and, by extension, any collyrium in form of powder.

The most remarkable difference is found in the general description about the effect made by each metal, as the underlined texts in [T4] show. The *Gold* says that each metal has its own effect that differs from those of the other metals, whereas the *Copper* says that each metal works only for the object that is similar to that metal. The former compares each metal to the others, while the latter mentions the relation between each metal and its proper object. Thus, the directions of the comparison are vertical to each other, but both mean the exclusiveness of the effect of each metal.

Besides, not only physical disease but also mental health disorder, given that such classification of illness was applicable to the age when the Corpus was composed, is treated in the *Seven Metals*. For instance, a gold plate is said to be effective to remove fear of a scared person.

T5: Gold plate against fear in the *Gold*, [ب 4a] [ق 2b] [ط 43a]

Know that gold has occult properties and effects in a way which a person who hears it does not believe without trying it. An experiment is a fair witness. For example, [take] 5 *miskāl* of smelted unmixed gold, knock them until they become a plate whose length and width are the same as is about 4 *iṣba*ʿ or 3 of the similar [measure] to it (i.e., *iṣba*ʿ), and tie the sheet with silky thread on something threatening him. It revives his heart and removes from him the wild state, i.e., the palpitation [that comes] from both black bile and yellow bile, and makes his soul good. If it scares [him], it will go away from him and it will remove sad thoughts and anxiety of which cause is not known to him. The fear is fenced with the heart.	واعلم أن الذهب فيه خواص وأفعال طريقة لا يصدق بها من يسمعها دون تجربتها فإن التجربة شاهد عادل وذلك أنه من سبك من الذهب الخالص خمس مثاقيل فطرقها حتى تصير صفيحة طولها وعرضها واحد يكون نحو أربعة إصابع أو ثلاثة في مثلها وربطها في خيط إبريسم على مهدده يحيي قلبه وأزال عنه التوحش فالخفقان السوداوي والصفراوي وطيب نفسه وإن كان ينفزع زال عنه وأزال الأفكار المحزنة والقلق الذي لا يعرف له سبب فالمخاوف الحاظرة بالقلب

The symptom described in [T5] – being afraid of something without knowing the reason[10] – can be described as melancholia, i.e., the disorder caused by an excess of black bile. In another place, gold is said to be useful to remove black bile.

T6: Nature of gold in the *Gold*, [ب 3a] [ق 1b-2a] [ط 41b-42a]

Philosophers agreed concerning the issue of it (i.e., gold) that it is hot, moist, proportioned, calm and integrated – There is	واجتمعت الفلاسفة في أمره على أنه حار رطب

[10] The cause of this kind of fear could be called *ḫawāṣṣ* (occult properties), i.e., "an unknown cause of a known effect" according to Lane's Lexicon since "the notion of *ḫāṣṣa* is thus at the heart of the relationship between theoretical knowledge and perceptible reality insofar as it reflects the limitation of the theory when confronted with experience". See Gannagé (2018), p. 43. As for the science of properties, see Chapter 1.2.

معتدل رزين [ق-2ب] متداخل وذلك [ط-42أ] بغير شك ولا خلف فيه بينهم وأنه ينفع من الخلط السوداوي فيزيل ومنفعته عجيبة وإبرآء بليغ

وذلك يكون منه إذا دبّر بأن يبرده بمبرد ليّنٍ وأديم سحقه بمآء السلى حتى يصير كالهباء وخولط بالأدوية المخرجة لسودائة النافعة منها فيكون حينئذ بادزهر الخلط السوداوي وإن أخذه مخلطا بالأدوية أنفع من استعماله وحده بل لا يستعمل وحده البتة فاعلم ذلك وادر ما تحته تجد فيه الفائدة في شفاء الأمراض السوداوية إن شاء الله تعالى.

no doubt and no disagreement about it among them – and [agreed] that gold is useful for [symptoms of] black bile and [if it is used,] black bile disappears. The benefit of gold is marvelous and the release [from the illness] is accomplished.

That [effect] will come from it (i.e., gold) if it is prepared by making it cold with something moderately cold and [by] continuing to be pounded with amniotic water until it becomes like fine dust. [When] it is blended with a medicament that removes black bile and is effective in it (i.e., black bile), then it will be antidote to black bile. If one makes gold blended with the medicament, [it will be] more useful than using gold only. Rather, gold alone never works. Know that and be aware of what you scrape off, in which you will find the usefulness of cure for disease of black bile, if sublime God wills.

Gold – hot and moist – gets rid of black bile. In a similar way, copper is said to be effective in remedy for phlegmatic symptoms.

T7: Nature of copper in the *Copper*, [ب 21b] [ق 15a] [ط 54b]

والنحاس كما تعلم من الأجساد الذائبة وهو يجري مجراها ويعمل مثل أعمالها وله منافع كما لكل واحد منها منافع [<ط-54ب5] فمن ذلك أنه ينفع أولا البلغم ويخرجه من البدن بقوة قوية وعمل شديد ويكون استعماله لذلك على ما أصف: وهو أن يؤخذ منه وزن درهم واحد فيبرد لينا واسحق دائما بماء الملح المقطّر على صلاية سحقا بليغا حتى يليين ثم يؤخذ منه دانقٍ ونصف ومن السقمونيا مثل وزنه ومن بزر الكرفس دانق ونصف ومن التربد درهم ويسقى الإنسان منه هذا الدرهم فقط أخرج من جوفه رطوبات لا يخرجها أقل من عشرة دراهم شحم الحنظل أو ما يقوم مقامها في القوة من الأدوية

Copper is, as you know, of soluble bodies, and it is analogous to them, works like their actions, and has benefit as all of them have benefit. For example, copper is firstly useful for the phlegm and removes it from stomach with strong faculty and intensive effect. Its operation for that [effect] is as I describe: take copper by one dirham weight, make it cold moderately and grind it completely all the time with refined salt water in the course of roasting until it becomes soft. Then, take one *dāniq* and a half from it (i.e., the ground copper), the same weight as it from scammonia, one *dāniq* and a half from celery seed, and one dirham from convolvulus turpethum. Give it (i.e., the blended copper medicament) to a person by this dirham altogether, and it removes the moist things from the inside of the person. Less than ten

dirham of colocynth pulp or other medicaments –which are substitutive for them concerning the faculty and whose purpose is to remove phlegm – do not remove them (i.e., moist things).	الآخر التي سبيلها إخراج البلغم

Neither gold nor copper is used alone but blended with other medicaments. Metals do not seem effective when used only by themselves. The remedial faculty of metals seems to derive from natures of each metal. As gold was said to be hot and moist, every substance has its own combination of natures (i.e., hot, cold, moist and dry). Since natures can reduce or even annihilate their opposites, the diseases that are caused by the four humours – also constituted of four natures – can be cured with medicaments that have opposite natures to the humour that caused the disease.

The four humours

The *Iron* has the list of medical substances against each humour, which is presented as an introductory part to explain transmutation of bodies (i.e., metals) according to the opposite (*muqābala*) in them.

T8: Four humours in the *Iron*, [ب 40b-41a] [ق 28a] [ط 35b-36a]

Know that we intend [to deal with] the opposite of the humours (*aḫlāt*) of the human body, the opposite of diseases and medicaments, and the opposite of natures and things formed by natures. Nothing is added on them except to show you the balance and to guide you to it. For, every opposite thing is contrary to the other. A similar thing is like the other or close to it. The distinction of the opposite is [being] different. the distinction of the similarity is [being] the same.	واعلم إنما نريد تقابل أخلاط بدن الإنسان وتقابل الأمراض والأدوية وتقابل الطبائع والمطبوعات لا يزيد بذلك شيئا سوى دلالتك على الميزان وهدايتك إليه لأن مقابل كل شيء وهو ضده [ط-36أ] ومماثلة هو شكله أو مقاربه وفصول المقابلة مختلفة وفصول المماثلة واحدة
The opposite to everything hot is cold, and the opposite to everything moist is dry because every opposite thing is its contrary. The opposite to the composite of them is [as follows]: the opposite to everything hot-dry is cold-moist, the other way around. For, the opposite to yellow bile is phlegm and the opposite to black bile is blood.	فمقابل كل حار بارد ومقابل كل رطب يابس لأن مقابل كل شيء هو ضده ومقابل المركب منها أن يكون مقابل كل حار يابس بارد رطب وبالعكس فإن مقابل الصفراء البلغم ومقابل السوداء دم
The medicaments for diseases of yellow	فإن أدوية العلل الصفراوية ماء الخيار والقرع [ب-

bile are cucumber water, gourd, herbs, barley water, *Rāyib* water and psyllium seed essence.

The opposite to blood diseases is cold-dry things of black bile since every part of the medicament is opposite to part of the disease, and every part of the disease is opposite to its part of the medicament. The medicament for the blood is chalk, vinegar, pomegranate, pomegranate blossom, rose, camphor, rumex and what is similar to them.

The opposite to every disease of black bile is hot-moist things related to blood, such as onion, rucola, hot water, honey water, honey syrup and what is similar to them.

The opposite to phlegmatic things and cold things is hot-dry yellow bile [things] like castoreum, opopanax, honey, assa foetida, walnut, hazelnut, green bean and what is similar to that. This is about simple things.

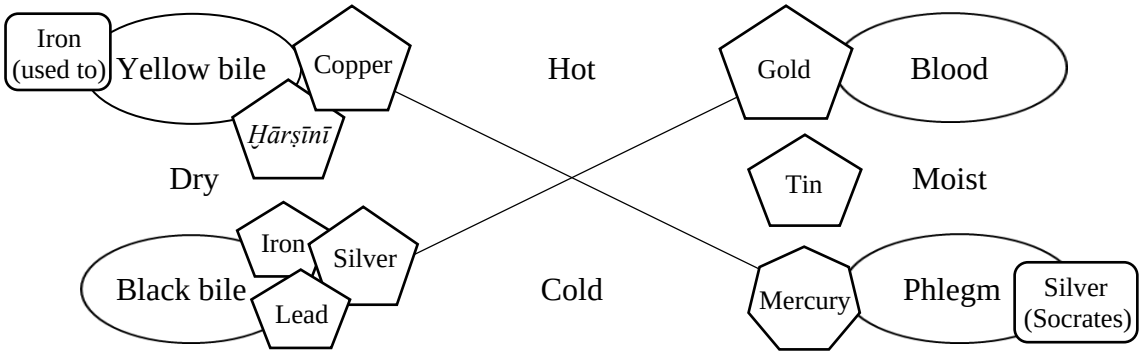
41أ] والبقلة وماء الشعير وماء الرايب ولعاب بزر قطونا

ومقابل العلل الدموية والأشياء الباردة اليابسة السوداية ليكون كل جزء من الدواء مقابل الجزئية من العلة وكل جزء من العلة مقابل جزئه من الدواء ومن الدواء للدم الطباشير والخل والرمان والجلنار والورد والكافور والحماض وما أشبه ذلك

ومقابل كل علل السوداء الأشياء الحارة الرطبة الدموية مثل البصل والجرجير والماء الحار وماء العسل وشرابه وما أشبه ذلك

ومقابل الأشياء البلغمية والأشياء الباردة الصفراوية الحارة اليابسة كالجندبيدستر والجاوشير والعسل والحلتيت والجوز والبندق وحبة الخضراء وما أشبه ذلك فهذا في البسائط

Metals and four humours in relation with four natures



Combining all information about which nature is associated with each humour, the relation between humours and natures appears like this: black bile is cold and dry, blood is hot and moist, yellow bile is hot and dry, and phlegm is cold and moist. Moistness of phlegm is not actually mentioned in [T8] but there is no doubt in its attribution considering the relation between other humours and natures. The opposite pairs are ‘yellow bile – phlegm’ and ‘black bile – blood’. It is convincing that gold was said to be effective in removing black bile because the nature of gold is hot and moist – the opposite of black bile. In the same line of thinking, copper removes phlegm because it is hot and

dry. Each of the *Seven Metals* explains natures of the metal that is put on the title of the book. It is worth gathering those explanations to comprehend the basic knowledge about metals in terms of their natures, which is in advance represented in the chart above with the position of figured metals.

Nature of the seven metals

When nature of metals – being hot or cold and moist or dry – is mentioned, other features are described as well. Since those characteristics vary from metal to metal, there is no common format to define each metal. Some are explained with reference to the planet to which the metal is ascribed, some are mentioned in terms of their special relation with other metals, and others are described focusing on their colours, taste, or medical benefits. Hereunder, natures and other features of metals are overviewed from various points of view.[11]

Gold is unanimously hot and moist in the outside and cold and dry in the inside. It is the lord of bodies and ascribed to the Sun, i.e., the lord of planets and the head of everything. The Sun is the light, the life, the great matter, and the right eye of the world, and also the cause of coming-to-be from perishing in this lower world. In the same way as the Sun, gold is distinguished from the other metals.[12]

Silver is cold and dry, though Socrates said that silver is cold and moist. The view that silver is cold and dry is ascribed to Wālīs I, who does not find a precise historical identification but apparently is one of the authorities in alchemy. Socrates and Wālīs I agree on the occult properties of silver, i.e., on the fact that silver is salty and slightly sweet. Whether it is moist or dry sounds fundamental difference, but Ǧābir thinks that their views are compatible. Wālīs I said that silver was originally moist. However, by being cooked with mild hotness, its moistness was converted to dryness, and the dryness produced saltiness in silver. At the same time, continuous cooking brought a little sweetness. Socrates agreed that silver was cooked in its coming-to-be process with mild hotness and therefore saltiness and sweetness appeared, but he disagreed on the other point by saying that the hotness dried just a part of the moistness and the rest of the moistness, which was a real cause of sweetness, was enough to be more dominant than dryness in silver. Thus, Ǧābir tried to show that the difference between two authorities is insignificant because they agree that silver was originally moist and cooked at the beginning of its birth, and just disagreed about whether the cooking changed the moistness into the dryness or just reduced part of the moistness. Ǧābir finally concludes

[11] The nature and occult properties of each metal described in this section is not a translation of the Arabic text but a selective summary. The source texts are found in Appendix.
[12] See ‘Nature of gold’ of the *Gold* in Appendix.

that silver is cold and dry and its inside is no doubt hot and moist on the ground that silver should be the same as the inside of gold.[13]

Copper is hot and dry with strong bitter taste and mottled black colour. Because its hotness is excessive, it has combustion (*iḥtirāq*) at the origin of its generation. Copper is close to silver in terms of foundation (*qiwām*). If the black of copper disappears and its hotness also disappears with its black, copper can become white silver. On the other hand, copper is analogous to gold as a dye, namely, in terms of its effect as an elixir, not of its effect derived from its balance of the natures. Therefore, copper has resemblance (*šakl*) to both silver and gold. Moreover, copper can be mixed with sulphur and has an affinity to sulphur as gold does, while copper has an aversion to arsenic as gold does. Copper can replace gold in many actions (*aʿmāl*).

In the middle of the *Copper*, Ǧābir treats some philosophical themes such as the balance, the fifth nature, and the substance. After that, he recurs to the natures of copper. The outside of copper is very hot and a little dry according to 'our opinion' (*ʿalā maḏhab-nā*) stated by Ǧābir, whereas some people think that copper is very dry, and its inside is slightly cold and very moist. Ǧābir says that the inside of copper is no doubt the outside of tin (i.e., cold and moist). Hence, the inside of tin is copper. This relation between copper and tin should be questioned when the nature of tin is explained in the *Tin*. If the dryness of copper disappears and the moistness conquers it in the outside, the inside of copper will become cold and dry like lead and its outside will become like gold (i.e., hot and moist). Other people say that the inside of copper is as silver (i.e., cold and dry), but this is, Ǧābir asserts, far from correct. Copper is like silver in terms of faculty and is also like gold in terms of hardness except that it differs from them in terms of colour. If the blackness that copper possesses due to the combustion at the beginning of its generation disappears, golden yellow will occur.[14]

Iron is said to be cold and dry but used to be regarded as hot and dry. That is because iron has several appearances (*wuǧūh*). There are two reasons for the old view: firstly, people related iron to the planet Mars owing to their resemblance, and the Mars was said to be hot and dry. Secondly, people claimed that iron has the redness since it generates red rust. Probably the hotness was considered to be a cause of the redness. Ǧābir says that their reasoning is not essential and can be refuted. For, in the first place, the planets themselves are not hot, not dry, not moist and not cold. Iron is related to the Mars only because of its sharpness. Since people use a large amount of iron with fire in manufacture with hight heat, it could have made an image of iron related to the hotness. The second proof to refute their opinion is as follows: iron turns rust (called 'saffron', *zaʿfarān*) when something is mixed with the nature of iron and changes it to the hotness. The appearance of the redness is caused by coming out of the inside hotness to the outside. For, everything

[13] See 'Nature of silver' of the *Silver* in Appendix.
[14] See 'Nature of copper (1)' & 'Nature of copper (2)' of the *Copper* in Appendix.

cold on its outside is hot in its inside, the other way around. However, it can generate not only the red in everything but also can generate the white. The blackness of iron is in its body (*ǧasad*), not in its spirit (*rūḥ*). Its spirit is red and white. It is capable of whitening and reddening. From point of view of mineral, iron is generated from both sulphur and mercury which have sharpness and hotness with their sourness which guards a body from coldness that it obtains. It is very harsh, sharp and useful. The wise (*al-ḥukamāʾ*) classified iron along with Mars for its sharpness (*ṣarāma*) and its harshness (*ḫušūna*). The planet Mars is associated with everything red.[15]

Tin is described as hot and moist in its nature in the *Tin* although the *Copper* reports that the inside of copper is tin, which means tin is cold and moist. Tin functions in the same way as gold does if its moistness does not increase, and its hotness is less than that of gold. Tin is related to the Jupiter which the Romans and the Greeks called Zeus and the Persians called *Birǧīs*. As a medicament, when tin is ground with unripe grapes water and with water squeezed from sour plants or with aged wine vinegar, it heals cold tumours. Tin can be a substitute for silver in the operations of the art.[16]

Lead is cold and dry in its nature, for which people are unanimous. Its dryness exceeds many of the stones (*ḥiǧāra*). Accordingly, the inside of lead is, in the same as silver, hot and moist, namely, the outside of gold. The way to transmute lead into a golden body is to bring the inside of lead to the outside by increasing the quantity of hotness and moistness that are hidden inside lead. Ǧābir says in the *Gold* that the most similar and closest to gold is lead because the inside of gold is the same as the outside of lead although silver has the same kinds of nature as lead has. At the end of the *Lead*, three variations of lead are introduced as ‘children of lead’ (*awlād al-usrub*): *usrunǧ* (Pb_3O_4, ‘red lead’), *isfīdāǧ* ($PbCO_3 \cdot Pb(OH)_2$, white lead) and *martak*, also called *murdāsanǧ* (PbO, ‘litharge’).[17] These three are mentioned also in the *Gold* where they are not called ‘children of lead’ but ‘three colours (*ṯalāṯa alwān*)’. Only *isfīdāǧ* is white, and the other two are red pigments.[18]

Ḫārṣīnī is hot and dry. Since its dryness is excessive, it is useful to dry any metals and something moist in animal bodies. Its drying effect is also utilised in kohl, i.e., eye medicament. The colour is black intermingled with red. *Ḫārṣīnī* can strengthen tin and remove the sound and smell of tin quickly when it mixed with tin. Moreover, it is said

[15] See ‘Nature of iron’ of the *Iron* in Appendix.
[16] See ‘Nature of tin’, ‘Occult properties of tin’ and ‘Tin as a substitute for silver’ of the *Tin* in Appendix.
[17] As for these three variations of lead, see Stapleton, Azo & Ḥusain (1927), p. 323 & p. 353, where, although *isfīdāǧ* is explained as lead or tin oxide, it could not be tin oxide but any lead-related substance because it should be one of the lead children. According to Arabic-English Lexicon by Lane, *isfīdāǧ* is ceruse or white lead ($2PbCO_3 \cdot Pb(OH)_2$), i.e., a variation of lead carbonate.
[18] See ‘Nature of lead’ of the *Lead* in Appendix

that *ḫārṣīnī* has a faculty to soften iron.[19]

In addition to the above descriptions of each metal, the *Tin* provides a classification according to their softness or hardness as follows:

T9: Softness and hardness of metals in *Tin*, [ب 49a] [ق 34a] [ط 31a]

Know that the soft bodies are two varieties of *raṣāṣ* (i.e., tin and lead) and silver, and the hard bodies are iron, copper and *ḫār*. As for gold, it is hard with the hardness and soft with the softness. Understand.	واعلم أن الأجساد الرخوة الرصاصان والفضة والأجساد الصلبة الحديد والنحاس والخار فأما الذهب فهو صلب مع الصلاب رخو مع الرخوة فافهم

Only gold cannot be classified but it possesses both qualities. This special feature of gold among the seven metals is found again in another dualistic classification, i.e., Father or Mother as described in T10 later.

Now, integrating all information presented above, the nature of the seven metals can be summarised as in the chart below [C1]. Moreover, to be familiar with Ǧābirian understanding of seven metals, it is useful to compare [C1] with another chart [C2] that is an outcome from the *Books of Seventy*, of which seven books are dedicated to seven metals. Considering that the *Books of Seventy* are mentioned in the *Seven Metals*, [C1] can be a modified version of [C2].

C1: The *Books of Seven Metals*[20]

	outside		
Gold	hot	moist	Hard and soft
Silver	cold	dry	Salty, slightly sweet, soft
Copper	hot	dry	Hard, (the inside of copper is tin)
Iron	cold	dry	Hard
Tin	hot (/cold)	moist	Soft, less hot than gold
Lead	cold	dry	Soft
Ḫārṣīnī	hot	very dry	Hard

C2: The *Books of Seventy* (of which *Books 32-38*)[21]

	outside			inside		
Gold	hot	moist		cold	dry	
Silver	cold	dry		hot	moist	
Copper	hot	dry	less dry than iron	cold	moist	

[19] See 'Nature of *ḫārṣīnī*', 'Burning *ḫārṣīnī*' and 'Softning iron' of the *Ḫārṣīnī* in Appendix. Details of how *ḫārṣīnī* works is focused on again in Chapter 2.4 where identification of *ḫārṣīnī* is attempted.
[20] Which natures are the inside of each metal is also mentioned in the *Seven Metals*, but I did not specify it in C1 because it is just the reverse of the outside ones.
[21] C2 depends on Kraus' summary of the *Books of Seventy* in Kraus (1942), p. 2.

Iron	hot	very dry	hard	cold	moist	soft
Tin	cold	moist	soft	hot	dry	hard
Lead	cold	dry	very soft	hot	moist	very hard
Mercury	cold	moist	soft	hot	dry	hard

It is convincing that *ẖārṣīnī* and mercury are different in nature because they are obviously not the same matter. However, it is not easy to understand that nature of tin changes from cold to hot. That tin is said to be cold in the *Books of Seventy* might be a clue to understand the incoherency between the *Copper* and the *Tin*. It can be thought that the *Copper* presents the old knowledge that the *Books of Seventy* have, and takes tin as cold and moist, whereas the *Tin* reformulated the knowledge and replaces 'cold' with 'hot' as the nature of tin.

In this way, seven metals are defined by four natures. This theory of nature might not always be fixed as the description of tin exemplifies. However, its importance does not seem to be reduced just by some inaccuracy and inconsistency because it is obvious that Ǧābir explained transmutation of metals theoretically with the change of their natures. Therefore, although recipes – practical and experimental aspects – are inevitable part of the *Seven Metals* as alchemical writings, it is also necessary to understand Ǧābirian theories that give foundations for the applied science. Besides the concept of nature, Ǧābir often uses dichotomic notions for the seven metals. Not only whether they are soft or hard as said in T9 but also other pairs of opposed concepts are used. One of them is the father and mother classification.

Dualistic theories

By dualistic theories, I mean the theory that have a pair of principles, i.e., dichotomic notions. One of such theories is the father and mother classification of metals, which is written in the *Tin*. The father, i.e., masculine, is copper, *ẖārṣīnī* and lead. The mother is silver and tin. Gold is not masculine nor feminine but hermaphrodite because it is balanced. Gold becomes masculine when its moistness is reduced. For dry things are related to a category of the father while moist things are in a category of the mother. Moreover, everything cold is a mother and everything hot is a father. Unlike the classification that divides between the soft and the hard metals, not only gold but also iron are given a special position and can become both masculine and feminine.

T10: Father and mother classification in the *Tin*, [ب 46a-b] [ق 31b-32a] [ط 27b-28a]

Know that the artisans call the seven soluble bodies the father and the mother. This is a way of calling them by the artisans. On the other hand, the logicians call [them] the basis (*qāʿida*), the substrate	واعلم ذلك أن الصنعويين [ق-32أ] يسمون الأجساد السبعة الذائبة الأب والأم هذا تسمية الصنعويين لها وأما المنطقيون فيقولون القاعدة

(*mawḍūʿ*) and the carrier (*ḥāmil*). Know that and understand it. It will be clarified to you what came before it and what came after these symbolized things. Recognise it, scrutinise it and make the way to it clear, obvious and easy. As for the father, what stems from it is masculine, which is copper, *ḥār* and lead. The mother is silver and tin.

والموضوع والحامل فاعرف ذلك وافهمه [ب-46ب] يتضح لك ما تقدم [ط-28أ] منه وما تأخّر من هذه الأشياء المرموزة فاعرف ذلك وتبينه تصب الطريق إليه واضحا بينا سهلا فأما الأب فما كان من ذلك ذكر وهو النحاس والخار والأسرب والأم والفضة والقلعى

Concerning gold, it is hermaphrodite among them, neither masculine nor feminine because it is balanced. For this reason, it is said to be hermaphrodite and becomes masculine by the extinction of its moistness. Know that.

فأما الذهب فهو عندهم خنثى لا ذكر ولا انثى لأنه معتدل ولهذه العلة قيل إنه خنثى ويصير ذكرا بزوال رطوبته فاعلم ذلك

As for iron, it is said to be the servant, the slave, the maid, the attendant, the dirt and anything relevant [to them] because it is, among them, what is produced and hermaphrodite as we said about gold. It sometimes makes masculine effect, and sometimes feminine effect.

فأما الحديد فيقال الغلام والعبد والجارية والخادم والوسخ وكل شيء مضاف لأنه عندهم متولد والخنثى كما قدمنا الذهب فهو يفعل مرة فعل الذكور ومرة فعل الإناث

The seven soluble bodies are called ‘father’ or ‘mother’ by artisans, i.e., alchemists because the art (*al-ṣanʿa*) – one of the seven sciences listed in the *Iḫrāǧ* – actually means alchemy.[22] On the other hand, logicians call the same bodies ‘basis (*qāʿida*)’, ‘substrate (*mawḍūʿ*)’ and ‘carrier (*ḥāmil*)’. In relation to this, another dichotomy that is introduced in the same book deserves attention. In the following citation, while the body is called substrate, what is in the substrate is said to be spirit that means colour. One body has only one spirit. Thus, one-to-one correspondence between the body and the spirit is declared.

T11: Substrate of metals in the *Tin*, [ب 49a] [ق 34a] [ط 31a-b]

Know that the substrate (*mawḍūʿ*) is movable on things that are different in terms of their essence (*ḏāt*). No one doubts it. The spirits are brought about with the bodies, and the bodies with the spirits. The spirits are the place of the bodies. These spirits that are referred to here are the spirits of the bodies, that are generated with them (i.e., bodies) in the mineral and mixed with their bodies. Understand. In the same way, there are the carried

واعلم أن الموضوع يكون منقولا على الأشياء المختلفة في ذاتها لا يشك فيه أحد فيجعل الأرواح مع الأجساد والأجساد مع الأرواح والأرواح مكان الأجسام وهذه الأرواح التي يذكرها ههنا هي أرواح الأجساد المتكونة معها في المعدن المختلطة بأجسادها فافهم ومثال ذلك المحمول

[22] See Chapter 1.2.

(*maḥmūl*) and the substrate (*mawḍūʿ*). That is, this substrate is bodies, and the carried is on them after the mixture acquires one colour. These spirits are possessed by each one of the bodies, and enough for each body that does not need any other spirit besides the one. These things are possessed by each one of what we talked about in this section and what is analogous enough to it.

الموضوع وهو [ط-31ب] أن يكون هذا الموضوع أجساد والمحمول عليها بعد المزاج اكتساب اللون الواحد هذه الأرواح هو لكل واحد من الأجساد وهو كفاية له لا يحتاج منه إلى روح غيره واحد هذه الأشياء لكل واحد مما قلنا فيه في هذا الباب وما جرى مجراه كفاية

That substrate, i.e., the body, is movable means that it goes through various stages. In other words, the substrate looks different depending on what essence it possesses, but it is the same whatever essence it carries. The substrate does not change itself. For, if the substrate changes, the change of things in general cannot occur. It is a widely accepted knowledge in philosophy that the substrate is an unchangeable base to sustain the shift of the essence and the attributes on it. As for 'the carried', it might more broadly mean everything that is in things. However, considering that 'the carried' is reworded with the spirit or colour that should be one for a body, 'the carried' does not seem to indicate something generally carried like attributes but seems to represent the essence as a necessary element. Here, the spirit and colour can be equal to essence that defines the thing.

Interestingly, the same terms, *mawḍūʿ* and *maḥmūl*, indicate other notions in logic, i.e., 'subject' and 'predicate' respectively, whose usage is found in the *Lead*.

T12: Subject and predicate in the *Lead*, [ب 52a-b] [ق 36a-b] [ط 20b-21a]

As for what follows this discourse, [it is] the saying about introductions that you have not found out. We clarified their aspects by way of logic. The balance that comes from these [introductions] does not depend on this way. Some of these subjects come after that position: that first to this last, and this last to that first.

فأما ما يتبع هذا الكلام والقول في المقدمات إلا تتبيّنه [ط-21أ] فقد أوضحنا وجوهها على سبيل المنطق والميزان من هذه لا على هذا السبيل وبعض هذه المواضع يحل بعد ذلك الموضع أول ذلك لآخر هذه وآخر هذه لأول ذلك

Understand that it should be believed that most of these things happen to you from the sciences of balance like occult properties that the balance, the art derived from it (i.e., balance), and the [science of] medicine entirely require.

وافهم أنه ينبغي أن تعتقد أن أكثر هذه الأشياء يجري [ق-36ب] لك من علوم الميزان كالخواص التي لا بد للميزان والصنعة من ذلك والطب منها باسرها

If they are analogous to that art and have a little portion of [the science of] talismans, I mean that [if] logic in subjects of it (i.e., that art) is like preliminary step to these

إذا كانت إنما يجري مجرى ذلك الفن وفيها نبذة يسيرة من الطلسمات أعني أن المنطق في مواضع

sciences that require it – for, we composed the *Books of Balances* according to the meaning of logic and [the science of] real nature –, it is necessary for us to know that the predicate of propositions is tied to their subject although [it is] in potentiality, that is, [it is potential] if the tie is hidden and not apparent. These are things called the second like our saying "Sayyid is alive" because the tie of the life is Sayyid. It is hidden in this former term. Likewise, increase and decrease are hidden in silver and copper, [and it is possible] for them to be like gold. This does not have doubt nor controversy.

منه يكون كالتوطية بهذه العلوم لا بد لها منه لأنا وضعنا **كتب الموازينية** [ب-52ب] على معنى المنطق والطبيعة الحقيقية فإن الواجب أن نعلم أن القضايا يرتبط محمولها بموضوعها أما بالقوة وهو إذا كان الرباط مضمرا غير مظهر وهذه هي الأشياء الذي يسمى الاثنينية كقولنا سعيد حي فإن الرباط للحياة سعيد وهو مضمر في هذه المقدمة كذلك الزيادة النقصان مضمر في الفضة والنحاس أن يكونا كالذهب هذا لا شك فيه ولا منازعة

In [T12], Ǧābir mentions the necessity of logic as basic knowledge for sciences such as the science of balance, alchemy and medicine, and shows the parallel relation between logic and alchemy. In logic, the predicate is tied to the subject. However, the tie exists potentially, which means it is hidden and not apparent. Its example is a proposition with two terms: *Saʿīdu ḥayyun* ('Sayyid is alive'). The cause of his being alive is the life that Sayyid has. The life is included a priori in the first term, i.e., Sayyid. In the same way, increase and decrease in terms of the quantity of nature should be included in silver and copper which can become gold. Since every metal is defined by the nature they have (i.e., quality) and how much they have each nature (i.e., quantity), they can be transmuted into gold if the quantity of natures in them is increased or reduced so that their natures become the same balance of the natures in gold. This is one of the interpretations of [T12] which seems to depend on a certain book on logic, probably a Peripatetic one. Although I have not found the possible source book yet, the terminologies used in [T12], i.e., *mawḍūʿ* and *maḥmūl*, show the influence of Aristotle's *Organon*.[23] On the other hand, the same words have a different translation outside the field of logic as shown in [T11] from the *Tin*. The difference of their usage can be illustrated as follows:

The *Tin*			The *Lead*	
example	meaning	terminology	meaning	example
روح	The carried	محمول	predicate	حي (حياة)
جسد	substrate	موضوع	subject	سعيد
Physical			Logical	

[23] See the Arabic translation of Aristotle's *Categories* in ed. Badawi (1948), p. 45. It can be said that the terminologies, *mawḍūʿ* (the subject) and *maḥmūl* (the predicate), come from the *Categories*, but, considering that Ǧābir refers to the structure of propositions, Aristotle's *Prior Analytics* and *Posterior Analytics* might deserve searching any source discourse of this text from the *Lead*.

In the *Tin*, *maḥmūl* and *mauḍūʿ* were used to explain the structure of bodies, whereas the *Lead* uses the same two words for logical structure of propositions. These two points of view, i.e., physical and logical appear again when the concept of the fifth nature is analysed.[24]

After mentioning logical elements as in [T12], the *Lead* begins to treat celestial bodies. Furthermore, the next and the last book, the *Ḫārṣīnī* is, after the explanation of natures and occult properties of *ḫārṣīnī* at the beginning, dedicated to astrology in relation with similarity and oppositeness which are another binary principle that is more universal than 'hard or soft' and 'father or mother' since it functions not only in alchemy but also in other sciences such as medicine, astrology, the science of talismans and occult properties. Similarity and oppositeness are explained before concrete astrological descriptions start in the *Ḫārṣīnī*.

Similarity and oppositeness

The *Ḫārṣīnī* is divided into two parts in terms of its contents and structure. In the first part of the book, the subject is *ḫārṣīnī* itself. However, *ḫārṣīnī* is no longer the main topic in the second part which is dedicated to the science of talismans. In fact, at the end of the *Ḫārṣīnī*, Ǧābir says "in it (i.e., this book), [there is] a mighty, great and important principle of talismans".[25] Between these two parts, only MS Tehran [ط] has the text on mercury ([ط] 67b8-68a9) of which most part is the same text as found in the *Copper* ([ب] 30b-31a; [ق] 21a-21b) except for the last few lines that do not correspond to any texts in MS Paris 2606 [ب] and MS Cairo [ق].[26] The text on the science of talismans in the *Ḫārṣīnī* is a repetition of the *Iḫrāǧ* as Ǧābir declares at the point where the overlapping text finishes. I put both texts from the two books in parallel below. The citation from the *Iḫrāǧ* in the *Ḫārṣīnī* starts with the topic of the similarity and oppositeness, and here is the place where the latter part of the *Ḫārṣīnī* begins and the correspondence of MS Tehran [ط] to the other two manuscripts [ب] and [ق] recurs after its text on mercury. The translation is basically of the text from the *Ḫārṣīnī*. However, when the text of the *Ḫārṣīnī* seems to be corrupt, I translate its counterpart in the *Iḫrāǧ* and underline it while the corresponding text in the *Ḫārṣīnī*, which does not convey understandable meanings, is marked with a dot line.

T13: Similarity and oppositeness in the *Ḫārṣīnī*, [ب 57a-	The *Iḫrāǧ*[27]

[24] See Chapter 2.5.1.

[25] [ب 59b]: وهو الكتاب الخار آخر الكتب السبعة مما كنا اعتمدنا فيما تقدم وفيه أصل عظيم كبير خطير من الطلسمات

[26] See the table of contents of the *Seven Metals* in Chapter 2.2.

[27] Ed. Kraus (1935), pp. 77-78. As for the marks in the Arabic text in Kraus (1935), Kraus suggests omission by [ ] and addition by < >.

b] [ق 40a-b] [ط 76b-77b]		
It bears [the attribute to] work in itself in [its] portion because it is substantial in nature. Be aware that coming out from potentiality to actuality belongs to the category of the relation. It is part of its parts, namely, part of all, and it is what is called the similarity and the oppositeness. We explained it well for you in another place of our books, especially [the book on] logic for the purpose of improvement.	وذلك إنما يحمل بذاته في القطع عملا فإنه جوهري الطبع وادر أنه الخارجة من القوة إلى الفعل من باب المضاف وهو جزء من أجزائه أي من كله وهو المسمى المماثلة والمقابلة وقد جودنا تفسيره لك في غير شيء من كتبنا خاصة من المنطق بغاية التجويد	القول في الطلسمات في التحقيق من باب الجوهر، لأن ما عمل بذاته عملا ما فإنه جوهري الطبع. وأدواته الخارجة من القوة إلى الفعل من باب المضاف في † جرمته، وهو المسمى المماثلة والمقابلة وقد حددنا لك وجوّدنا تفسيره في غير موضع من كتبنا وفي كتب المنطق بغاية التجويد،
It is necessary to say, right here, about that (i.e., the similarity and the oppositeness) with what contains its meaning. That is, the similarity means that things resemble one another, attract them (i.e., other things) and make them more, like the similarity of sulfur matches to fire. The oppositeness is that things differ from one another, make one be far from another, avoid and move away from each other. Things have two kinds of the similarity and the oppositeness.	ولا بد من القول ههنا على ذلك وبما يستوعب المعنى فيه وهو أن المماثلة مشاكلة الأشياء بعضها إلى بعض واستجلابها والاستكثار منها كمماثلة الكبريت بالنار والمقابلة مباينة الأشياء بعضها من بعض وبعدها منها ومنافرتها والانتقال منها ولها من ثنتان في المماثلة والمقابلة	ونحن الآن قائلون فيه قولا يشتمل على ذلك وبما يستوعبه المعنى فيه وهو أن المماثلة مشاكلة الأشياء بعضها إلى بعض واستجلابها والاستكثار منها كمماثلة الكبريت للنار. والمقابلة مباينة الأشياء بعضها من بعض وبُعدها عنها ومنافرتها لها والاستقلال منها ولها مرتبتان في المماثلة والمقابلة :
As for the similarity, things that are similar by the active are stronger and mightier than things that are similar by the passive. Things that are similar by both sides together are stronger and mightier than things that are similar by one side of them. The	أما المماثلة فإن الأشياء التي تماثل بالفاعل أقوى وأمكن من التي يتماثل بالمنفعل والأشياء التي تتماثل بالطرفين معا أقوى وأمكن من التي تتماثل بأحدهما فإن النسبة بين الحار	أما المماثلة فإن الأشياء التي تماثل بالفاعل أقوى وأمكن من التي تتماثل بالمنفعل، والأشياء التي تتماثل بالطرفين معا أقوى وأمكن من التي تتماثل بأحدهما. فإن النسبة بين الحار

اليابس <والحارّ> الرطب أقوى من النسبة بين الحار اليابس والبارد اليابس بالعكس. و[بين] النسبة بين الحار اليابس والحار اليابس أقوى وأمكن من الشكلين المتقدمين، فاعلم ذلك	اليابس والحار الرطب أقوى من النسبة بين الحار واليابس والحار اليابس أقوى وليكن من الشكل المتقدمين فاعلم ذلك	relation between the hot-dry and the hot-moist is stronger than the relation between the hot-dry and the cold-dry conversely. The relation between the hot-dry and the hot-dry is stronger and mightier than [the relation between] the two presented propositions. Know that.
وإذ قد بان أمر المماثلة فلنقل في المقابلة : فلتعلم أن الأشياء <التي> تتقابل بالفاعل أقوى مباينة من التي تتقابل بالمنفعل، والتي تتقابل بالطرفين أمكن من التي يتقابل بأحدهما.	وإذ قد بان أمر المماثلة فلنقل في المقابلة. اعلم أن الأشياء التي تتقابل بالفاعل أقوى مباينة من التي تتقابل بالمنفعل والتي تتقابل بالطرفين معا أقوى وليكن من التي يتقابل بأحدها	Since the issue of the similarity became clear, we shall talk about the oppositeness. Know that things that are opposite by the active are stronger in difference than things that are opposite by the passive. Things that are opposite in both sides together are stronger and mightier than things that are opposite in one of the two sides.
ومثال ذلك أن الأشياء التي تتقابل على هذا <الوجه>، وهو أن يكون أحدهما حارا يابسا [والآخر يابسا] والآخر باردا يابسا، فإن هذه أقوى وأمكن مباينة من التي تتقابل بأن يكون أحدهما حارا يابسا والآخر حارا رطبا. والأشياء التي هي حارا يابسا أقوى وأمكن مباينة للبارد والرطب من جميع الوجهين المتقدمين	ومثال ذلك أن الأشياء التي تتقابل على هذا وهو أن يكون أحدهما حارا يابسا والآخر حارا رطبا. الأشياء التي هي حارة يابسة أقوى وأمكن مباينة البارد والرطب من الوجهين المتقدمين	For example, things that are opposite are in accordance with this. That is, one of them is hot-dry and the other is cold-dry, this is stronger and mightier in difference than things that are opposed in that one of them is hot-dry and the other is hot-moist. Things that are hot-dry are stronger and mightier in difference, to [things that are] cold-moist, than all presented aspects.

The relation exemplified with four qualities in [T13] from the *Ḥārṣīnī* is difficult to understand. The word وأمكن in the *Iḫrāǧ* is rather attested as وليكن in the *Ḥārṣīnī* twice, but this could be a simple paleographic mistake in the copy since وأمكن seems more

appropriate than وليكن considering the meaning of the active and the passive in natures.

As for this criterion, i.e., either active or passive, there is no explanation about what is active or passive. In this regard, the ancient knowledge might help to understand these words. In a Greek medical text attributed to Ps.-Galen, that might have influenced the Corpus, it is written that the hotness and the coldness are productive (ποιητικόν) while the moistness and the dryness are material (ὑλικόν).[28] The material is a receiver of what was produced by the agent. Accordingly, the relation of the productive and the material can be the same as that of the active and the passive.[29] If this classification of natures ascribed to Athenaeus by Ps.-Galen in terms of the productive and the material is validly corresponding to the active and the passive in the Corpus, it follows that things that are opposite by whether it is hot or cold have larger difference than things that are opposite by whether it is moist or dry, and other relations are epitomized like this:

Similarity	hot-dry : hot-dry	>	hot-dry : hot-moist	>	hot-dry : cold-dry
Oppositeness	hot-dry : cold-moist	>	hot-dry : cold dry	>	hot-dry : hot-moist (active-passive)

Following this explanation of the similarity and oppositeness, Ǧābir mentions the difference between occult properties and talismans.

T14: Talismans and occult properties in the *Ḫārṣīnī*, [ب 57b-58a] [ق 40b-41a] [ط 77a-b, 68a-b]		The *Iḫrāǧ* [30]
Since the aspect of the similarity and the oppositeness became clear, we will return to talking about the talismans – we already talked about the occult properties – that they (i.e., talismans) are either transforming and increasing [something], like attracting riding animals, snakes, fish, people and beasts, or [they work] in driving away and making distance as driving these [creatures] away from cities and places.	وإذ قد بان وجه المماثلة والمقابلة فإنا راجعون إلى ذكر الطلسمات وقد قلنا في الخواص إنها إما استحالات واستكثار كاستجلاب الدواب والحيات والسمك والناس والوحوش وإما في طرد وإبعاد مثل طرد هذه عن المدن والأماكن	وإذ قد بان الوجه في المقابلة والمماثلة فإنا راجعون إلى ذكر الطلسمات وقد قلنا فيها إنها إما استجالاب استكثار كاستجلاب العقارب والحيات والضفادع والسمك والناس والوحوش وإما نفى وإبعاد مثل طرد هذه عن المدن والأماكن.
These talismans follow two things, to bring what is in	وهذه الطلسمات تابعة شيئين	وهذه الطلسمات تتبع شيئين

[28] See Chapter 2.5, T6: ps.-Galen, *Introduction* IX, 5.
[29] Cf. [Copper 0.2] in Chapter 2.6 where it is said that two of the four natures are the active and the other two are the passive.
[30] Ed. Kraus (1935), pp. 78-79.

potentiality to actuality, [that are] natural qualities of medicaments and drugs, natural qualities of motion of stars, natural qualities of positions of stars, and no others. The science of occult properties is not like this because occult properties follow one of them: the natural qualities of stars regarding the motion, or their natural qualities also regarding the position, or the natural qualities of medicaments, or the natural qualities of mixture of bodies, drugs and medicaments, the natural qualities of motions of stars and rotation of the celestial sphere, the natural qualities of positions of the planets in constellations, and nothing else.	إخراج ما في القوة إلى الفعل وطباع الأدوية والعقاقير وطباع حركات النجوم وطباع مواضعها لا غير وليس كذلك علم الخواص لأن الخواص يتبع أحدهما إما طباع النجوم بالحركة وإما طباعها أيضا بالموضوع وإما طباع الأدوية وإما طباع الممتزجة من الأجساد والعقاقير والأدوية وطباع حركات النجوم ودور الفلك وطبع مواضع الكواكب من البروج لا غير	وهما : طباع الأدوية والعقاقير، وطباع حركات النجوم وطباع مواضعها لا غير. وليس كذلك علم الخواص، لأن الخواص يتبع أحدهما : إما طباع النجوم بالحركة و[إما] طباعها أيضا بالموضع،
Right here, the issue of occult properties and that of talismans are different because the occult properties follow one of them: the natural qualities of stars regarding motion, or their natural qualities regarding position, or the natural qualities of medicaments, drugs, stones and others. This is a difference between the talisman and the occult property.	وههنا يختلف أمر الخواص وأمر الطلسمات لأن الخواص تتبع أحدهما إما طباع النجوم بالحركة وإما طباعها بالموضع وإما طباع الأدوية والعقاقير والحجارة وغير ذلك فهذا هو الفرق بين الطلسم والخاصة	وإما طباع الأدوية العقاقير والحجارة وغير ذلك. فهذا هو الفرق بين الطلسم والخاصية

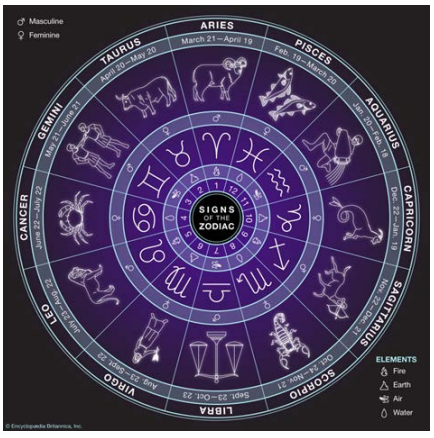
The *Ḫārṣīnī* has a longer text than the *Iḫrāğ*, but the meaning of the contents is the same as presented in the *Iḫrāğ*. After [T14], the texts from both books continue to deal with the talismans. However, they no longer overlap, and the directions of their contents are different. The *Ḫārṣīnī* emphasises the importance of the celestial bodies for the talismans while the *Iḫrāğ* returns to the topic of the similarity and the oppositeness.

T15: Talismans and occult properties (continued) in the *Ḫārṣīnī*, [ب 58a] [ق 41a] [ط 68b]		The *Iḫrāğ* [31]
Understand it. What	فافهمه والذي يخصّ الطلسم	ولأنا نبين <...> أن نقول

[31] Ed. Kraus (1935), p. 79.

ههنا لِمَ يسمى الطلسم <طلسما> (...)[32] فأشرح هذا في **كتابي إخراج ما في القوة إلى الفعل**. فالطلسم – عافاك الله – مُسَلِّط في فعله، قاهر غالب بموازاة المماثلة والمقابلة.	أنه فعل الشيء لشيء وحيّ سريع مسلط قاهر لا يتأخر والظهور في الوقت بتة ولا ممتنع بحيلة	distinguishes the talisman is that it (i.e., the talisman) is an action of something to something, [it is] alive, quick, commanding, invincible, does not delay at all, appears definitely on time, and is not stoppable by any trick.
ونحتاج أن نقول كيف ذلك في المماثلة والمقابلة في النجوم والحجارة والأدوية والحيوان، ويكون ذلك آخر هذا الكتاب. والله الموفّق للصواب، إن شلء الله تعالى	ولا بأس أن نُمثل أمر الطلسمات وعملها على إتباعها للنجوم وكيفيته ذلك بحسب ضرورة الفلك في حركته وتنقله فإنه مما تحتاج إليه ضرورة في عمل التراكيب بالميزان فافهم	It is rather important that we represent the issue of the talismans and their work based on [the fact] that they are in accordance with stars and how it is. That is according to the necessity of the celestial sphere in terms of its motion and its transference. For, it is what is requisitely needed in making composites with balance. Understand [it].

After [T15] that are different between the *Ḥārṣīnī* and the *Iḫrāğ*, they start again to have the same text, which is an astrological description based on the theory of the similarity and oppositeness. Although the similarity and oppositeness were already exemplified with the four natures (i.e., hot, cold, moist and dry) in [T13], they are, this time, associated with the position of constellations as shown in [T16]. Moreover, in this long citation, a philological feature of the text can be seen. Among the three extant manuscripts of the *Seven Metals*, MS Paris 2606 [ب], which has almost the same text as MS Cairo [ق] has, was prioritised in the Arabic edition as in Appendix over MS Tehran [ط] of which the text is more explanatory than those of [ب] and [ق].[33] An interesting fact is that the text from the *Iḫrāğ* has more affinities with the text of the *Ḥārṣīnī* in [ط]. To



Signs of Zodiac (For reading T16 below)
Publisher: Encyclopædia Britannica (https://www.britannica.com/topic/zodi

[32] The text that I did not quote and marked with (…) is Kraus (1935), pp. 79.8- 80.2 which is a conversational passage between the Lord and Ǧābir about why the talisman is called '*ṭilasm*'.
[33] The reason of the priority of MS Paris 2606 is explained in Chapter 2.1.

indicate their resemblance, I adopted some sentences that [ط] has but [ب] and [ق] do not have in [T16] which, consequently, differs from the Arabic text that I put in the Appendix where I adopted [ب] and [ق] rather than [ط].[34]

T16: Astrological description in the *Ḥārṣīnī*, [ب 57b-59a] [ق 41a-b] [ط 68b-70a]		The *Iḫrāǧ* [35]
As for the similarity, it is equivalence, that is, the equivalence of the first to the fifth and the ninth. Every similarity follows the same way. The hot to the hot, the cold to the cold, the moist to the moist, and the dry to the dry.	أما المماثلة فهي المساواة وهي مساواة الأول للخامس والتاسع وجميعها كذلك الحار للحار والبارد وللبارد والرطب للرطب واليابس لليلبس.[36]	أما المماثلة فهي مساواة الأول للخامس <والخامس>[37] للتاسع في جميعها، الحار للحار والبارد وللبارد والرطب للرطب واليابس لليلبس.
The faculty is given to the middle, and the weakness to the two edges. The first, i.e., Aries, is weaker than the last (i.e., Sagittarius). Like this, Aries, Leo and Sagittarius are the first, the fifth and the nineth [respectively]. They are analogous and all of them are hot. The strongest among them is Leo because it is the middle. Aries is weaker in effect than Sagittarius. They are two edges. Sagittarius is stronger in effect than	ويعطى القوة بالأوسط والضعف[38] بالطرفين الأول وهو الحمل أضعف من الأخير ومثل ذلك أن الحمل والأسد والقوس أول وخامس وتاسع وهي متناسبة[39] جميعها حار والأقوى منها الأسد لأنه الأوسط والحمل أضعف فعلا من القوس وهما الطرفين والقوس أقوى فعلا من الحمل وكذلك الثور والسنبلة	وتعطى القوة بالأوسط، وتعطى الضعف بالطرفين، والأول أضعف من الأخر. ومثال ذلك أن الحمل والأسد والقوس أول وخامسه وتاسعه وهي متناسبة لأن جميعها حار يابس والقوة للأسد لأنه الأوسط، والحمل أضعف فعلا من القوس وهما طرفان، والقوس أقوى فعلا من الحمل. وكذلك الثور والسنبلة

[34] In order to avoid complication, I show editorial variants only in the Appendix and usually dispense with variants when I present citations of the Arabic text in chapters. However, as an exception, this time I make some foot notes to indicate which sentence is in [ط] and not in [ب] and [ق]. This is for presenting the similarity between the *Ḥārṣīnī* in [ط] and the *Iḫrāǧ*.

[35] Ed. Kraus (1935), pp. 80-83.

[36] الحار للحار والبارد وللبارد والرطب للرطب واليابس لليلبس [ط] : --- [ب، ق].

[37] Although Kraus suggests adding ‘the fifth’ here, there seems to be no need to do so. For, in the signs of zodiac, the first, the fifth and the ninth are at even intervals, and this evenness can be regarded as similarity according to the following text of this citation and the last section of the *Ḥārṣīnī*, where three constellations are grouped and associated with four natures. For example, Capricorn, Taurus and Virgo are grouped, and called earthy and cold. See the text in Appendix and the image of the signs of zodiac above.

[38] ويعطى القوة بالأوسط والضعف [ط] : ثم قال ويعطى الأضعف [ب، ق].

[39] متناسبة : متناسبتان [ط].

والجدى، وكذلك الجوزاء والميزان والدلو، وكذلك السرطان والعقرب والحوت، فهذا ما في المماثلة.	والجدى وكذلك الجوزاء والميزان والدلو وكذلك السرطان والعقرب والحوت فهذا ما في المماثلة[40]	Aries. In the same way, there are Taurus, Virgo and Capricorn; Gemini, Libra and Aquarius; and Cancer, Scorpio and Pisces. This is what is about the similarity.
< وأما القول في المقابلة > فإن النسبة فيه السباعية، فإن هذه أضداد. لأن نور كل < أول > مظلم عند ظهور سابعه، ونور سابعه مظلم عند طلوع أوله.	فأما المقابلة فإن النسبة فيه السباعية لأن السباعية أضداد لأن نور كل أول مظلم عند ظهور سابعة ونور سابعة مظلم عند طلوعه	As for the opposite, the relation about it is the seventh because the seventh is opposite [to the first] since the light of all the first becomes dark when the seventh appears. The light of the seventh becomes dark when it (i.e., the first) rises.
ومثاله أن نسبة الأول إلى السابع كنسبة الثاني إلى الثامن، والثالث إلى التاسع، والرابع إلى العاشر، والخامس إلى الحادي عشر، والسادس إلى الثاني عشر.	ومثاله في النسبة من الأول إلى السابع لنسبة الثاني إلى الثامن والثالث إلى التاسع والرابع إلى العاشر والخامس إلى الحادي عشر والسادس إلى الثاني عشر	For example: the relation of the first to the seventh is [equal] to the relation of the second to the eighth, the third to the ninth, the fourth to the tenth, the fifth to the eleventh, the sixth to the twelfth.
ويدوَّر على العدة، فيصير نسبة السابع إلى الثالث عشر، والثامن إلى الرابع عشر، والتاسع إلى الخامس عشر، والعاشر إلى السادس عشر، والحادى عشر إلى السابع عشر، والثاني عشر إلى الثامن عشر. ومثال ذلك في فلك البروج، وهي اثنا عشر برجا باثنى عشر اسما، وهي	ويدور فيزيد على العدد فيصير نسبة السابع إلى الأول كنسبته إلى الثالث عشر والثامن إلى الرابع عشر والتاسع إلى الخامس عشر والعاشر إلى السادس عشر والحادى عشر إلى السابع عشر والثاني عشر إلى الثامن عشر ومثال ذلك في[41] فلك البروج وهي اثنا عشر برجا باثنا	It turns and increases in number: the relation of the seventh to the first becomes like its relation to the thirteenth, the eighth to the fourteenth, the ninth to the fifteenth, the tenth to the sixteenth, the eleventh to the seventeenth, the twelfth to the eighteenth, and like that in the celestial constellations, which are twelve constellations with their twelve names: Aries, Taurus, Gemini, Cancer,

[40] ومثل ذلك أن الحمل والأسد والقوس أول وخامس وتاسع وهي متناسبتان جميعها حار والأقوى منها الأسد لأنه الأوسط والحمل أضعف فعلا من القوس وهما الطرفين والقوس أقوى فعلا من الحمل وكذلك الثور والسنبلة والجدى وكذلك الجوزاء والميزان والدلو وكذلك السرطان والعقرب والحوت فهذا [ط-69أ] ما في المماثلة [ط] : وهو القوس [ب، ق].

[41] في [ط] : من [ب، ق].

هذه : حمل. ثور. جوزاء. سرطان. أسد. سنبلة. ميزان. عقرب. قوس. جدى. دلو. حوت.	عشر أسماؤها الحمل والثور والجوزاء والسرطان والأسد والسنبلة والميزان والعقرب والقوس والجدى والدلو والحوت[42].	Leo, Virgo, Libra, Scorpio, Sagittarius, Capricorn, Aquarius and Pisces.
فإن المخالفة الأولة بالسباعية فقط من غير زيادة العدد. كمقابلة الحمل للميزان الذي هو سابعه، والثور للعقرب وهي نسبة الثاني إلى الثامن، والجوزاء للقوس وهي نسبة الثالث إلى التاسع، والسرطان للجدى وهي نسبة الرابع إلى العاشر، والأسد للدلو وهي نسبة الخامس إلى الحادي عشر، والسنبلة للحوت وهي نسبة السادس إلى الثاني عشر.	قال فإن المخالف الأول بالسباعية فقط من غير زيادة في العدد كمقابلة برج الحمل للميزان وهي نسبة الأول إلى السابع والثور للعقرب وهي نسبة الثاني إلى الثامن والجوزاء للقوس وهي نسبة الثالث إلى التاسع والسرطان للجدى وهي نسبة الرابع إلى العاشر والأسد للدلو وهي نسبة الخامس إلى الحادي عشر والسنبلة للحوت وهي نسبة السادس إلى الثاني عشر.[43]	He said: the opposed of the first to the seventh only without any increase in number is like the oppositeness of the constellation of Aries to Libra. This is the relation of the first to the seventh. Taurus to Scorpio, which is the relation of the second to the eighth. Gemini to Sagittarius, which is the relation of the third to the nineth. Cancer to Capricorn, which is the relation of the fourth to the tenth. Leo to Aquarius, which is the relation of the fifth to the eleventh. Virgo to Pisces, which is the relation of the sixth to the twelfth.
فهذه الأوائل المشتملة على† الذكر من غير عكس، جميعها متساوية كل واحد مثل الآخر من أول إلى سابع. <..... ومن السابع > إلى أول له + كيف عكس كذلك†، والقول فيه	ثم قال فهذه الأوتاد المسماة من الدوائر من غير عكس الدوائر جميعا متساوية وكل واحد مثل الآخر من الأول إلى السابع ومن السابع إلى الأول الذي له كيف عكس كان ذلك فأما الثاني فهو	Then he said: these poles [of the opposed pairs] called after the circles without reversing the circles are equal altogether. Each one is like the other: from the first to the seventh, and from the seventh to the first, which preserves how it was

[42] باثنا عشر أسماؤها الحمل والثور والجوزاء والسرطان والأسد والسنبلة والميزان والعقرب والقوس والجدى والدلو والحوت [ط] : وأسماؤها [ب، ق].

[43] وهي نسبة الأول إلى السابع والثور للعقرب وهي نسبة الثاني إلى الثامن والجوزاء للقوس وهي نسبة [ط-69ب] الثالث إلى التاسع والسرطان للجدى وهي نسبة الرابع إلى العاشر والأسد للدلو وهي نسبة الخامس إلى الحادي عشر والسنبلة للحوت وهي نسبة السادس إلى الثاني عشر [ط] : وذلك الباقية [ب، ق].

كالقول فيما تقدم. نسبة السابع إلى الثالث عشر هي نسبة السابع إلى الأول منعكسا،	هذا والقول فيه كالقول فيما تقدم نسبة السابع إلى الثالث عشر وهي نسبة السابع إلى الأول.[44]	reverse. It is the second [way] in which it is this. The explanation about it is like the explanation about what was presented by the relation of the seventh to the thirteenth. It is the relation of the seventh to the first.
فيصور الأول معدودا مرتين، فتزيَّد دائرة الاثنى عشر واحدا. وكذلك الثامن إلى الرابع عشر، والتاسع إلى الخامس عشر، والعاشر إلى السادس عشر، والحادي عشر إلى السابع عشر، والثاني عشر إلى الثامن عشر.	فيصور الأول معدودا مرتين فيزيد دائرة الاثنا عشر واحد وكذلك الثامن إلى الرابع عشر والتاسع إلى الخامس عشر[45] والعاشر إلى السادس عشر والحادي عشر إلى السابع عشر والثاني عشر إلى الثامن عشر.[46]	The first is counted twice, and then the circle of the twelve increases by one. Likewise, the eighth [corresponds] to the fourteenth, the ninth to the fifteenth, the tenth to the sixteenth, the eleventh to the seventeenth, and the twelves to the eighteenth.
ومثال ذلك الميزان< إلى > الحمل [مرتين] فيكون مكررًا مرتين، وكالعقرب <إلى الثور> والثور من الحمل أربعة عشر، وكالقوس <إلى الجوزاء> والجوزاء من الحمل خمسة عشر، وكالجدى إلى السرطان <والسرطان> من الحمل ستة عشر، وكالدلو إلى الأسد <والأسد> من الحمل سبعة عشر، وكالحوت إلى السنبلة	ثم قال[47] مثال ذلك الميزان إلى الحمل مرتين فيكون الحمل مكررًا مرتين وهو في أصل الدائرة الاثنا عشر والحمل ثلاثة عشر العقرب والثور من الحمل أربعة عشر وكالقوس إلى الجوزاء من الحمل خمسة عشر وكالجدى إلى السرطان من الحمل ستة عشر وكالدلو إلى الأسد من الحمل سبعة عشر وكالحوت إلى السنبلة من الحمل	Then he said: for example, Libra [corresponds] to Aries twice, and Aries is repeated twice. It is [based] on the principle of the circles of the twelves. Aries is thirteen. Scorpio [corresponds to] Taurus [to which] from Aries there are fourteen [signs]. Similarly, Aquarius [corresponds] to Leo [to which] from Aries are seventeen, and Pisces to Virgo [to which] from Aries are eighteen.

[44] الذي أول له كيف عكس كان ذلك فأما الثاني فهو هذا والقول فيه كالقول فيما تقدم نسبة السابع إلى الثالث عشر وهي نسبة السابع إلى الأول [ط] : فيعكس [ب، ق].

[45] والتاسع إلى الخامس [ق-41ب] عشر [ب، ق] : --- [ط].

[46] والعاشر إلى السادس عشر والحادي عشر إلى السابع عشر والثاني عشر إلى الثامن عشر [ط] : وذلك الباقية [ب، ق].

[47] ثم قال [ب، ق] : --- [ط].

<والسنبلة> من الحمل ثمانية عشر	ثمانية عشر[48]	
فهذا ما في علم الطلسمات من مقابلة البروج فافهم لم تكلمنا بذلك ولأي شيء مثلناه ويستدل على وجه الميزان صحيحا مكشوفا	فهذا ما في علم الطلسمات في المقابلة للبروج فافهم لم تكلمنا بذلك ولأي شيء مثلناه ويستدل على وجه الميزان صحيحا مكشوفا	This is what concerns the science of talismans regarding the oppositeness of the constellations. Understand what we talked about it and whatever we signified, and it will show an aspect of the balance correctly in an uncovered way.
فأما الكواكب فإن الأحمد أن يكون النجم في برجه، ليكون في بيته الأوسط [في] للاشياء <...>، أو في بيت شرفه للاشياء † الكائنة، أو في هبوطه ورجوعه للأشياء الدون الصغار. † أو يكون مثاله كالشمس† ان لك† في البروج فليكن المريخ فإن أعوز فالزهرة، فإن أعوز فعطارد، وأمثال ذلك.	فأما الكواكب فإن الأول حمل أن يكون النجم في برجه ليكون في بيته للاشياء المتوسطة أو في بيت شرفه للاشياء العالية أو في بيت هبوطه ورجوعه الأشياء الدون الصغار ويكون على هذا المثال كالشمس فإنها حارة يابسة فإن عدمت فعل الشمس أن يكون مع البرج فليكن بدل الشمس المريخ فإن أجوز فالزهرة وأمثال ذلك	As for the planets – the first is Aries, it is a star in its constellation and is to be in its house for the middle things, or in the house of its nobility for the elevated things or in the house of its sinking and its returning for the lower and small things. It is, according to this example, like the Sun since it (i.e., the Sun) is hot and dry. If it (i.e., the Sun) was deprived of the action of the Sun that is to be with the constellation, the Mars would substitute for the Sun. If it was possible, the Venus and the other stars [would substitute].

The similarity is found in the four groups of three constellations on the basis of the four elements. An example is the grouping of the first, the fifth and the ninth on the signs of zodiac. The oppositeness is in six pairs of two constellations such as the relation of the first to the seventh. The corresponding system on the signs of the zodiac is adaptable to the numbers over thirteen regardless of the limited number of the constellations, i.e., twelve, since the way to count is circular. After such basic knowledge of astrology is explained as in [T16], the *Ḫārṣīnī* stops quoting the text of the *Iḫrāǧ*. As Ǧābir declares, the text of the *Ḫārṣīnī* was a repetition of that of the *Iḫrāǧ*. In the last part of the *Ḫārṣīnī* after [T16], the grouped constellations are referred to: the fiery constellations (i.e., Aries,

[48] وكالقوس إلى الجوزاء من الحمل خمسة عشر وكالجدى إلى السرطان من الحمل ستة عشر [ط] : --- [ب، ق].

Leo and Sagittarius), the earthy (Capricon, Taurus and Virgo) and the watery (i.e., Cancer, Scorpio and Pisces), and then Ǧābir finishes the *Ḫārṣīnī* saying that this book contains the great principle of talismans.

T17: Bibliographical information in the *Ḫārṣīnī*, [ب 59a] [ق 41b] [ط 70a]

We referred, concerning it, to a thing with satisfaction in these books of ours on talismans, which is sufficient and wealthy. Therefore, one should study, consider it, and gather its meanings from somewhere and this place. I do not express anything symbolically to you. I referred to it in the *Book of Bringing What is in Potentiality to Actuality* and repeated it here, in which, by repeating, there is usefulness to you. If you gather things written in the two books, it will be good. Even if you do not catch the [contents of] the *Bringing What is in Potentiality to Actuality*, this discourse here about it is sufficient and preferable. If sublime God wills.	وقد ذكرنا في ذلك شيئا شافيا في كتبنا هذه في الطلسمات ما فيه كفاية وغنًى فليطلب ولينظر فيه ويجمع معانيه من المكان وهذا المكان ولست أرمز عليك شيئا بته وقد ذكرته في **كتاب إخراج ما في القوة إلى الفعل** وكررته ههنا الفوائد لك فيه بالتكرير يكون فإن جمعت من الكتابين كان جيدا وإن لم يحضرك **إخراج ما في القوة إلى الفعل** فهذا الكلام ههنا فيه كفاية وحب إن شاء الله تعالى	وقد ذكرنا من ذلك شيئا شافيا في كتاب من كتبنا هذه <في> الطلسمات ما فيه كفاية وغنًى. فليطلب وينظر فيه ويجمع بين معانيه ومعاني ما في كتابنا هذا. فإنه يفتح له الطريق، إن شاء الله تعالى

[T13]-[T16] that occupies the latter half of the *Ḫārṣīnī* is not short and overlapping with the first half of the text about the science of talismans in the *Iḫrāǧ*. Now, considering another fact that not only the *Ḫārṣīnī* but also the latter half of the *Lead* is dedicated to astrological knowledge, a question may be raised: why do the talismans and astrological knowledge have a significant presence in the *Seven Metals*, and ultimately so in Ǧābirian science? The answer might appear by paying attention to the occult properties that is closely relevant to the talismans, whose description is scattered in the *Seven Metals*. Although the difference between occult properties and talismans was mentioned in the *Ḫārṣīnī* along with the *Iḫrāǧ* in [T14], occult properties are also said to be part of talismans in the *Gold*.

T18: Occult properties as part of talismans in the *Gold*, [ب 6b-7a] [ق 4b] [ط 46b]

Know that most of the sections [of operations][49] which we mentioned in the	واعلم أن أكثر الأبواب التي ذكرناها في كتب

[49] Probably *bāb* here does not mean a chapter of a book, but it is used as a synonym of *tadbīr* to indicate

Books of Balances are [concerning] occult properties. It means that they work by the occult property with them not by the nature. Nothing is superior to the actions of occult properties since occult properties work neither slowly nor in a delayed way but their action appears on time like the action of talismans because occult properties are parts of talismans and talismans are the whole of occult properties.	الموازين هي خواص ومعنى ذلك أن تعمل بخاصية لها لا بالطبع وليس شيء أفضل من أفعال الخواص لأنها تعمل أعمالا لا تبطؤ ولا تتأخر بل يظهر فعلها للوقت كفعل الطلسمات [ب-7أ] فإن الخواص من أجزاء الطلسمات والطلسمات كليات لها

The *Seven Metals* often mention the *Books of Balances* that attach great importance to the occult properties. The occult properties are the results of appropriate mixture of the elements, i.e., natures.[50] Natures are indeed significant as fundamental elements in Ǧābirian sciences, but what Ǧābir intended to manipulate by the art is occult properties, rather than natures that are themselves unchangeable. The occult properties can fall under the control of the operation based on the theory of balance and they are changeable depending on the proportion of natures. As for the relation between occult properties and talismans, the last sentence of [T18] means that occult properties are included in the talismans. Therefore, dealing with occult properties necessarily concerns talismans. Furthermore, another text testifies that both occult properties and talismans originate from the celestial bodies.

T19: Bibliographical information in the *Tīn*, [ب 49b] [ق 34a-b] [ط 31b-32a]

Concerning our words in the 32 books on the occult properties (*ḫawāṣṣ*), they (i.e., occult properties) are rooted from the balance (*mīzān*)[51] and its basis (*qāʿida*). As for the talismans, they are an action that is inspiring, fast and complete in a short time, [meaning that] it does not delay and does not act slowly. Understand. As for the stars, they are an origin for two issues (i.e., occult properties and talismans) together and a key of both two sciences. It concerns the time, I mean, the period in which it should be completed.	فأما قولنا على الاثنين وثلثين كتابا على الخواص فهي أصل الميزان وقاعدته [ق-34ب] فأما الطلسمات فهي العمل الوحي السريع التام في مقدار يسير لا يتأخر ولا يتأنّى فافهم وأما النجوم فهي الأصل للأمرين جميعا ومفتاح العلمين كلاهما [ط-32أ] وذلك من جهة الأوقات أعني الأزمان التي ينبغي ان يكون تمام ذلك فيه

each step of the operation. See Kraus (1942), p. 7.

[50] See Kraus (1942), p. 95.

[51] Considering the parallel structure between *al-ḫawāṣṣ fa-hiya aṣl al-mīzān* and the later phrase *al-nuǧūm fa-hiya al-aṣl li-l-amrayn*, the former seems to be translated as 'the occult properties are the origin of the balance'. However, this translation is probably not acceptable since the occult properties are understood, generally in the Corpus, as the outcomes of the balance of natures in things.

The stars are the keys to both sciences of occult properties and talismans which are two of the seven sciences that the Corpus is dedicated to.[52] The celestial influence is inevitable to manipulate terrestrial things in the realm of Ǧābirian sciences. Without being familiar with celestial phenomena, the art remains incomplete. Therefore, astronomical and astrological knowledge is required. As for the seven metals, they have been related to seven planets since ancient times.[53] However, this is not the only reason for the considerable presence of the celestial knowledge in the *Seven Metals*. Each metal has its own natures, and the balance of natures in the metal determines its occult properties. Therefore, as long as the operations on metals involve occult properties under the influence of celestial bodies along with talismans, it is a natural consequence that the *Seven Metals* refer to the science of stars.

Through overviewing the contents of the *Seven Metals*, the meaning of nature – the thematic concept of our research – has developed and become a little more concrete.[54] For, in each book of the *Seven Metals*, Ǧābir defines metals with their natures and occult properties, where these two notions, i.e., nature and occult property, seem to be synonyms but clearly different according to [T18]. Nature seems more inner and fundamental than occult properties. The manipulation in Ǧābirian sciences is aiming at changing occult properties that are the result of the mixture of natures. More informative text concerning the notion of nature is left to be analysed, that is, the middle part of the *Copper* where the fifth nature is mentioned in addition to the four natures, I will move to the analysis of the text on the fifth nature. Before that, however, the next chapter focuses on another topic, i.e., *ḫārṣīnī*, which has been referred to many times as one of the seven metals without sufficient explanation. While the six metals are fixed in the Corpus, the seventh metal is not determined, but mostly it is either mercury or *ḫārṣīnī*.[55] The question what *ḫārṣīnī* is should not be neglected as long as the seventh book of the *Seven Metals* is titled 'the *Book of Ḫārṣīnī*'. It is probably a zinc-related substance, but the details of this issue will be discussed in the next chapter.

[52] See Chapter 1.2.
[53] As for the association of metals with planets, see the beginning of Chapter 2.4.
[54] See Chapter 1.5, where the concept of nature in alchemy was investigated, starting from Byzantine text and going back to ancient Greek and Arabic alchemy, but 'nature' was not defined there in a clear way.
[55] See Chapter 1.1.

2.4 *Ḫārṣīnī* as the seventh metal

Metals have been utilised since ancient times, and usually known as the seven metals: gold, silver, copper, iron, tin, lead and the seventh, not fixed but usually quicksilver. Each of them is associated with one of the seven planets.[1] The combination between the metal and the planet was almost stable except 'mercury' (= quicksilver) as a counterpart of the planet Mercury. In the ancient Greek writings, the place of the Mercury, not always regarded as the seventh, was occupied by several options: quicksilver, electrum, glass and even something like stones.[2] In the Arabic world, the metal that corresponds to the planet Mercury was either quicksilver or *ḫārṣīnī* according to Ǧābir.[3]

T1: The *Iron*, [ب] 42a; [ق] 28b-29a; [ط] 37b

These seven [bodies] are divided among the planets according to which we made these books about them and by their names. Each book is [called] with a name of a body among the ones that can be melted. They are gold, silver, lead, tin, iron, copper and *ḫārṣīnī*. As for lead among these metals, [it has] the natural quality of the Saturn among the planets. Tin has the natural quality of the Jupiter. Iron has the natural quality of the Mars. Gold has the natural quality of the Sun. Copper has the natural quality of the Venus. Silver has the natural quality of the Moon. Only one of the planets remains, which is the Mercury. This is *ḫārṣīnī*, which has the natural quality of the Mercury. Most of the artisans put quicksilver in the place of *ḫārṣīnī*. That is false because quicksilver falls into the number of the spirits, not into the hard	وهذه السبعة انقسمت [ق-29أ] على الكواكب حسب ما عملنا هذه الكتب عليها وبأسمائها كل كتاب منها باسم جسد من الذائبة وهي الذهب والفضة والرصاص الأسرب والرصاص القلعى والحديد والنحاس والخارصيني فأما الأسرب منها فطبع زحل من الكواكب والرصاص القلعى بطبع المشترى والحديد بطبع المريخ والذهب بطبع الشمس والنحاس بطبع الزهرة والفضة بطبع القمر ويبقى من الكواكب واحد وهو عطارد وهو الخارصيني فهو بطبع عطارد وأكثر الصنعويين يدخلون الزيبق مكان الخارصيني وذلك غلط لأن الزيبق داخل في عدد الأرواح لا في الأجسام ولا في الأجساد

[1] The idea of the ascription of the metals to the planets is also testified, although only four pairs are mentioned, in Proclus' *Commentary on Plato's Timaeus*, ed. Diehl (1903), pp. 42-43: ἐφαρμόσει ἄρα καὶ τούτοις τὸ μήτε χρυσὸν μήτε ἄργυρον μήτε ἄλλο μηδὲν κτῆμα νομίζειν ἴδιον αὐτῶν. εἰ δὲ βούλει, καὶ τοῦτον λεγέσθω τὸν τρόπον φυσικῶς· καὶ χρυσὸς καὶ ἄργυρος καὶ ἕκαστα τῶν μετάλλων, ὥσπερ καὶ τῶν ἄλλων, ἀπὸ τῶν οὐρανίων ἐν γῇ φύεται θεῶν καὶ τῆς ἐκεῖθεν ἀπορροίας. λέγεται γοῦν Ἡλίου μὲν ὁ χρυσός, Σελήνης δὲ ὁ ἄργυρος, Κρόνου δὲ μόλυβδος καὶ Ἄρεως ὁ σίδηρος. ταῦτα δὴ οὖν γεννᾶται μὲν ἐκεῖθεν, ὑφίσταται δὲ ἐν γῇ καὶ οὐκ ἐν ἐκείνοις τοῖς τὰς ἀπορροίας ἀφιεῖσιν· οὐδὲν γὰρ ἀπὸ τῶν ἐνύλων ἐκεῖνα εἰσδέχεται· καὶ ἔστι πάντα μὲν ἐκ πάντων, ἐπικρατεῖ δὲ ὅμως ἄλλη ἐν ἄλλοις ἰδιότης, οἷς μὲν Κρόνιος, οἷς δὲ Ἡλιακή, πρὸς ἣν καὶ ἀπιδόντες οἱ τούτων φιλοθεάμονες τὸ μὲν εἰς τήνδε, τὸ δὲ εἰς ἄλλην δύναμιν ἀναπέμπουσιν. Cf. French tr. Festugière (1966), p. 75.

[2] These options are presented in the table that Halleux provided to show which metals were associated with which planets in ancient Greek writings. See Halleux (1974), pp. 154-155.

[3] Glass (*zǧāǧ*) can also be an alternative to quicksilver or *ḫārṣīnī* in the Corpus. See Chapter 1.1.

stones (*ağsām*), nor into the bodies (*ağsād*).	

Among the seven metals, it was debatable to ascribe *ḫārṣīnī* to the Mercury which was generally regarded as quicksilver at that time. The reason of the combination between quicksilver and the Mercury is explained to some extent in another place of the *Ḫārṣīnī*.

T2: The *Ḫārṣīnī*, [ط] 68a

The description of the Mercury. O my brother, for the people, it is male with the males, female with the females, what concerns the day with the day, what concerns the night with the night, moist with moistness, dry with dryness. The reverse of the dyes revives the spirits and dyes them into the dead bodies; then, it makes them alive after death. It revives them after its extinction; it moves them when they are still; it raises them after its pushing it down. Likewise, quicksilver is one of the spirits related to the Mercury among the planets in terms of the actions and constellations, nothing else.	وصفة عطارد يا أخي عند القوم أنه ذكر مع الذكران وأنثى مع الإناث نهاري مع النهارية ليلي مع الليلية رطب مع الرطبة يابس من اليابسة منقلب الأصباغ باعث الأرواح وصابغها إلى الأجساد الميتة فيحيها بعد الموت ويبعثها بعد الدثور ويحركها عند السكون ويرفعها بعد الرسوب وكذلك الزيبق من الأرواح نسبت عطارد من الكواكب بالأعمال وبالبروج لا غير

People seem to have associated quicksilver with the planet Mercury owing to its being a hermaphrodite and a symbol of revival. However, Ǧābir said the Mercury should correspond to a body, i.e., metal – *ḫārṣīnī* – because quicksilver is not a body but a spirit. On the other hand, despite his clear denial of quicksilver as combined with the Mercury in the above citation (T1), Ǧābir counted quicksilver as one of the seven metals instead of *ḫārṣīnī* in his *Books of Seventy*.[4] Considering that the *Books of Seventy* were composed before the *Seven Metals*, quicksilver might have been first regarded as the Mercury and later replaced with *ḫārṣīnī* in the Corpus.

After Ǧābir, another famous alchemist, Muḥammad b. Zakariyyā al-Rāzī (865-925), chose *ḫārṣīnī* as the seventh metal instead of quicksilver in his *Instructive Introduction (Al-madḫal al-taʿlīmī)* and *Book of Secrets (Kitāb al-asrār)*. Especially, the latter book is regarded as a copiously annotated version of Ǧābirian *Books of Seventy* where not *ḫārṣīnī* but quicksilver is counted as a metal.[5] It means that al-Rāzī

[4] The *Books of Seventy* were later translated into Latin, whereas the *Seven Metals* were not transmitted into the Latin world. This might be one of the reasons why the notion of quicksilver as the Mercury was widespread in Latin alchemy.

[5] "The substances, apparatus, and processes mentioned by ar-Rāzī are, almost without exception, found in the 'Book of the Seventy,' and, in certain cases, it is practically certain that ar-Rāzī must have had this book of Jābir in his possession when he was writing the *Kitāb al-Asrār*". See Stapleton, Azo & Ḥusain (1927), p. 336.

intentionally adopted *ḫārṣīnī* as the seventh metal rather than quicksilver. Al-Rāzī's adoption of *ḫārṣīnī* can be explained by his inclination toward the science of the Ṣābians of Ḥarrān where *ḫārṣīnī* was associated with the temple of the Mercury.[6]

Ḫārṣīnī

Ḫārṣīnī is supposedly zinc (alloy) according to Stapleton, Azo and Ḥusain, who conducted the research into the meaning of *ḫārṣīnī* in al-Rāzī's writings.[7] As a matter of fact, *ḫārṣīn* or *ḫārṣīnī* in modern Arabic means zinc along with *tūtiyāʾ* and *zink*.[8] However, there is still much obscurity in what *ḫārṣīnī* really is. The three researchers mentioned above were aware of the presence of the *Ḫārṣīnī* of Ǧābir's in MS Paris BnF Arabe 2606, but they were not able to obtain it. Therefore, the analysis of the *Ḫārṣīnī* will still contribute to the study of history of zinc.

The etymology of *ḫār-ṣīnī* – a word of Persian origin – is 'Chinese barb (i.e., arrowhead)'. Ǧābir often called it just *ḫār* without *ṣīnī*. '*Ṣīnī* (chinese)' means that this metal comes from China.

T3: The *Ḫārṣīnī*, [ب] 56a; [ق] 39b; [ط] 66b

What has been left for us among the bodies that melt is a body called *ḫārṣīnī*, which is obtained from China, where it is extracted from a mine as the rest of bodies are extracted; then its parts are united by fire and smelting. They require a long work, but there is no need for us to be familiar with it and it is not useful for someone who reads them (i.e., the *Seven Metals*). Therefore, we will leave it and talk about the natural quality of *ḫār*, its peculiar properties and its description.	وقد بقي لنا من الأجساد الذائبة جسد يقول له الخارصيني وهو يجلب من بلاد الصين يستخرج من معدن هناك كما تستخرج سائر الأجساد ثم يجمع أجزائه بالنار والسبك ولهم فيه عمل طويل ولا حاجة لنا [ب-56ب] في اقتضاضه ولا فائدة لمن يقرأها فتركناه ونخبر بطبع الخار وخواصه وصفته

This passage implies that there was a specific technique for smelting *ḫār*. Suppose that *ḫār* is zinc, which has been used since ancient times mainly in the form of brass not in its pure form. Zinc is always found contained in any ores such as sphalerite or zinc blend ((Zn,Fe)S), smithsonite ($ZnCO_3$), calamine ($ZnO\text{-}Fe_2O_3$), zincite (ZnO), willemite (Zn_2SiO_4), and franklinite ($ZnFe^{3+}{}_2O_4$).[9] It requires a special distillation technique to

[6] Stapleton, Azo & Ḥusain (1927), pp. 340-342. However, the image used for the ritual at the temple of the Mercury in Ḥarrān was made from not only *ḫārṣīnī* but also *maʿādin* (minerals) and *zaybaq* (quicksilver). See ed. Chwolson (1856), pp. 394-396.

[7] Stapleton, Azo & Ḥusain (1927), p. 407.

[8] *Zink* (زنك) is a transliteration of German 'zink'. *Tūtiyāʾ* will be discussed later in this chapter.

[9] These zinc ores are presented in Alam (2020), p. 23. Calamine is, although specified with $ZnO\text{-}Fe_2O_3$

obtain zinc in pure form because the boiling point of zinc is relatively low (907 °C) and it becomes gaseous before other components of zinc ores are totally smelted. Therefore, it had been a long time until pure zinc was recognised with invention of the specific way of zinc smelting. In this point – the necessity of special technique for its smelting –, *ḫār* is likely to be zinc since Ǧābir indicated that the Chinese had a skill to smelt *ḫār*. However, because Ǧābir abandoned the description of how *ḫār* was smelted in China at that time, there is no way to precisely compare the smelting method for *ḫār* with that for zinc in China. As an endeavour to approach *ḫār*'s smelting technique that Ǧābir intended, it would be helpful to survey the way of smelting zinc in China. In general, *ṣīnī* can be used to indicate something that transmitted from East, not only from China, and does not always literally mean 'Chinese'. However, as long as Ǧābir clearly says that *ḫārṣīnī* is mined in China, it seems reasonable to take an account of the history of zinc in China as a first step to approach the substance called *ḫārṣīnī*.

Zinc smelting in China

In 2012, Wenli Zhou, Marcos Martinón-Torres, Jianli Chen, Haiwang Liu, Yanxiang Li published the outcome of their research into the artifacts excavated from eighteen zinc smelting sites, dated to the Ming Dynasty (AD 1368-1644), that have been found on banks of the Yangtze River in Fengdu county, Chongqing, southwest China since 2002 (Fig. 1).[10] Although Chinese zinc smelting technology and its history have already been studied

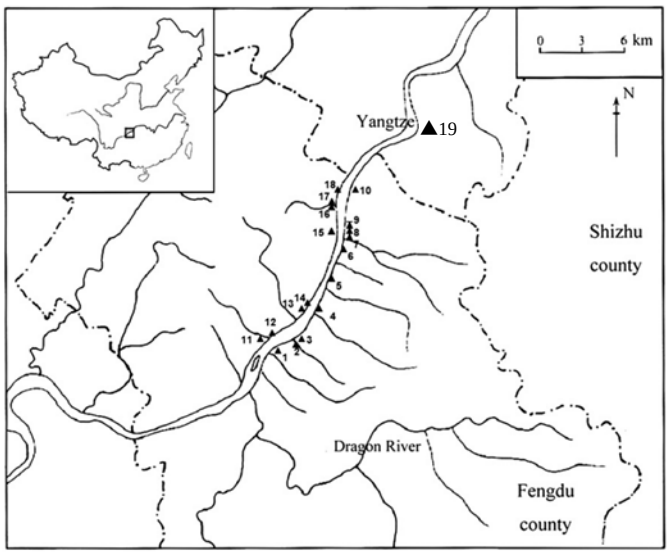


Fig. 1. Distribution map of zinc smelting sites in Fengdu. 1. Daoliuzi, 2. Miaobeihou, 3. Puzihe, 4. Muxiexi, 5. Shaxizui, 6. Qingjiayuan, 7. Yuanjiayan, 8. Shidiba, 9. Yuxi, 10. Hejiaba, 11. Jiudaoguai, 12. Langxi, 13. Chixi, 14. Qingquan, 15 Tingxi, 16. Hezuishang, 17. Tangfang, 18. Xiaoshuangxi. The Laochangping lead-zinc ore deposits in Shizhu lie 50 km southeast of these sites. 19. Linjiangerdui

here, an ambiguous name and can signify $ZnCO_3$ (i.e., smithsonite) as well.

[10] Zhou et al. (2012), p. 909 (with some addition: no. 19. 'Linjiangerdui' in this map is added for this chapter). The pictures of Linjiangerdui are available in Li et al. (2020).

since the 1920s, the study was not enough due to the lack of relics that provide concrete evidence, and it was prompted only recently by the discovery of these zinc smelting sites (Fig. 1). At the beginning of their article, Zhou et al. summed up the history of zinc production in general as follows:

> Before Europe established large scale zinc production in the 18th century (Day, 1998; Dungworth and White, 2007), only India and China produced unalloyed zinc on an industrial scale. Indian zinc production, based on the principle of distillation by descending, first appeared about 1000 years ago, boomed during the 14th to 16th centuries, and ceased in the early 19th century at Zawar, northwest India (Craddock et al., 1998). In contrast, the Chinese zinc smelting process was based on the principle of distillation by ascending, which seems fundamentally different from the Indian one. Chinese zinc was mainly used for making brass coins in the Ming and Qing dynasties (16th to 19th centuries); some were traded via European merchants to the world (Bonnin, 1924; Craddock and Hook, 1997; de Ruette, 1995; Souza, 1991). Traditional zinc smelting processes were still in operation in southwest China until the late 20th century. They utilised mineral coal instead of charcoal, both as fuel and reducing agent.[11]

Systematic zinc production had started in India – around the eleventh century – earlier than in China.[12] Recalling that the supposed composition date of the *Ḫārṣīnī* is in the tenth century and that Ǧābir ascribed *ḫārṣīnī* – probably zinc-related substance – to China not to India, the history of smelting zinc in China might still be full of undiscovered stories especially in its early stage. It might have already started by the tenth century. However, there is no evidence for that. The zinc smelting method that will be mentioned hereunder is the one in the fifteenth century, which is much later than the composition date of the Ǧābirian writings (the ninth and the tenth centuries). Nevertheless, considering that the sixteenth-century zinc smelting process continued until the nineteenth century in China according to the above citation from Zhou et al. (2012), it is not so diverted to pay attention to Chinese zinc smelting method in the later period for approaching Ǧābirian *ḫārṣīnī* as long as there is no research into the tenth-century zinc smelting method in China.

In 2016, Wugan Luo, Dadi Li, Di Mu, Jiujiang Bai and Birui Xiao published the study of zinc smelting relics in the middle late period of the Ming Dynasty (the first half of the fifteenth century).[13] Most of the artifacts excavated from the examined site were from a smelting process, such as smelting pots, slags, ores, pocket, furnaces, coal, etc.

[11] Zhou et al. (2012), p. 908.
[12] India seems to have established its own process for smelting zinc earlier than China. See, Kharakwal & Gurjar (2006).
[13] The range of calibrated radiocarbon ages of the zinc smelt site that they investigated was 1420-1440 AD (68.2%) or 1410-1445 AD (95.4%). See Luo et al. (2016), p. 134.

They gave an illustration of these pots like the below (Fig. 2) and the same but more structural image of the pot is given by Zhou (2012) (Fig. 3).

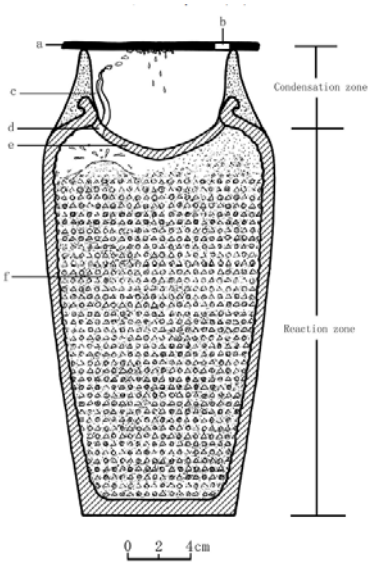


Fig.2. Reconstruction of the Zinc smelting technology in the Ming Dynasty based on the pots excavated from Linjiangerdui: a. Lid; b. vent hole; c. zinc vapour; d. airway; e. pocket; f. zinc and coal [Luo et al. (2016), p. 135].

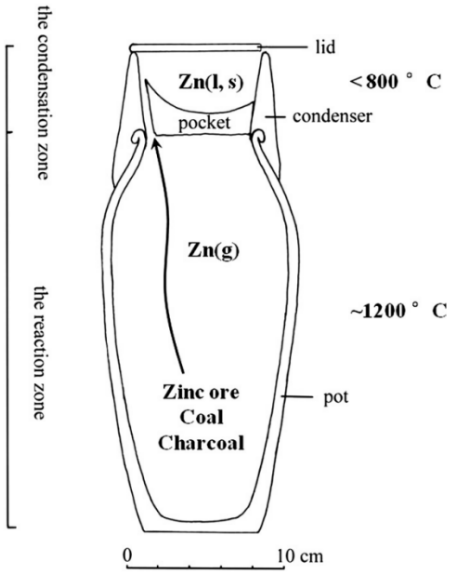


Fig.3. Reconstruction of a retort (g-gas, l-liquid, s-solid) [Zhou et al. (2012), p. 910].

Zhou et al. (2012) depends on the case study of Miaobeihou (no. 2 in Fig. 1),[14] while Luo et al. (2016) investigated relics in Linjiangerdui (no. 19 in Fig. 1) which was excavated in 2013. That is why the conclusions of their studies are not always the same: the former says that "according to the studies of slag and mineral samples from these sites, the zinc ores used were mostly zinc carbonates, smithsonite",[15] i.e., $ZnCO_3$, whereas the latter concludes that "the zinc ore used for smelting was from a Zn-Pb coexistence ore belt, and the main phase is zincite (ZnO) and hydrozincite ($Zn_5(CO_3)_2(OH)_6$)".[16] In any case, however, the craftsmen seem to have always mixed zinc ore with coal or charcoal as reductant agent inside the zinc smelting pots.[17] If zinc carbonate represents the source for obtaining pure zinc, the role of coal or charcoal will be clear by the following descriptions: zinc carbonate is decomposed to zinc oxide and carbon dioxide at about 300 °C (= [1] in the chemical formulae below). Carbon from the coal and charcoal reacts the carbon dioxide from the zinc carbonate, and they produce carbon monoxide (= [2-1]). The carbon also reacts with oxygen that initially exists in the pot and generates carbon monoxide (= [2-2]). Since the boiling point of zinc is 907 °C, zinc oxide becomes gaseous when the temperature reaches over 1000 °C. In parallel, the carbon dioxide detached from

[14] Zhou et al. (2012), p. 909.
[15] Zhou et al. (2012), p. 916.
[16] Luo et al. (2016), p. 141.
[17] Luo et al. (2016), p. 140.

zinc oxide produces more carbon monoxide by reacting with coal and charcoal. Thus, the reversible reaction (= [3]) is kept from the left to the right.

[1] $ZnCO_3(s) = ZnO(s) + CO_2(g)$
[2-1] $C(s) + CO_2(g) = 2CO(g)$
[2-2] $2C(s) + O_2(g) = 2CO(g)$
[3] $ZnO(s) + CO(g) \rightleftarrows Zn(g) + CO_2(g)$

This process might be simplified too much because the mined zinc ores, represented by zinc carbonate ($ZnCO_3$) this time, must have contained impurities enough to affect and change the above reaction process. In fact, clusters of zinc sulphide and metallic iron are frequently found in the slag – i.e., the metallurgical residues left within the pots after the smelting – in Miaobeihou. Especially, abundance of metallic iron in the zinc smelting process is well recognised owing to its presence in cracks, pores and surfaces of the pots.[18] As for sulphur, it must have easily entered the produced substance since its boiling point is about 445°C which is much lower than the average zinc smelting temperature in the Ming dynasty, i.e., 1270 °C according to thermometric analysis.[19] Sulphur and iron, being possible impurities of zinc ores, should be key elements later when the colour of *ḫārṣīnī* is mentioned.

Whether this zinc smelting process in the Ming dynasty is the one that Ǧābir had in mind or not, it is remarkable that Ǧābir described a kind of smelting way for *ḫārṣīnī* as a process of *ḫār* burning.

T4: The *Ḫārṣīnī*, [ب] 56b; [ق] 39b-40a; [ط] 67a

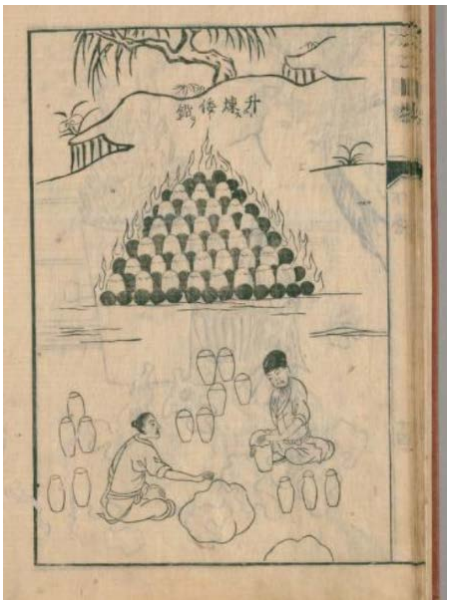
Description of its burning: make a crucible for it (i.e., *ḫār*), that is resistant to fire, and use an adjusted lid for it. Put [the lid] on it and connect [them] well and dry it. Put it on the fire of embers of *ġaḍan* wood, blow on it for six hours, remove [it from the fire] so that it cools, put it on a stone slab, and crush it and it will crush, wash it and then use it.	وصفة إحراقه أن يصنع له بوطقة صابرة على النار وتعمل لها غطاء مهندم يؤضع عليها ويؤخذ الوصل جيدا ويجفف ويوضع على نار جمر الغضًا وينفخ عليها ست ساعات [ق-40أ] مستويات وينزل حتى يبرد ويلقى على صلاية ويسحق فإنه ينسحق ويغسل ثم يستعمل

This is a preparatory process at the beginning of the recipe for softening iron.[20] A small pot with *ḫārṣīnī* inside is shut up by a lid and then burnt. This process is to some degree similar to the Chinese zinc smelting method in the fifteenth century. Although there is no pocket in the pot for *ḫārṣīnī* as shown in Fig. 2 & 3, cooling process is added probably to

[18] Zhou et al. (2016), p. 915.
[19] Luo et al. (2016), p. 140.
[20] This incredible effect, i.e., 'softening' iron, can mean zinc galvanisation of iron.

solidify the vaporised materials. Therefore, this way to burn *ḫārṣīnī* can be zinc smelting process. In fact, this description of burning *ḫārṣīnī* is basically the same as written in *The Exploitation of the Works of Nature* (天工開物 *Tiān Gōng Kāi Wù*) that is known as the earliest definite textual evidence of producing metallic zinc in a Chinese literature written by Sòng YīngXīng (宋応星) in 1637.[21]

> T5: *Wōqiān* (倭鉛), a term of recent origin, does not appear in ancient books. It is extracted from *lúgānshí* (爐甘石), and is produced primarily in the Taihang Mountain of Shanxi, followed by Jing [in Hubei province] and Heng [in Hunan province]. Fill each earthen jar with ten catties [c. 6 kg] of *lúgānshí*, then seal it tightly with mud, and let it dry slowly so as to prevent cracking when heated. Then pile a number of these jars in alternate layers with coal briquettes, with kindling on the bottom layer for starting the fire. When the jars become red-hot, the *lúgānshí* melts into a mass. When cooled, the jars are broken open and the substance thus obtained is *wōqiān*, with a twenty percent loss. This metal is easily burnt off by fire if not mixed with copper. Because it is similar to lead, yet more fierce in nature, it is called *wōqiān* [literally 'Japanese lead'].[22]



[The image cited from the website of National Diet Library, Japan. *Tiān Gōng Kāi Wù III*, 7, image no. 17/28 (accessed 21/02/2022)]

The pot depicted here does not seem to have a pocket in the upper part, but cooling process is implied by saying "when cooled". Thus, zinc smelting process described in the

[21] Kharakwal & Gurjar (2006), p. 140.

[22] Tr. Zhou (2012), pp. 292-293. This translation is basically the same as in Sun and Sun 1966, p. 247, but modified by Zhou. Ed. Pan (1989), p. 364; 凡倭铅古书本无之，乃近世所立名色。其质用炉甘石熬炼而成。繁产山西太行山一带，而荆、衡为次之。每炉甘石十斤，装载入一泥罐内，封裹泥固以渐砑干，勿令见火拆裂。然后逐层用煤炭饼垫盛，其底铺薪，发火煅红，罐中炉甘石熔化成团。冷定毁罐取出。每十耗其二，即倭铅也。此物无铜收伏，入火即成烟飞去。以其似铅而性猛，故名之曰倭云。Pan (1989) is an edition in simplified Chinese characters, which is reproduced from the original 1637 edition. The non-simplified text is found in the image no. 15/28 of *Tiān Gōng Kāi Wù III*, 7 at the website of National Diet Library, Japan. The name '*wōqiān*' [literally 'Japanese lead'] might have had relation to the fact that Japanese pirates were active when *The Exploitation of the Works of Nature* was written. See Yabuuchi (1969).

seventeenth-century Chinese literature corresponds to Ǧābirian description of *ḫārṣīnī* burning. In other words, *lúgānshí* – the source of zinc (*wōqiān*) – can be equal to *ḫārṣīnī* (before burning), and *wōqiān* – an old Chinese name of zinc – can correspond to burnt *ḫārṣīnī*. *Lúgānshí* had been a debatable substance until it was proved to be hydrozincite ($Zn_5(CO_3)_2(OH)_6$) that contains a little impurity in 1953.[23] An interesting point is that both *ḫārṣīnī* and *lúgānshí* were used as eye medicine. Ǧābir says that *ḫārṣīnī* works as eye-medicine (*kuḥl*)[24] while *lúgānshí* was used as a main ingredient of eye medicine during Ming dynasty (1368-1644), which was the first medicine made of stone that was listed in a Chinese pharmacological book, *Compendium of Materia Medica* (本草綱目 *Běn cǎo Gāng mù*) written by Lǐ Shízhēn 李時珍 in 1570. However, since Ǧābir adds the condition that "it (i.e., *ḫārṣīnī*) will have usefulness as *kuḥl*, if it is burnt and used", *ḫārṣīnī* as an eye-medicine was burnt one – *wōqiān* rather than *lúgānshí*. It means that being effective to eyes cannot be a feature that combines *ḫārṣīnī* with *lúgānshí*.

In the first place, the comparison of Ǧābirian writings with the seventeenth-century Chinese literature might not be valid since the composition dates of these two books are too far to compare their contents. *The Exploitation of the Works of Nature* was written in 1637 while the *Ḫārṣīnī* is considered to have been composed in the tenth century. Indeed, there is no crucial element that denies later composition date of the *Ḫārṣīnī*, but, considering that its extracts are preserved in the *Book of Keys of Mercy and Secrets of Wisdom* (*Kitāb mafātīḥ al-raḥma wa asrār al-ḥikma*) by Ṭuġrāʾī (1061-c. 1121), *terminus ante quem* of the *Ḫārṣīnī* is at latest the eleventh century. There are still over five centuries between the latest possible composition dates of the *Ḫārṣīnī* and this Chinese book. Nevertheless, Needham says "the thing to remember then is that we can be sure of the existence and use of isolated zinc metal from + 900 onwards" on the ground that the name *wōqiān* appears in the *Discourse on the Precious Treasury of Earth* (寶藏論 *Bǎo Zàng Lùn*) that is datable to 918 CE,[25] although *The Exploitation of the Works of Nature* is generally regarded as the earliest text that describes the exact way to smelt zinc in the world. Therefore, there is still a possibility that *ḫārṣīnī* intended by Ǧābir indicates *wōqiān* – an old Chinese name of zinc – that might already have been recognised in the early tenth century according to Needham's words quoted right before. However, Needham's conclusion is inconsistent with a record written by Sung in 1637 – "*woqian*, a term of recent origin, does not appear in ancient books". Given that Sung's words are incorrect and Needham's reasoning is valid, the zinc smelting process in *The Exploitation of the Works of Nature* or the one explained in Zhou et al. (2012) and Luo et al. (2016) could have been already utilised in the tenth century. In addition, if Ǧābir did not really know Chinese way of smelting *ḫārṣīnī*, it is possible that Ǧābir wrote about *ḫārṣīnī*

[23] As for the identification of *lúgānshí*, see Masutomi & Yamazaki (1953).
[24] See 'Nature of *ḫārṣīnī*' of the *Ḫārṣīnī* in Appendix. "وفيه منفعة في الأكحال إذا أحرق واستعمل"
[25] Needham (1974), pp. 213-214.

burning without knowing that it is almost the same method as its smelting way that was performed in China at that time.

Colour of *ḫārṣīnī*

The next point that we investigate is colour of *ḫārṣīnī*. Colour descriptions in alchemical writings are not always accurate but the colour of any substance can be determined even symbolically. Therefore, the colour of *ḫārṣīnī* described in the *Ḫārṣīnī* might not deserve to be trusted. However, I proceed the exploration of *ḫārṣīnī* further on the premise that *ḫārṣīnī* is black mixed with red as Ǧābir says.[26] Suppose that *ḫārṣīnī* is metallic zinc. Then, it should be grey-white if it is really pure. Indeed, zinc will be tarnished and can become black if it is oxcidised only by being exposed to air and moisture, but it cannot be red. Al-Rāzī, who counted *ḫārṣīnī* as the seventh metal after Ǧābir, did not mention its colour. Much later, al-Qazwīnī's *Book of Wonders of Creation (Kitāb ʿaǧāʾib al-Maḫlūqāt)* (c. 1275) says that the colour of *ḫārṣīnī* is black mixed with red,[27] which is the same description as Ǧābir made. Stapleton, Azo and Ḥusain proposed that 'black' in al-Qazwīnī's record is certainly a copyist's mistake for 'white' because (1) Qazwīnī explains that *ḫārṣīnī* is produced from white substances by cooking pure quicksilver and pure white sulphur with coagulating cold before coction, and (2) another name for *ḫārṣīnī* was 'Chinese iron'.[28] The latter reason, i.e., (2), probably presupposes that iron is white. However, Ǧābir thought that iron is black in its body (*ǧasad*) although its spirit (*rūḥ*) is regarded as red and white.[29] In relation to this, the former reason, i.e., (1), can be dissolved if quicksilver and sulphur theory does not deal with the body side of the metal but only with its spirit side.[30] Thus, since it is not certain that *ḫārṣīnī* should be white, the blackness of *ḫārṣīnī* cannot easily be erased as a mere mistake in the manuscript transmission.

Concerning the colour, especially the whiteness, another Chinese word *báiqiān* (白鉛; lit. white lead) should be surveyed. This expression was used as synonym of *wōqiān* in the *Mirror of Alchemical Processes and Reagents (Tan Fang Qian Yuan)* written around 950.[31] Provided that *wōqiān* exactly meant the same as *báiqiān* and it is indicated by *ḫārṣīnī*, *ḫārṣīnī* should be white. However, *ḫārṣīnī* is black according to

[26] ولونه أسود يشوب سواده حمر See the *Ḫārṣīnī* in Appendix.

[27] Wüstenfeld (1848), p. 208.

[28] Stapleton, Azo & Ḥusain (1927), p. 407.

[29] The *Iron*. See Chapter 2.3 where nature of iron is mentioned.

[30] This requires the premise that metal is constituted of body and spirit. Even if a spirit element is white, a body element can be black regardless of the whiteness in its paired spirit.

[31] Needham (1974), p. 214, where further colour-related explanation is found: *Bái qiān* "is a term continued in use, along with *wō qiān* down to the present time, contrasting with *hēi qiān* (黑鉛), 'black lead', which has always meant lead itself".

Ǧābir. In this point too, *ḫārṣīnī* seems to be something different from *wōqiān* although it might have any relevance to *wōqiān*.

Even *lúgānshí*, i.e., hydrozincite, cannot be black but white though it can be partially brown by its impurities (Fig. 5). Thus, neither *wōqiān* nor *lúgānshí* can fit *ḫārṣīnī* in terms of colour. It is not easy to identify *ḫārṣīnī* with any recognised substances especially when its colour described by Ǧābir is prioritised for its identification. However, it seems less likely that *ḫārṣīnī* is pure zinc since zinc is never reddish as it is. Accordingly, *ḫārṣīnī*, black mixed with red, can be zinc ore or alloy that was mined in China and smelted by local technique.

Fig. 5 Hydrozincite ($Zn_5(CO_3)_2(OH)_6$)
https://www.mindat.org/photo-374355.html[32]
Mined from Zhejiang, China
12.0 cm. White, flower-like crystal group
Copyright©David J. Eicher.

There is another possibility that the colour of *ḫārṣīnī* is just mixed up with that of cinnabar which is black and red since both *ḫārṣīnī* and quicksilver were regarded as counterparts of the planet Mercury. Yet, considering Ǧābir's clear negation of quicksilver as a representative of the Mercury, it seems reasonable to stick to pursuing the colour of zinc-related materials.

If the colour description by Ǧābir is prioritised to identify *ḫārṣīnī*, a more plausible substance that contains zinc might be sphalerite (FnS) which becomes black when the percentage of iron is high ((Zn,Fe)S).[33] There is a sphalerite sample that can look black intermingled with something red (Fig. 6), which seems to contain iron at a high rate but less than that in Marmatite (Fig. 7). Its relatively pure form probably without iron (Fig. 8) might be able to explain the redness of *ḫārṣīnī* although it might look orange rather than red. Sphalerite was one of the zinc ores that were used in zinc smelting in China at latest in the fifteenth century, but it is reported that the major ore for zinc smelting was smithsonite ($ZnCO_3$) – also known as calamine.[34] Smithsonite varies in

[32] All photos of the mineral hereafter are cited from the website 'Mindat.org' (an outreach project of the Hudson Institute of Mineralogy).
[33] According to Mindat.org, https://www.mindat.org/min-3727.html, sphalerite, also known as blende or zinc blende, is the major ore of zinc. When pure (with little or no iron), it forms clear to white crystals (known as Cleiophane). Yellow to orange sphalerite is often called "golden sphalerite." Red shades of sphalerite are known as Ruby Blende or Ruby Jack. As iron content increases, sphalerite forms dark, opaque submetallic crystals (known as Marmatite or Black Jack).
[34] "The most common ore for zinc smelting is smithsonite ($ZnCO_3$), although sometimes hemimorphite ($Zn_4(H_2O)[Si_2O_7](OH)_2/Zn_2SiO_4$), sphalerite (ZnS) etc. are also used". See Luo. et al. (2016), p. 133.

colour and can be dark brown,[35] which might look black and red (Fig. 9: the image of smithsonite associated with hydrozincite and calcite).

Fig. 6. Sphalerite, ZnS
https://www.mindat.org/photo-273708.html
Mined from Buckwheat pit, Franklin Mine, Franklin, Franklin Mining District, Sussex County, New Jersey, USA
(No mention about copyright)

Fig. 7. Marmatite (an iron-rich variety of sphalerite), (Zn,Fe)S
https://www.mindat.org/photo-179366.html
Mined from Naica, Saucillo Municipality, Chihuahua, Mexico
Colour: Black
Copyright©Danny Jones

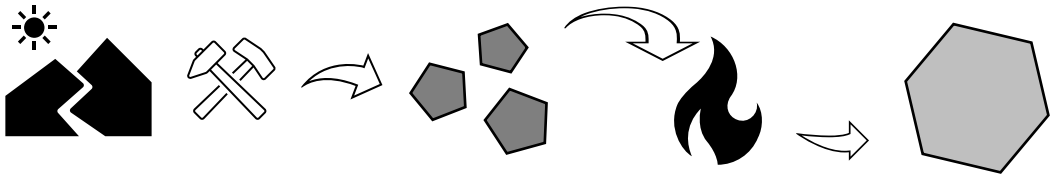
Fig. 8. Sphalerite, ZnS
https://www.mindat.org/photo-253687.html
Mined from Flamboro Quarry ("Flamborough Quarry"), West Flamborough Township, Hamilton, Ontario, Canada
Colour: Yellow, light to dark brown, black, red-brown, colourless, light blue. green
Copyright©Maggie Wilson

Fig. 9.
Smithsonite $ZnCO_3$, Hydrozincite $Zn_5(CO_3)_2(OH)_6$
https://www.mindat.org/photo-210865.html
Mined from Tsumeb Mine, Tsumeb, Oshikoto Region, Namibia
A cluster of sharp, brown smithsonite crystals with a powdery dusting of gray hydozincite microcrystals on a nicely contrasting crust of calcite ($CaCO_3$).
Copyright: © Rob Lavinsky & irocks.com

Whether *ḫārṣīnī* is considered to be hydrozincite, sphalerite or smithsonite, there will be fundamental inconsistency if *ḫārṣīnī* was a substance that artificially obtained by smelting after it was mined. For, the mentioned zinc ores are all naturally produced. According to T3 of the *Ḫārṣīnī*, *ḫārṣīnī* was mined and then smelted with fire in China. If Ǧābir described the mined *ḫārṣīnī* as black mixed with red, it could be simply proposed that *ḫārṣīnī* can be ZnS, (Zn, Fe)S or $ZnCO_3$ because archaeologists have been confirmed that these zinc ores were actually mined in China. However, Ǧābir does not seem to have seen *ḫārṣīnī* that is before being smelted. If Ǧābir only knew the smelted *ḫārṣīnī* as imported products from China and did not know the original state of *ḫārṣīnī* right after

[35] Smithsonite can be white, grey, yellow, green to apple-green, blue, pink, purple, bluish grey, brown and even possibly colourless or faintly tinted in transmitted light. See the description of Smithsonite in https://www.mindat.org/min-3688.html.

being mined, his saying “the colour of *ḫārṣīnī* is black mixed with red” is for the smelted *ḫārṣīnī* and not for the mined one.



Mined *ḫārṣīnī* Smelted *ḫārṣīnī*

Can it be ZnS, (Zn, Fe)S or $ZnCO_3$?

Probably Ǧābir did not see this process

In the latter case, it can be thought that the smelted *ḫārṣīnī* is not pure zinc but that with impurities. Considering the fact that iron and zinc sulphide are often found in the residues in used smelting pots, along with that coal and charcoal are used in the smelting process in China,[36] the impure smelted zinc could have been ZnS, (Zn, Fe)S and $ZnCO_3$. Then, what occurred in Chinese zinc smelting process can be described as follows:

Any zinc ores (1) + something (2) + heat → ZnS, (Zn, Fe)S or $ZnCO_3$ + something else

Zinc ores (1) can be $ZnCO_3$, ($Zn_5(CO_3)_2(OH)_6$), or perhaps ZnS or (Zn, Fe)S. Something (2) can be Fe, S, Pb and anything else like C, CO_2 and O_2. With scarcity of both literal and archaeological evidence, these are all hypotheses. However, as possibilities based on available information, it is provisionally concluded that *ḫārṣīnī* could have been such zinc ores as ZnS, (Zn, Fe)S and $ZnCO_3$.

To return to T4 of the *Ḫārṣīnī*, although the method of burning *ḫārṣīnī* as shown in T4 is similar to the one described in *Tiān Gōng Kāi Wù*, T4 does not present a way for smelting *ḫārṣīnī* but a preparatory procedure to utilise *ḫārṣīnī* if we precisely follow Ǧābir’s intention. Therefore, it is better to regard T4 as the next step for the smelted *ḫārṣīnī* that was discussed above. Given that the smelted *ḫārṣīnī* is smithsonite (calamine), i.e., $ZnCO_3$, T4 can be interpreted in a relatively convincing way. The chemical formula that represents T4 is roughly described as follows:

$$\underset{\text{Smelted } ḫārṣīnī}{ZnCO_3} \rightarrow \underset{\text{Burnt } ḫārṣīnī}{ZnO} + CO_2$$

If this change is meant in T4, *ḫārṣīnī* can be both smithsonite ($ZnCO_3$) and zinc oxide (ZnO) by being subdivided into the smelted and the burnt respectively. This ambiguity of *ḫārṣīnī* can explain both its colour and medical effect for eyes. For, smithsonite can be

[36] Zhou et al. (2016), p. 915; Luo et al. (2016), p. 140.

described as black intermingled with red as Fig. 9 exemplified, and zinc oxide – known as eye medicine – meets Ǧābir's saying that *ḫārṣīnī* is effective as *koḥl* – eye medicine – when it is burned.[37] This process of burning *ḫārṣīnī* is the same as the first phenomenon that happens in zinc-smelting that was operated in China under the Ming Dynasty in the fifteenth century.[38] Thus, this is a kind of 'incomplete' process for producing pure zinc. In general, the calcination of smithsonite, or of other carbonate zinc ore, is an important process for making brass because it facilitates the combination between zinc and copper (ZnO + Cu + C → Cu-Zn alloy). The calcination of smithsonite (calamine) seems to have been a well-known method for making not only brass but also other zinc alloys.[39] Therefore, burning *ḫārṣīnī* (T4) could be one of the examples of such a popular process of preparing zinc ores for producing zinc alloys.[40]

Effect of *ḫārṣīnī*

Given that *ḫārṣīnī* is any substance of which a main component is zinc, our analysis will pursue how *ḫārṣīnī* acts according to Ǧābir. Following T4, how *ḫārṣīnī* makes iron 'soft' is described in the *Ḫārṣīnī*:

T6: The *Ḫārṣīnī*, [ب] 56b-57a; [ق] 40a; [ط] 67a-67b

What has been tried out about it [finds] that a little amount [of it] is useful to tin, it strengthens it (i.e., tin) and removes its sound and its foul smell quickly.	والذي جرّب منه أن قليلة ينفع القلعى ويشدده ويزيل صريره ونتنه بسرعة
He said, after his mentioning the roasting of iron with arsenic, [as follows:] take *ḫār* and put [it] in a solid crucible. Throw the same weight of *dūṣ* on it, blow on it in hot embers all the time, and then take both of them (i.e., *ḫār* and *dūṣ*) out [from the crucible]. When it is filed by pounding and crushing well, then the iron is put into a firm crucible, and *ḫār* and *dūṣ* which were taken out are put with it (i.e., iron). And	وقال بعد ذكره تشوية الحديد بالزرنيخ ويؤخذ الخار فيجعل في بوطقة محكمة ويلقى عليه مثل وزنه دوص وينفخ عليها في جمر حامى دائما ثم يخرجان فإذا برد سحقا ودقا جيدا ثم يوضع الحديد [ب-57أ] في بوطقة وثيقة ويجعل معه الخار والدوص الذي خرج [ط-67ب] ثم ينفخ عليه

[37] See note 24 in this chapter.
[38] See the chemical formula [1] in p. 117.
[39] At latest by the thirteenth century, *tūtiyāʾ* (perhaps a synonym of *ḫārṣīnī* as mentioned later in this chapter) used to be roasted with other ingredients as a preparation for making alloys. See Craddock et al. (1990), p. 73. In addition, though this is much later than Ǧābir, the calcination of calamine is witnessed also in Germany as shown in Brown (1677), pp. 163-164, which is the same century as *Tiān Gōng Kāi Wù* was written. As for roasting calamine in general, see Pauquet (2000), pp. 128-129.
[40] The calcination of calamine (smithsonite) was not always operated in a closed container but rather usually in a heap. If it is calcinated with mild heat in a closed heap, not all the Zn will evaporate, but ZnO was formed. I am deeply grateful to Prof. Ernst Homburg and Dr. Giacomo Montanari for their comments and advice on the attempt to identify *ḫārṣīnī* in this chapter.

then, the ember is blown on it in the crucible. Then, the iron can be molded as you want. Use it in iron works, soft and obedient to you in the amalgam as you want. And God, the Great and the Mighty, knows best.	الجمر في البوطقة فإن الحديد ينسبك كيف شئت فادخله في أعمال الحديد، لينا يطاوعك في الممازجة كما تريد فاعلم ذلك إن شاء الله عز وجل

It is not explained how *ḫārṣīnī* should be applied to tin, but only the outcome is written. Suppose that *ḫārṣīnī* is smelted and mixed with tin and *ḫārṣīnī* makes tin strong. In general, tin – a soft metal – gets harder when it is mixed with any other metals. However, zinc is not so hard, either. If *ḫārṣīnī* is a zinc ore that contains iron as impurity, it is understandable that tin becomes strong when mixed with *ḫārṣīnī* since iron is the hardest in the seven metals. Besides, it is said that the sound of tin disappears by *ḫārṣīnī*. It can mean that *ḫārṣīnī* makes tin lose the so-called tin cry, i.e., a sound that occurs when pure tin is bent and its crystal twinning is broken. However, any metal other than zinc would be able to stop the tin cry when it could be mixed with tin. Therefore, this phenomenon cannot be a clue that identifies *ḫārṣīnī*. Furthermore, Ǧābir says that *ḫārṣīnī* removes the odour of tin, which seems to mean the effect of deodorisation by zinc ion. Yet again, this does not necessarily limit *ḫārṣīnī* to zinc since other metals can work as deodorants. Iron is another representative metal for deodorant.

After mentioning iron arsenate in T6, Ǧābir prescribes the mixture of *ḫārṣīnī* and *dawṣ* that is ‘water of iron’ if al-Rāzī correctly registered the same *dawṣ* as Ǧābir intended. According to Stapleton, Azo and Ḥusain, “*dawṣ* is a Persian word, and the substance it represents was probably first introduced into alchemy owing to the world-wide and very ancient belief in the magical properties of Iron”.[41] It is still not certain what the water of iron is, but in any case, *dawṣ* is a liquid related to iron. The blended *ḫārṣīnī* and *dawṣ* are further mixed with iron. Then, the iron becomes ‘soft’. Ǧābir adds his words about ‘softening’ in T7 which is a continuous passage to T6.

T7: The *Ḫārṣīnī*, [ب] 57a; [ق] 40a; [ط] 67b

We reported its natural quality, its properties and its actions. It (i.e., *ḫār*) does not enter any compositions that we described in our books in any way. However, since [its] action for softening iron was so strong that it [can] smelt it, it is useful. The iron, O my brother, if it becomes soft [by itself], it is enough and sufficient, and you do not need anything else apart from it (i.e., iron). However, it became soft only by *ḫār* in some of the talismans, and we have already mentioned	وقد أخبرنا بطبعه وخواصه وأفعاله وليس يدخل في شيء من التراكيب التي وصفنا في كتبنا بحال من الأحوال إلا أنه لما كان قويّ الفعل في تليين الحديد حتى يسبكه صار ذلك نافعا والحديد يا أخي إذا لأن ففيه كفاية وبلاغ فلا تحتاج إلى غيره وإنه لان بالخار وحده في شيء من الطلسمات قد ذكرناه من كلام لنا في الطلسمات

[41] Stapleton, Azo & Ḥusain (1927), p. 352, n. 4.

it (i.e., *ḫār*) in our discourse on the talismans and in some of our great books. I swear to God, I do not designate it for you so that it is of little difficulty for you and make you recognise the presence of our favour towards you.	وفي بعض كتبنا الكبار ليس وحق سيدي أسميه لك لتتعب بطلبه قليلا وتعرف مكان منّتنا عليك [ط-67ب8]

To make iron work as talismans, *ḫārṣīnī* is said to be useful because it makes iron 'soft'. However, iron does not physically become soft under its melting point, i.e., 1538°C. Therefore, it is unbelievable that zinc and iron-related water called *dawṣ* make iron bendable and plastic. To understand the meaning of 'soft', it is hypothesised that being 'soft' (*layyin*) means to be kept smooth, away from rusting. Iron can be prevented from rusting by being coated with zinc, which is known as galvanisation. Corrosion of metals is caused by electrochemical reaction, and oxidation is detachment of electron from the atom. Among the seven metals, zinc is the easiest to corrode and iron is the second. Therefore, zinc can be a sacrifice metal that is easier to be oxidised than iron and can protect iron from rusting. Other five metals are more tolerable to be oxidised than iron and cannot be sacrifice metals.[42] Thus, the effect of zinc's galvanising iron might be meant by "iron is softened only by *ḫārṣīnī*".

Before finishing the analysis of what *ḫārṣīnī* is, another Arabic word related to zinc, i.e., *tūtiyāʾ*, should be considered. In modern Arabic, *tūtiyāʾ* means zinc along with *zink* and *ḫārṣīn* or *ḫārṣīnī*. The name of *tūtiyāʾ* is found in a Persian literature, Abū Dulaf's *Al-risāla al-ṯāniya*, datable to the ninth and tenth centuries, where it is said that the Indian *tūtiyāʾ* was preferred in Persia.[43] Moreover, the Persians have another witness of *tūtiyāʾ* as the vapour of tin, which might be identified with zinc.[44] Depending on these literatures, Kharakwal and Gurjar assert that zinc was already produced in India in the ninth and tenth centuries.[45] That is, according to them, *tūtiyāʾ* already meant zinc in the ninth and tenth centuries at least in Persian. On the other hand, Needham considered *tūtiyāʾ* not to be pure zinc but zinc ore, calamine.[46] *Tūtiyāʾ* is not found in the *Ḫārṣīnī* of

[42] Gold, silver, copper, lead, tin, iron and zinc. In this order, ionization tendency becomes higher and oxidation is easier to occur.
[43] Allan (1979), pp. 43-45.
[44] Allan (1979), p. 44; Craddock et al. (1989), p. 74.
[45] Kharakwal and Gurjar (2006), p. 154.
[46] Needham (1974), p. 203. According to Zhou Wenli (2012), p. 38, brass was imported from Persia and India to China via the Silk Road with the introduction of Buddhism (see also Zhou Weirong (2000)) and called *tou-shi* (鍮石) after a Persian word (see Lin (1999)). Needham says that although *tou-shi* (lit. *tou* stone) has usually been supposed to be a loan-word from the Middle Persian *tūtiyaʾ* according to Laufer, yet more agreeable is Chang Hung-Chao's opinion that the real origin of *tou* is a Sanskrit word, *tāmra* (copper, brass) considering that trade between Persia and China did not begin on any scale until after about 517AD. See Needham (1974), p. 203. *Tūtiya* is also discussed in Chen (2019) that provides a summary of prior research including Needham (1974).

Ǧābir but used once in the *Gold* [47]and many times in the *Copper*, where Ǧābir gave scant explanation about *tūtiyāʾ*. "*Tūtiyāʾ* is familiar with copper (*al-tūtiyāʾ ṣadīq al-nuḥās*)"[48] might support that *tūtiyāʾ* is zinc which is easily alloyed with copper. In addition, "*tūtiyāʾ* of copper (*al-tūtiyāʾal-nuḥās*)"[49] might mean brass, copper-zinc alloy. According to much later Persian literature, i.e., *A Materia Medica (Maḫzan al-Adwiya)* written by Muḥammad Ḥusain of Oudh in 1771 AD, *tūtiyāʾ* is a corruption of a Persian word *dūdiyā* meaning 'smoke'. [50] This etymology might explain that zinc becomes gaseous at relatively low temperature for metal, but nothing proves its certainty of this eighteenth century witness. Concerning the transmission of *tūtiyāʾ*, another route should be noted. In the tenth or eleventh-century Byzantine manuscript *Marcianus* gr. 299, an alchemical recipe on the tempering of copper and 'Indian iron' preserves a word θουθία which is probably a transliteration of *tūtiyāʾ*.[51] To roughly summarise, *tūtiyāʾ* might mean Indian origin zinc – either pure or impure – imported through the Persians into the Arabic world, while *ḫārṣīnī* is a Chinese origin substance related to zinc.[52]

In relation to *tūtiyāʾ*, since about 1605, zinc metal was an important article of export commerce from China to Europe and was known under the name of 'tutenag' which derived from *tūtiyāʾ* and spelt in various ways.[53] However, already before that, zinc itself was recognised in Europe. Paracelsus (d. 1541) is generally regarded as the first person who used the name 'Zink'.

> Of zinc: – There is another metal, zinc, which is in general unknown. It is a distinct metal of a different origin, though adulterated with many other metals. It can be melted, for it consists of three fluid principles, but it is not malleable. In its colour it is unlike all others, and does not grow in the same manner; but with its *ultima materia* I am as yet unacquainted, for it is almost as strange in its properties as *argentum vivum*. It admits of no mixture, will not bear the *fabricationes* of other metals, but keeps itself entirely to itself.[54]

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[47] See T1 in Chapter 2.3, where *tūtiyāʾ* is used in a recipe for gold-like glass.
[48] The *Copper* in Appendix.
[49] The *Copper* in Appendix.
[50] Stapleton, Azo & Ḥusain (1927), p. 350, n. 5.
[51] See Chapter 1.4.
[52] It might be worth mentioning that Hommel, a metallurgist and historian of technology, was convinced that *ḫārṣīnī* referred to by al-Qazwīnī, was not zinc, but antimony or Hartblei (an alloy of lead and antimony). See Hommel (1912), esp. p. 100.
[53] Needham (1974), p. 212.
[54] Paracelsus, *Liber de mineralibus*: [HE8,359] Vom Zincken. Also ist auch ein Metall als der Zincken derselbig ist vnbekannt in der gemein : Vnd ist dermassen ein Metall einer sonderlichen arth vnd eines andern Sahmens doch aber viel Metallen adulteriern in jhm. Derselbig Metall ist an jhm selbs flüssig dann er wirdt von flüssigen dreyen Ersten aber kein Malleation hat er sonder allein ein Fusion : vnd sein Farben vnderschiedlich von andern Farben also das er den andern Metallen wie sie wachsen gar nicht gleich ist. Vnd ist ein solcher Metall das vltima Materia bey mir noch nicht bekandt ist. Dann er ist gar nahet so seltzam in seiner Proprietet als Argentum viuum : er nimpt kein vermischung an er gedult auch nicht anderer Metall Fabricationes, sonder ist für sich selbs. Tr. Johnston (1846), vol. 2, p. 41, n. 2. Johann Beckmann (1739-1811) cited Paracelsus words on zinc as "the principal passage" in his German book, *A History of*

In this passage from Paracelsus' text, the resemblance of zinc to quicksilver is implied.[55] As a matter of fact, quicksilver was eventually classified as zinc group element in modern chemistry. It might not be a coincidence that the position of the seventh metal was shared with quicksilver and *ḫārṣīnī* which is relevant to zinc. For now, owing to the broadness and ambiguity of the descriptions about *ḫārṣīnī* in the medieval literatures, no strong conclusion concerning *ḫārṣīnī* can be given. However, pursuing *ḫārṣīnī* further seems meaningful because it seems to have a possibility to contribute to the research into the history of zinc that is still in progress.

Since *ḫārṣīnī*, the basic but enigmatic element in the *Seven Metals*, has been overviewed, another unclear word should be investigated, going back to an inquiry into the concept of nature. In the next chapter, the fifth nature is explored.

Inventions, Discoveries, and Origins. This book was translated into English by Johnston.

[55] In another English translation from a Latin version of Paracelsus' text, quicksilver is not mentioned in the description of zinc, like this; tr. Waite (1894), p. 254: "Concerning zinc. Moreover, there is a certain metal, not commonly known, called zinc. It is of peculiar nature and origin. Many metals are adulterated in it. The metal of itself is fluid, because it is generated from three fluid primals. It does not admit of hammering, only of fusion. Its colours are different from other colours, so that it resembles no other metals in the condition of growth. Such, I say, is this metal that its ultimate matter, to me at least, is not yet fully known. It does not admit of admixture; nor does it allow the fabrications of other metals. It stands alone by itself". Cf. text, Paracelsus, III (1658).

2.5 Overview of the fifth nature in the Corpus

Chapter 2.3 showed how each metal was defined by the natures that are either outside or inside the metal. The four natures are the elements that compose everything in the world. However, they were not enough for the architecture of Ǧābir's thought. He needed another principle, i.e., the fifth nature. The description of the fifth nature is found in part of the *Copper*, whose text turned out to be a partial copy of the *FN*.[1] We will focus on the concept of the fifth nature in these two books that seem to be the most informative texts about the fifth nature in the Corpus. On the other hand, not only these two books but also some other Ǧābirian works mention the fifth nature as Kraus already showed.[2] It will be useful to first overview how the fifth nature is referred to in the other Ǧābirian writings before analysing the new evidence, in order to give a general overview of the Ǧābirian fifth nature. In the course of that, some ancient Greek thoughts will be surveyed as well because they could have been the sources for the fifth nature, as Ǧābir himself declares in T1. In fact, the fifth principle is not Ǧābir's invention, although calling this principle 'nature' might be unique to Ǧābir, but it has a long history since ancient times.

The first description about the fifth nature comes from the *Small Book of Balance (Kitāb al-mīzān al-ṣaġīr)* which is one of the *Books of Balances* and preserved in MS Paris BnF Arabe 5099, the same multiple-text manuscript that contains the *FN*.

T1: The *Small Book of Balance (Kitāb al-mīzān al-ṣaġīr)* [3]

We say: the mass of the celestial sphere is also what is the fifth nature according to what all philosophers said without adding anything to it (i.e., what they said). […] While we say: the meaning of our expression 'the mass of the celestial sphere', which used to be dealt with in our and philosophers' discourses, is the substance that receives everything, it is a thing that is in everything, everything comes from it and to it everything returns.	نقول: إن من جرم الفلك أيضا <ما> هو طبيعة خامسة على ما قالته الفلاسفة كلها ولم تزد عليه شيئا، [...] فنقول: إن معنى قولنا جرم الفلك هو ما قد جرت به العادة من كلامنا وكلام الفلاسفة أنه الجوهر القابل لكل شيء، وهو الذي في كل شيء ومنه كل شيء وإليه يعود كل شيء

The mass of the celestial sphere,[4] also called the fifth nature, is said to be the substance

[1] Kraus knew that the fifth nature was dealt with not only in the *FN* but also in the *Copper*. See Kraus (1942), p. 153, n. 1; Kraus (1943), p.114. Nevertheless, he did not mention that the texts of these two books partially overlap with each other. It is not certain whether he did not notice the overlap or he just regarded it as needless to say.

[2] Kraus (1942), p.153.

[3] Ed. Kraus (1935), p. 428, 4-9; tr. Kraus (1942), p. 153 «Comme l'affirment tous les philosophes, la masse de la sphère consiste encore en ce qui est (appelé) la cinquième Nature».

[4] 'The mass of the celestial sphere' might sound awkward as a translation of *ǧirm al-falak* that can be expressed as 'celestial body' instead. However, it seems to be better to adopt 'mass' as an equivalent of

meant as receiver of everything. It is immanent in everything, and it is both a starting point and a goal of everything. Here, at the same time, the fifth nature is described as the substance of the celestial bodies. Moreover, in another passage of the *Small Book of Balance*, the substance is expressed as a thing with which the space is filled and as a fine dust (*habāʾ*).

T2: The *Small Book of Balance (Kitāb al-mīzān al-ṣaġīr)* [5]

As for substance, God protect you, it is the thing by which the space is filled. It is capable of taking any form. Everything is in it, everything is constituted out of it, and everything dissolves back to it. If this account does not enable you to understand what substance is, then [let me explain further that] it is the dust, and its color is somewhat white. And when the sun radiates on it, it becomes inflamed and visible. Thus you ought to know that it is the mass of the Supreme Luminous Sphere, may its Creator be praised, and His name hallowed. This is the body which is in all three kingdoms of nature, namely animals, plants and stones.	فأمّا الجوهر – عافاك الله – فهو الشيء المملوء به الخلل وهو المشكَّل بكل صورة وفيه كل شيء ومنه كل شيء يتركّب واليه ينحلّ كل شيء. وإن كنت لا تعلم ما هو من هذا القول فهو الهباء ولونه الى البياض ما هو، فإذا وقفت عليه الشمس انقدح وظهر. فينبغى أن تعلم أنّ ذلك هو نفس جرم الفلك المنير الأعظم – سبحان خالقه وتقدّست أسماؤه – وهو الجسم الذي في سائر الموجودات الثلاثة التي هي الحيوان والنبات والحجر.

These expressions of the substance are related to the next reference to the fifth 'principle' in the *Book of Genera (Kitāb al-aǧnās)* which is one of the *Books of Seventy*.

T3: The *Book of Genera (Kitāb al-aǧnās)* [6]

The principle of things are the four natures, they have a fifth principle, that is the simple substance (*al-ǧawhar al-basīṭ*), called matter (*hayūlā*) and it is the fine dust (*habāʾ*) with which the space is filled.	أصل الأشياء أربع طبائع ولها أصل خامس وهو الجوهر البسيط المسمّى هيولى وهو الهباء المملوء به الخلل

The four natures are regarded as a principle of all things, and along with them the fifth 'principle' is introduced here. It is said that the fifth principle is the simple substance,

ǧirm to distinguish it from *ǧism* that is usually translated as 'body'. The choice of 'mass' depends on the English translation in Haq (1994) and Kraus' translation 'la masse de la sphère'.

[5] Ed. Kraus (1935), p. 429, 3-9; tr. Haq (1994), p. 55; cf. tr. Kraus (1942), p. 154.

[6] Ed. Kraus (1935), p. 482, 5-6; tr. Haq (1994), p. 54 with modification.

equal to the matter and the fine dust. The substance was described with the same expression, 'the fine dust', in the *Small Book of Balance* where the fifth 'nature' is said to be the substance that can be called 'the fine dust'. Consequently, regardless of the difference between 'nature' and 'principle', the fifth 'principle' can be identified with the fifth 'nature' through the words 'the substance' and 'the fine dust' with which the space is filled.

Since Ǧābir says in T1 from the *Small Book of Balance* that philosophers already discussed the mass of celestial spheres as the fifth nature, it is obvious that the Ǧābirian fifth nature or fifth principle derived from ancient philosophy. Accordingly, it is necessary to trace the concept of the fifth principle in history of philosophy in order to gain a better understanding of the fifth nature in the Corpus. Firstly, Aristotle should be mentioned because the term of 'the fifth element' is usually ascribed to him although Aristotle himself did not strictly call the matter of celestial things 'the fifth element' but rather named it 'the primary bodily substance' or 'the primary body'.[7]

T4: Aristotle, *De Caelo I*, 3, 270b 20-24.[8]

If then there is, as there certainly is, anything divine, what we have just said about the primary bodily substance was well said. The mere evidence of the sense is enough to convince us of this, at least with human certainty. For in the whole range of time past, so far as our inherited records reach, no change appears to have taken place either in the whole scheme of the outermost heaven or in any of its proper parts. The name, too, of that body seems to have been handed down right to our own day from our distant ancestors who conceived of it in the fashion which we have been expressing. The same ideas, one must believe, recur in men's minds not once or twice but again and again. And so, implying that the primary body is something else beyond earth, fire, air and water, they gave the highest place the	εἴπερ οὖν ἔστι τι θεῖον, ὥσπερ ἔστι, καὶ τὰ νῦν εἰρημένα περὶ τῆς πρώτης οὐσίας τῶν σωμάτων εἴρηται καλῶς. συμβαίνει δὲ τοῦτο καὶ διὰ τῆς αἰσθήσεως ἱκανῶς, ὥς γε πρὸς ἀνθρωπίνην εἰπεῖν πίστιν· ἐν ἅπαντι γὰρ τῷ παρεληλυθότι χρόνῳ κατὰ τὴν παραδεδομένην ἀλλήλοις μνήμην οὐθὲν φαίνεται μεταβεβληκὸς οὔτε καθ' ὅλον τὸν ἔσχατον οὐρανὸν οὔτε κατὰ μόριον αὐτοῦ τῶν οἰκείων οὐθέν. ἔοικε δὲ καὶ τοὔνομα παρὰ τῶν ἀρχαίων διαδεδόσθαι μέχρι καὶ τοῦ νῦν χρόνου, τοῦτον τὸν τρόπον ὑπολαμβανόντων ὅνπερ καὶ ἡμεῖς λέγομεν· οὐ γὰρ ἅπαξ οὐδὲ δὶς ἀλλ' ἀπειράκις δεῖ νομίζειν τὰς αὐτὰς ἀφικνεῖσθαι δόξας εἰς ἡμᾶς. διόπερ ὡς ἑτέρου τινὸς ὄντος τοῦ πρώτου σώματος παρὰ γῆν καὶ πῦρ καὶ ἀέρα καὶ ὕδωρ, αἰθέρα προσωνόμασαν τὸν ἀνωτάτω τόπον, ἀπὸ τοῦ θεῖν ἀεὶ τὸν

[7] Hahm demonstrated that the term 'fifth body' is a doxographer's term not a term used by Aristotle himself, by reconsidering Aristotle's lost work *De philosophia*, supposedly written in the early stage of his life, with a passage from Cicero and other doxographic evidence that had sustained the belief that Aristotle used the term 'fifth body'. See Hahm (1982), esp. pp. 65-66. The primary body is mentioned also in Aristotle's *Meteorology I*, 3, 339b21-27.

[8] Tr. Barnes (1985), I, pp. 450-451.

name of aether, derived from the fact that it 'runs always' for an eternity of time.[9] Anaxagoras, however, misuses this name, taking aether as equivalent to fire.	ἀΐδιον χρόνον θέμενοι τὴν ἐπωνυμίαν αὐτῷ. Ἀναξαγόρας δὲ κατακέχρηται τῷ ὀνόματι τούτῳ οὐ καλῶς· ὀνομάζει γὰρ αἰθέρα ἀντὶ πυρός.

The outermost part of the heavens is made up of something divine and unchangeable to which the ancients gave the name of aether. Aristotle calls it the primary substance of bodies (πρώτη οὐσία τῶν σωμάτων) or primary body (πρῶτον σῶμα). It was not 'the fifth' but 'the first' in Aristotle's writings, but it became called the fifth body or element by later philosophers and widely recognized as Aristotle's fifth element. An example of the later witness is Xenarchus of Seleucia (c. 30 BC) who wrote a treatise *Against the Fifth Substance* where he criticized Aristotle's theory of aether.[10] Thus, even if Aristotle himself did not call the substance of the celestial spheres 'the fifth', there was ascription of the fifth element to Aristotle already around 30 BC. Therefore, it is reasonable to assume that the fifth element combined with aether –that is the substance of celestial world– was known to Ǧābir as Aristotle's notion.

Although the Aristotelian fifth element can be one of the sources of the Ǧābirian fifth nature, the concept of the fifth nature does not totally fit in the Peripatetic framework. For, the fifth nature is the substance not only of celestial bodies but also of anything else, including the existence in the terrestrial world as said, in both T1 and T2 from the *Small Book of Balance*, to be a thing in which everything is. Furthermore, in T3 of the *Book of Genera*, the fifth principle was said to be the fine dust (*habāʾ*) with which the space is filled, and it was also regarded as a principle for the four natures. These features can be reminiscent of Empedocles' minute discrete particles as an element of the other four elements. Aetius reports the idea ascribed to Empedocles.

T5: Aetius, R27 (=DK 31A43)[11]

Empedocles: before the four elements there are smallest sparks, like elements	Ἐμπεδοκλῆς πρὸ τῶν τεσσάρων στοιχείων θραύσματα ἐλάχιστα, οἱονεὶ στοιχεῖα πρὶν στοιχείων, ὁμοιομερῆ ὅ ἐστι στρογγύλα.

[9] The etymology of aether (αἰθήρ from ἀεὶ θεῖν) as something that runs always is already found in Plato's *Cratylus* 410B.

[10] Xenarchus' *Against the Fifth Substance* is mentioned in Simplicius' *Commentary on Book One of Aristotle's 'On the Heavens'* 13.18; 20.12; 21.33. Xenarchus "is sometimes described as being only 'notionally' Peripatetic, in fact almost a Stoic, at least somebody heavily influenced by Stoicism" See Kupreeva (2009), p. 151.

[11] Laks & Most (2016), ed. p. 628; tr. p. 629. The presence of the last phrase ὅ ἐστι στρογγύλα is a notable difference of R27, an edition in Laks & Most (2016), from that in DK31A43: Ἐμπεδοκλῆς ἔφη πρὸ τῶν τεττάρων στοιχείων θραύσματα ἐλάχιστα οἱονεὶ στοιχεῖα πρὸ τῶν στοιχείων ὁμοιομερῆ. Moreover, DK31A43 has another relevant text reported by Aetius that the new edition by Laks & Most does not have: "Empedocles and Xenocrates [said] compounded from smallest mass were the elements, which are minute and as if they are elements of the elements" (Ε. καὶ Ξενοχράτης ἐκ μικροτέρων ὄγκων τὰ στοιχεῖα συγκρίνει, ἅπερ ἐστὶν ἐλάχιστα καὶ οἱονεὶ στοιχεῖα στοιχείων).

before the elements,[12] homoeomers,[13] that is, spherical.	

Since θραῦσμα, being translated with "spark" here, means something fragmented,[14] it can be linked with the fine dust (*habāʾ*) that is another name used for the fifth principle. Moreover, considering that four natures or qualities in the Corpus function like the Empedoclean four elements, "elements before the elements" seem to correspond to the fifth nature as the principle of the four natures. Thus, Empedocles might be another possible source of the fifth nature.[15] No direct evidence has been found to prove that the concept of Empedoclean elements of the four elements was transmitted to Ǧābir. However, Empedocles – or at least, his name – was obviously known to Ǧābir as "the group of Empedocles" is mentioned in the *Book of Stones*.[16]

In this way, Empedocles and Aristotle have been pointed out as possible sources of the fifth nature. On the other hand, Kraus acknowledged that the Ǧābirian fifth nature cannot be identified with the Aristotelian fifth element because the latter is added to the four elements (fire, water, air and earth) while the fifth nature is a counterpart of the four natures (hot, cold, moist, and dry).[17] If this reasoning remains valid in preventing their identification, not only the Aristotelian fifth element but also Empedocles' principle of the four elements cannot be related to the Ǧābirian fifth nature. However, in the Ǧābirian system, the four natures or qualities act not just as components of the four elements but play the same role as the four elements function in Empedoclean and Aristotelian explanation of the generation and the corruption. Therefore, it is not to be rejected that the fifth nature can be a parallel concept to those ancient notions.

The idea that the four qualities are elements of things instead of the four primary bodies (i.e., fire, water, air and earth) is not specific to Ǧābir but its proponents are found already in the ancient world. One of them, Athenaeus, was a pneumatist, namely a physician influenced by the Stoic physics.[18] His opinion is reported by pseudo-Galen.

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[12] The possible fifth element, "elements before the elements", is not single but plural for Empedocles. This can be explained by that he assumed myriad of discrete particles as a principle of the four elements.

[13] The doctrine of homoiomereity is first ascribed to Anaxagoras' theory of matter by Aristotle. See Kerferd (1969), p. 132.

[14] Longrigg expresses Empedoclean elements of the elements as "minute discrete particles", "the element articles" and "imperceptibly small ingredients". See Longrigg (1976), pp. 437-438.

[15] It is possible that Aetius' texts that convey Empedoclean views were known in Arabic through Arabic translation of pseudo-Plutarchus. Although Daiber (1980), of which title is 'Aetius Arabus', is to some extent criticised by Mansfreed & Runia (1997) due to the very title because what Daiber edited there was 'pseudo-Plutarchus Arabus' (cf. Primavesi (2021), p. 141, n. 141), yet it does not deny that Aetius' writings could have been transmitted into Arabic.

[16] Kraus (1935), p. 187, 13 "طائفة انبدقليس". The existence of the Latin *Turba philosophorum* and its Arabic prototype, the *Muṣḥaf al-ǧamāʿa*, indicates that Arab alchemical circles were familiar with Empedocles' name. See Kingsley (1995), pp. 375-376.

[17] Kraus (1942), p.153, where Kraus does not talk about Empedocles but focuses on Aristotle.

[18] Petit says that pneumatism is analysed in Wellmann (1895) although most of his conclusions should be revised in the light of more recent research. See Petit (2014), p. 286. The description of pneumatism is also found in Allbutt (1921), Chapter X, pp. 224-264.

T6 : Ps.-Galen, *Introduction* IX, 5.[19]

According to Athenaeus the elements of a human being are not the four primary bodies, fire, air, water and earth, but their qualities, hot, cold, dry and wet, of which he posits that two, the hot and cold, are productive causes, and two, the dry and wet, are material. And he introduces a fifth in accordance with the Stoics: the pneuma which permeates everything, by which all things are held together and regulated.	Κατὰ δὲ τὸν Ἀθήναιον στοιχεῖα ἀνθρώπου οὐ τὰ τέσσαρα πρῶτα σώματα, πῦρ καὶ ἀὴρ καὶ ὕδωρ καὶ γῆ, ἀλλ' αἱ ποιότητες αὐτῶν, τὸ θερμὸν καὶ τὸ ψυχρὸν καὶ τὸ ξηρὸν καὶ τὸ ὑγρόν, ὧν δύο μὲν τὰ ποιητικὰ αἴτια ὑποτίθεται, τὸ θερμὸν καὶ τὸ ψυχρὸν, δύο δὲ τὰ ὑλικά, τὸ ξηρὸν καὶ τὸ ὑγρόν, καὶ πέμπτον δὲ παρεισάγει κατὰ τοὺς Στωικοὺς τὸ διῆκον διὰ πάντων πνεῦμα, ὑφ' οὗ τὰ πάντα καὶ συνέχεσθαι καὶ διοικεῖσθαι.

Although Athenaeus does not think about everything in the world, but only about human being, it is explicitly stated that the elements are not the four elemental bodies (fire, air, water and earth) but the four qualities. Besides, the fifth, identified with pneuma, is introduced as a substrate that permeates everything. That is, by being analogous to pneuma that is diffused throughout human bodies, the fifth principle – spread into everything – is also called pneuma. Now, it might be necessary to briefly trace the notion of pneuma in ancient medical and philosophical traditions to approach the fifth principle in general.

Among pre-Socratics, Anaximenes used air, pneuma and wind as synonymous words. And then, spirit detached itself as a vital principle as in Anaximander and Democritus. Roughly, the pneuma was regarded at first as an exhalation from the blood, but at a later date, as nourished by a *sanguis halituosus* (ἀναθυμίασις). This notion of pneuma survived more or less in the doctrine of Aristotle.[20] Aristotle did not systematically discuss pneuma.[21] Therefore, various descriptions of pneuma can be found in Aristotle's writings. They are summarised by Armstrong as follows:

> "The essential characteristic of" pneuma "is generative and life-giving heat". "Pneuma is the active material principle which under the influence of the movement of desire in the soul produces bodily movement by bringing about the necessary qualitative changes in the parts of the body affected. It is present in

[19] Tr. Coughlin & Levis (2020), p. 211; ed. Petit (2009), 21, 14-21 (= Kühn XIV, 698). Coughlin & Levis cite this passage and add, "thinking of pneuma as something analogous to the fifth or celestial element but present within a living thing goes back at least to Aristotle's *De generatione animalium*". See Coughlin & Levis (2020), pp. 211-212.

[20] The explanation of pneuma from the beginning of this paragraph depends on Allbutt (1921), pp. 225-226.

[21] There is non-fragmentary work concerning pneuma ascribed to Aristotle: pseudo-Aristote's *On Pneuma (Περὶ πνεύματος)* which, although peripatetic, is not regarded even as Theophrastus' work according to Allbutt (1921), p. 247, n. 1. On the other hand, Bos & Ferwerda (2008) proposed that the *On Pneuma* should be reconsidered as an authentic Aristotelian work. See Tawara (2015), p. 12.

> the sense-organs and the channels and veins connecting them with the heart" as "the material vehicle through which sense-perceptions reach the soul (the heart being the seat of sense-consciousness)". Moreover, it "is also present in the seed, and is the indispensable active material principle of generation (the passive principle being moisture)". Pneuma is generally "described as "hot air", but it is not simply ordinary air heated, for it is, or at least contains something, analogous to "aether", the Fifth Elements of the heavenly regions". Pneuma, being a sublunar counterpart of aether, acts "as vehicles and intermediaries through which the immaterial communicates with and acts on all other material things".[22]

Thus, pneuma for Aristotle is confined to the sublunar world but closely related aether as the substance of the celestial world. There is indeed a passage in which Aristotle implies the correspondence of pneuma to aether in their role:

T7: Aristotle, *De generatione animalium II*, 3, 736b33-737a1.[23]

All have in their semen that which causes it to be productive; I mean what is called vital heat. This is not fire nor any such force, but it is the breath included in the semen and the foam-like, and the natural principle in the breath, being analogous to the element of the stars	τοῦτο δ' οὐ πῦρ οὐδὲ τοιαύτη δύναμίς ἐστιν ἀλλὰ τὸ ἐμπεριλαμβανόμενον ἐν τῷ σπέρματι καὶ ἐν τῷ ἀφρώδει πνεῦμα καὶ ἡ ἐν τῷ πνεύματι φύσις, ἀνάλογον οὖσα τῷ τῶν ἄστρων στοιχείῳ

For Aristotle, pneuma was mediation to convey the action of the unmoved mover to the body as aether does in celestial world. Theophrastus, who was the head of the Lyceum after Aristotle, went beyond the Aristotelian view of pneuma and identified pneuma with God.[24] This sounds similar to the Stoic concept of pneuma which greatly influenced Athenaeus' medical thought as seen above. The Stoa identified God with intelligent designing fire or a breath (pneuma) which structures matter in accordance with plans that it or God has.[25] Merlan proposes that Theophrastus reached the identification of pneuma with God not because of being influenced by the Stoa but through developing Aristotelian

[22] The indented paragraph is an intermittent citation from Armstrong (1947), pp. 97-98. A few words outside the double quotation marks are mine.
[23] Tr. Barns (1985), I, p. 1143.
[24] Wimmer 1862, 162, Fr. 14: πῇ μὲν οὐρανὸν, πῇ δὲ πνεῦμα τὸν θεὸν ὑπονοεῖ.
[25] Tr. Long & Sedley (1987), I, pp. 274-275: "(1) The Stoics made god out to be intelligent, a designing fire which methodically proceeds towards creation of the world, and encompasses all the seminal principles according to which everything comes about according to fate, (2) and a breath pervading the whole world, which takes on different names owing to the alterations of the matter through which it passes." Ed. Long & Sedley (1987), II, pp. 271-272 [46A Aetius I.7.33 (SVF 2. 1027, part)]: (1) οἱ Στωικοὶ νοερὸν θεὸν ἀποφαίνονται, πῦρ τεχνικὸν ὁδῷ βαδίζον ἐπὶ γενέσει κόσμου, ἐμπεριειληφός <τε> πάντας τοὺς σπερματικοὺς λόγους καθ' οὓς ἅπαντα καθ' εἱμαρμένην γίνεται, (2) καὶ πνεῦμα μὲν ἐνδιῆκον δι' ὅλου τοῦ κόσμου, τὰς δὲ προσηγορίας μεταλαμβάνον κατὰ τὰς τῆς ὕλης, δι' ἧς κεχώρηκε, παραλλάξεις.

view on pneuma.[26] On the other hand, Armstrong said that Aristotle's pneuma is almost certainly the origin of the Stoic doctrine of pneuma.[27] Then, whether Theophrastus' view is identified with the Stoic pneuma or not, his work and the Stoa ultimately have the same root, that is Aristotle, in terms of the concept of pneuma.

The Stoic notion of pneuma, which fragmentarily comes down to us, is reported by Alexander of Aphrodisias in his *On Mixture and Increase (De mixtione)* where Alexander criticises the Stoic theory of mixture.

T8: Alexander of Aphrodisias, *De Mixtione*, X [Bruns 223, 6-9][28]

Surely it is absurd also to claim that the whole of substance is unified by a pneuma which pervades it completely, and through which the whole is held together, is stable and is sympathetic with itself?	Πῶς δ᾽οὐκ ἄτοπον καὶ τὸ λέγειν ἡνῶσθαι τὴν σύμπασαν οὐσίαν πνεύματός τινος διὰ πάσης αὐτῆς διήκοντος, ὑφ᾽ οὗ συνέχεταί τε καὶ συμμένει τὸ πᾶν καὶ συμπαθές ἐστιν αὑτῷ;

In the course of the criticism, the Stoic pneuma is described as a thing that permeates the whole of substance and therefore unifies it, stabilises it and mutually affects itself. This is more fundamental than Aristotle's notion of pneuma that is a mere incorporeal mediation between the soul and the body. Such pneuma that the Stoa depicted is closer to the Empedoclean smallest sparks or minute discrete particles as elements of the elements, and eventually leads to the Ǧābirian fifth nature that can be the substance called the fine dust. Furthermore, Alexander presents another testimony of the Stoic pneuma, which shows the similarity between the Stoa and Theophrastus in that pneuma is identified with God.

T9: Alexander of Aphrodisias, *De Mixtione*, XI [Bruns 225, 3-10][29]

For if God is on their view body, – an intelligent and eternal pneuma – and matter is body, first there will again be body going through body; then this pneuma will certainly be either one of the four uncompounded bodies which they say are also elements, or a compound of them (as of course they themselves say;	Εἰ γὰρ θεὸς κατ᾽ αὐτοὺς σῶμα, πνεῦμα ὂν νοερόν τε καὶ ἀΐδιον, καὶ ἡ ὕλη δὲ σῶμα, πρῶτον μὲν ἔσται πάλιν διῆκον σῶμα διὰ σώματος, ἔπειτα τὸ πνεῦμα τοῦτο ἤτοι τι τῶν τεσσάρων τῶν ἁπλῶν ἔσται σωμάτων, ἃ καὶ στοιχεῖά φασιν, ἢ ἐκ τούτων σύγκριμα, (ὥς που καὶ αὐτοὶ λέγουσιν· καὶ γὰρ ἀέρος καὶ πυρὸς ὑφίστανται τὴν

[26] Merlan (1970), p. 111.
[27] Armstrong (1947), p. 123.
[28] Ed. Todd (1976), p. 132 = Groisard (2013), p. 18; tr. Todd (1976), p. 133.
[29] Ed. & tr. Todd (1976), p. 138-139 (cf., ed. & tr. Groisard (2013), p. 21-22). As for τῶν οἰκείων, Todd implicitly complemented ἀποδείξεων as in τῶν οἰκείων <ἀποδείξεων>. See Groisard (2013), p. 90. However, οἰκεῖος in question can be read as "familiar" or "acknowledged as appropriate". Then, μετὰ τῶν οἰκείων can be translated as "besides the familiar things [to them, i.e., the four elements]" instead of Todd's translation "with appropriate support". See Yasuda (2019), p. 50, n. 111.

for they certainly suppose that pneuma has the substance of air and fire), or, if it is something else, the divine body will be a fifth substance for them here presented without proof or support for opponents who claim that the philosopher who established this theory with appropriate support offered an incredible doctrine.	οὐσίαν ἔχειν τὸ πνεῦμα), ἤ, <εἰ> ἄλλο τι εἴη, ἔσται τὸ θεῖον αὐτοῖς σῶμα πέμπτη τις οὐσία χωρὶς ἀποδείξεώς τινος καὶ παραμυθίας λεγομένη τοῖς πρὸς τὸν μετὰ τῶν οἰκείων τιθέμενον τοῦτο ἀντιλέγουσιν ὡς λέγοντα παράδοξα.

For the Stoa, God is body as an intelligent and eternal pneuma while, at the same time, matter is also body. Alexander criticises this firstly because it is absurd for two bodies to mutually infiltrate, and secondly, in that, if pneuma is neither one of nor compound of the four elements that are acknowledged by the Stoa themselves, pneuma should be another – the fifth – element of which the existence they criticised against Aristotle. Now, what our inquiry should pay attention to is that the Stoa did not accept the existence of the fifth element according to Alexander. This view is not only reported by Alexander but also by Cicero, who introduces Zeno's view.

T10: Cicero, *Academica* I, 39.[30]

His position on the natural principles was as follows. First, he didn't accept the addition to the four elements of that fifth nature his predecessors imagined as the source of the senses and the mind: he declared that fire was the nature that brings everything into being, and also the mind and the senses. A second disagreement with them was his belief that it was quite impossible for anything to be acted on by something entirely without body (which is what Xenocrates,[31] along with his predecessors, had claimed the mind to be): neither what acts nor what it acts on could be noncorporeal.	De naturis autem sic sentiebat, primum ut in quattuor initiis rerum illis quintam hanc naturam ex qua superiores sensus et mentem effici rebantur non adhiberet; statuebat enim ignem esse ipsam naturam quae quidque gigneret, etiam mentem atque sensus. Discrepabat etiam ab iisdem quod nullo modo arbitrabatur quidquam effici posse ab ea quae expers esset corporis, cuius generis Xenocrates et superiores etiam animum esse dixerant, nec vero aut quod efficeret aliquid aut quod efficeretur posse esse non corpus.

It is declared that Zeno did not suppose the fifth substance besides the four elements but regarded fire as the natural substance that yields everything. The expression *quinta natura* might remind us of the Ǧābirian term, the fifth nature (*al-ṭabīʿ al-ḫāmisa*). However, *natura* used by Cicero means corporeal substances while it is uncertain whether Ǧābir

[30] Tr. Brittain (2006), p. 103; cf. tr. Rackham (1933), pp. 447 & 449; ed. ibid. pp. 446 & 448.
[31] Here, probably Xenocrates' incorporeal self-moving number as the soul is referred to.

intends something corporeal by *ṭabīʿ* which Ǧābir usually uses as a synonym of quality. Zeno thinks nothing immaterial can act. Here, Zeno's – the Stoa's – materialism appears. Materiality of something prior to the four elements is another point to be mentioned later.

If we take these remarks by Cicero and Alexander for true, pseudo-Galen's view that Athenaeus introduced a fifth in accordance with the Stoics will sound inconsistent. This might suggest that the Stoic pneuma was widely recognised as the fifth element regardless of their will to reject another principle save the four elements, or that pseudo-Galen just emphasised the influence of the Stoa on Athenaeus too much, although Athenaeus reached the notion of pneuma as a fifth by adopting several opinions other than the Stoic. At any rate, whether pneuma was regarded as a fifth element by the Stoa or not, it does not change that the idea that pneuma permeates everything is certainly a Stoic notion. This concept of pneuma is virtually matter or substance and can be analogous to the Ǧābirian fifth nature that is "the simple substance (*al-ǧawhar al-basīṭ*), called matter (*hayūlā*) and it is the fine dust (*habāʾ*) with which the space is filled". The Stoa and Ǧābir are on the same side in that they do not distinguish the matter from the substance,[32] while Aristotle considered them to be different existence.

As pseudo-Galen mentioned, Athenaeus follows the Stoa who is characterised as corporealists.[33] The Stoa even regarded qualities as corporeal and supposed pneuma to permeate everything in the Stoic universe. This Stoic view of pneuma can also be found in another Ǧābirian work, the *Book of Elite* that is considered to be the first part of the *Small Book of Balance* that lacks its beginning.[34]

T11: Ǧābir, *Book of Elite (Kitāb al-ṣafwa)*[35]

Know that the art depends on the opposed and different four basic elements (*arkān*) which are combined by the fifth basic element that is not in accordance with their natural feature. The opposed and different four basic elements are hotness, coldness, moistness and dryness. The fifth that combines these four basic elements is	اعلم أن الصنعة على أربعة أركان متضادة متباينة يجمعها ركن خامس ليس هو على طبعها، فالأربعة الأركان المتضادة المتباينة هي الحرارة والبرودة والنداوة واليبوسة الخامس الجامع لهذه الأركان

[32] According to Arius Didymus (late first century), the Stoic philosopher Posidonius (first century BC) said that substance and matter are same in reality and only different in thought. Posidonius Rhodius, Fragmenta, Fr. 92, Arius Didymus, Epitome Fr. 20 (apud Stobaeus, Eclogae I. II. 5c = I. 133. 18 W; Dox. Gr. 458), tr. Kidd (1999), p. 152: "From Posidonius: Posidonius said that the substance of the whole, and [i.e.?] matter was without quality and without shape, in so far as in no way has it a form detached of its own, nor quality by itself either, but always is in some form and quality. [For?] He said that substance differs from matter, being the same in reality, in thought only." Ed. Edelstein & Kidd (1989), p. 99: Ποσειδωνίου. ἔφησε δὲ ὁ Ποσειδώνιος τὴν τῶν ὅλων οὐσίαν καὶ ὕλην ἄποιον καὶ ἄμορφον εἶναι, καθ' ὅσον οὐδὲν ἀποτεταγμένον ἴδιον ἔχει σχῆμα οὐδὲ ποιότητα καθ' αὑτήν, ἀεὶ δ'ἔν τινι σχήματι καὶ ποιότητι εἶναι. διαφέρειν δὲ τὴν οὐσίαν τῆς ὕλης, τὴν <αὐτὴν> οὖσαν κατὰ τὴν ὑπόστασιν, ἐπινοίᾳ μόνον.

[33] Hahm (1977), chapter 1.

[34] Kraus (1943), p. 93.

[35] Ed. Kraus (1942), p. 153, n. 2.

pneuma/spirit (*rūḥ*).	الأربعة هو الروح

At this point, it is useful to discuss the broad semantic spectrum that the word *rūḥ* has in a wide range of meaning in various fields. In alchemical context of the Corpus, *rūḥ* means a substance that is volatile when placed on the fire. In the sense, *rūḥ* is usually translated as "spirit". Ǧābir at first counted six spirits but later four: mercury, sulphur, arsenic sulphide and sal-ammoniac.[36] This label of spirit was inherited by al-Rāzī,[37] and eventually by late Byzantine alchemy – under the influence of Arabic alchemy – where πνεῦμα indicates the same four substances.[38] In ancient Greek alchemy, Zosimos used an interesting expression including πνεῦμα:[39] "separation of the spirit from the body and reunion of the spirit with the body",[40] which corresponds to the theory that the metal is composed of the spirit and the body.[41] Indeed, it is possible to suggest that spirit (*rūḥ*) in alchemy derived from pneuma (πνεῦμα) used in biology and philosophy, but this *rūḥ* here in the above citation from the *Book of Elite* does not convey such an alchemical meaning of *rūḥ*.

To return to the contents of T11, the pneuma (*rūḥ*) that unites the four elements is the same as the Stoic doctrine albeit there is no reference to the name of the Stoa in this passage.[42] Moreover, it is explicitly said that the four counterparts of the fifth here are not the four bodily substances but the four qualities as Athenaeus, reported by pseudo-Galen, insisted so according to the Stoa. There is no doubt that the fifth thing identified with pneuma in T11 can be called the fifth nature that is described as the same principle in other Ǧābirian works as pneuma here. In addition to the pneuma, the Stoicised concepts such as the substance that can be identified with matter owing to its corporeity and as the materialised four qualities are in fact implicitly found throughout the Corpus. As Kraus pointed out, however, it seems to be impossible to admit a historically direct influence of the Stoa on Ǧābir, and the Stoic notions must have been transmitted via doxographies, commentaries on Aristotle, works of Neoplatonists and Neopythagoreans, of physicians, of astrologers and of alchemists.[43] As Kraus suggested in this way, several channels from the Stoa to Ǧābir must have existed. As for the idea of the Stoic pneuma as the principle of the world in the Corpus, physicians might deserve to be pointed out as mediators between the Stoa and Ǧābir. Athenaeus, mentioned in T6 from ps.-Galen's *Introduction*, is regarded as a founder of the medical schools of pneumatism that was greatly influenced

[36] Stapleton, Azo & Ḥusain (1927), pp. 338-339.
[37] Stapleton, Azo & Ḥusain (1927), p. 346.
[38] The four spirits are presented in the *Chrysopoeia*, i.e., *Anonymous of Zuretti*. See Colinet (2002), p. 8.
[39] As for pneuma as a Stoic concept in Zosimean alchemy, see Rinotas (2017).
[40] *CAAG*, II, p. 107, 2-4: ἀπόσπασμος πνεύματος ἀπὸ σώματος καὶ σύνδεσμος πνεύματος μετὰ σώματος.
[41] Kraus (1942), p. 36.
[42] The Stoa is mentioned in the Corpus only once as *aṣḥāb al-riwāq* in the *Book of Stones II*. See Kraus (1935), p. 187, 12. In addition to *aṣḥāb al-riwāq* or *al-riwāqiyyūn*, the Stoa is also called by Arabic authors apart from Ǧābir as *aṣḥāb (*or *ahl) al-miẓalla* and *aṣḥāb al-usṭuwān*. See Kraus (1942), p. 171, n. 2.
[43] Kraus (1942), pp. 171-172, esp. n. 2.

by the Stoic. Considering that the Ǧābirian fifth element is similar to Athenaeus' pneuma as the fifth, and that both Athenaeus and Ǧābir regarded four qualities (hot, cold, moist and dry) as the elements instead of the four bodily substances (fire, air, water and earth), Athenaeus could have been a possible path from the Stoic pneuma to Ǧābirian fifth nature that is also called pneuma (*rūḥ*). However, Athenaeus is not directly quoted in the Corpus that has been edited or at least surveyed. Instead, another pneumatist, Archigenes is mentioned in the *Small Book of Balance*,[44] where it is said that Pythagoras, Homer, Archigenes and Socrates prioritised the moistness over other natures when it combines the substance.[45] This is a considerable fact since the *Book of Elite* where the pneuma (*rūḥ*) appears as the fifth is considered to be part of the *Small Book of Balance*. It means that both Archigenes and pneuma are found in the same book. Indeed, Ǧābir does not mention that Archigenes was a proponent of the pneuma as a primary element, but ps.-Galen does report that Archigenes considered pneuma to perfuse every natural element along with Athenaeus.

T12 : Ps.-Galen, *Introduction* XI, 6.[46]

Finally, those around Athenaeus and Archigenes have demonstrated that natural elements are constituted from the pneuma that permeates them only, and that all diseases derived from the primary affection of it; that is why they take the name of 'Pneumatists'.	οἱ δὲ περὶ Ἀθήναιον καὶ Ἀρχιγένην μόνῳ τῷ διήκοντι δι' αὐτῶν πνεύματι καὶ τὰ φυσικὰ συνεστάναι τε καὶ διοικεῖσθαι καὶ τὰ νοσήματα πάντα τούτου πρωτοπαθοῦντος γίνεσθαι ἀπεφήναντο, ὅθεν καὶ πνευματικοὶ χρηματίζουσι.

The feature of the pneumatist is that they considered pneuma to be a cosmological notion under the influence of some philosophical doctrines, mainly of the Stoa. Pneuma itself was originally rather a biological term meaning respiration. To distinguish pneuma of pneumatists from the more anatomical one, it may be appropriate to mention how pneuma was understood in the medical tradition.

Erasistratus (f. c. 280 BC), who is on the one hand supposed to be a student of Theophrastus because of the similarity of their intellectual approach but more probably to be a student of Chrysippus of Cnidus,[47] is allegedly the first person who elaborated the medical theory of pneuma. Erasistratus "denied the Aristotelian doctrine of the congenital (innate) heat, and taught, with his colleague, that the animal heat or pneuma was indrawn

[44] Moreover, Ǧābir counted Archigenes as an alchemist and wrote the *Rectifications to Archegines*. See Kraus (1943), p. 66.

[45] Kraus (1942), p. 102. Cf. the *Small Book of Balance*, ed. in Kraus (1935), p. 444:
والذي قاله فوثاغورس وأمورس وأرشيجانيس والطيقة الأوّله – وهو متبوع في الأكثر لأنّ سقراط وطبقته يقول بذلك – هو حمل الرطوبة أوّلًا على الجوهر الأنّ من شأن الرطوبة تلزيق الأشياء وتلدينها وإمكان مكنها عليه لا شكّ فيه.

[46] Ed. Petit (2009), p. 22, 12-17 (= ed. Kuhn XIV, p. 699); tr. Petit (2014), p. 276.

[47] As for teachers of Erasistrarus, see Scarborough (1985).

from the air, and carried from the lungs to the heart; whence the animal soul was delivered to the body and the psychical to the brain".[48] Thus, Erasistratus introduced vital pneuma (πνεῦμα ζωτικόν) and psychic pneuma (πνεῦμα ψυχικόν).[49] Thereafter, pneuma became the core of medical theory. Pneuma was indeed already used in a medical context, apart from a mere 'wind' or 'breath', by Anaximenes (d. c. 526 BC) and Hippocrates (b. c. 460 BC), but they did not advocate a theory with pneuma.[50] Galen seems to have followed the framework that Erasistratus formed because Galen used the terms: vital pneuma and psychic pneuma.[51] However, Galen insists that the heart, both left and right ventricles, is full of blood, which denies Erasistratus' view that the left ventricle is filled with living pneuma and even the Stoic view that psychic pneuma permeates the whole heart. Erasistratus and his followers were refuted in Galen's short treatise *An in arteriis natura sanguis contineatur*, which is also preserved in Arabic.[52] Therefore, this kind of pneuma in medical contexts without the influence of the Stoic philosophy surely entered the Arabic world, but, considering the meaning, it does not seem to concern Ǧābirian fifth nature that is the substance both of celestial spheres and of everything including terrestrial existence composed of the four natures.

As shown, the text that transmits pneumatists' view is indeed one of the possible routes conveying the Stoic pneuma to Ǧābir, but it does not deny the existence of other channels. Hippolytus of Rome, a contemporary of Alexander and Galen, ascribed to Aristotle the notion of the fifth body that is prior to the four elements and compared to pneuma.

T13: Hippolytus, *Philosophumena* 20.[53]

Aristotle is in agreement with Plato except	σύμφωνός ἐστιν πλὴν τοῦ περὶ ψυχῆς

[48] Allbutt (1921), p. 258.

[49] Galen, *De placitis Hippocratis et Platonis*, 2.8.38-39, ed. & tr. De Lacy (1981), pp. 164 & 165): Ἐρασίστρατος γοῦν οὐχ ἁπλῶς, ὥσπερ οὗτοι, τὸ ζητούμενον λαμβάνων ἀλλὰ μετὰ κατασκευῆς λόγων οὐκ ὀλίγων ἐκ μὲν τῆς κεφαλῆς τὸ ψυχικὸν, ἐκ δὲ τῆς καρδίας τὸ ζωτικὸν ὁρμᾶσθαι πνεῦμα. "Thus Erasistratus does not simply assume the matter in question, as they do, but supports with no few arguments his assertion that psychic (pneuma) starts from the head, and vital pneuma from the heart".

[50] Tawara (2015), p. 13.

[51] Galen, *De placitis Hippocratis et Platonis*, 7.3.27-28, ed. & tr. De Lacy (1980), pp. 444-447, cf. tr. Singer (2020), p. 242: τὸ μὲν οὖν κατὰ τὰς ἀρτηρίας πνεῦμα ζωτικόν ἐστί τε καὶ προσαγορεύεται, τὸ δὲ κατὰ τὸν ἐγκέφαλον ψυχικόν, οὐχ ὡς οὐσία ψυχῆς ὑπάρχον, ἀλλ' ὡς ὄργανον πρῶτον αὐτῆς οἰκούσης κατὰ τὸν ἐγκέφαλον, ὁποία τις ἂν ᾖ τὴν οὐσίαν. ὥσπερ δὲ τὸ ζωτικὸν πνεῦμα κατὰ τὰς ἀρτηρίας τε καὶ τὴν καρδίαν γεννᾶται τὴν ὕλην ἔχον τῆς γενέσεως ἔκ τε τῆς εἰσπνοῆς καὶ τῆς τῶν χυμῶν ἀναθυμιάσεως, οὕτω τὸ ψυχικὸν ἐκ τοῦ ζωτικοῦ κατεργασθέντος ἐπὶ πλέον ἔχει τὴν γένεσιν· ἐχρῆν γὰρ δήπου μᾶλλον ἁπάντων αὐτὸ μεταβολῆς ἀκριβοῦς τυχεῖν. "Now the pneuma in the arteries is and is called vital, and that in the brain is called psychic, not in the sense that it is the substance, but rather the first instrument of the soul that resides in the brain, whatever its substance may be. Just as vital pneuma is generated in the arteries and the heart, getting the material for its generation from inhalation and from the vaporization of the humors, so the psychic pneuma is generated by a further refinement of the vital. For it was necessary that this pneuma, more than anything else, be changed in precisely the right way".

[52] Furley & Wilkie (1972) shows that its Arabic version helped understanding its problematic Greek text.

[53] *Refutation of All Heresies* (κατὰ πασῶν αἱρέσεων ἔλεγχος) *I: Philosophumena* (Φιλοσοφούμενα), ed. Dox. Gr. 570, 20-24 = ed. Wendland (2016), p. 24, 14-19; ed. Litwa (2015) p. 64; ibid., tr. p. 65.

with regards to his doctrine of soul. For Plato said that the soul is immortal, whereas Aristotle said that it continues to exist for some time, and afterward it too disappears into the fifth body. He supposes that the fifth body is beyond the other four elements – fire, earth, water, and air. It is more refined, like a fiery breath.

δόγματος· ὁ μὲν γὰρ Πλάτων ἀθάνατον, ὁ δὲ ᾽Αριστοτέλης ἐπιδιαμένειν καὶ μετὰ ταῦτα καὶ ταύτην ἐναφανίζεσθαι τῷ πέμπτῳ σώματι, ὃ ὑποτίθεται εἶναι μετὰ τῶν ἄλλων τεσσάρων, τοῦ τε πυρὸς καὶ τῆς γῆς καὶ τοῦ ὕδατος καὶ τοῦ ἀέρος λεπτότερον, οἷον πνεῦμα.

According to Hippolytus, Aristotle supposes the fifth body to which the soul ultimately reduced. It means the fifth body is the substance of the soul. However, not only for the soul, the fifth body can also be the substance for everything since it is beyond the elemental principles. This passage of Hippolytus is one of the examples in which the fifth body identified with pneuma is attributed to Aristotle.[54] Thus, in addition to pneumatists, the Stoicised Aristotle might be another path through which Ǧābir acknowledged the Stoic pneuma.

In conclusion, our survey showed that Ǧābirian fifth nature or fifth principle can be a concept related to Aristotelian fifth element in terms of its identification with the substance of celestial bodies, and also to Empedoclean diffused particles and the Stoic pneuma in terms of its being a substrate of the four primary elements and permeating everything in the world. Depending on its meaning, the fifth nature deserves a position prior to any other principles and virtually means prime matter. In the first place, Aristotle's aether or Aristotelian fifth element, although it is the substance not for everything as the Ǧābirian fifth nature is so but only for the celestial things, was called primary bodily substance by Aristotle. Moreover, the Stoic pneuma that functions as the common substrate for the elementary qualities can correspond to the Neoplatonic notion of prime matter owing to its being before anything else although the first substance for the Stoa is corporeal while the Neoplatonic prime matter as three-dimensionality is incorporeal.[55] Regarding this point, it is unclear whether Ǧābir regarded the fifth nature as corporeal or not. This cannot be known only from the aforementioned citations from the Corpus. Nonetheless, it is certain that the fifth nature, being the fifth in name due to our epistemological order, is ontologically the first.

Thus, such primary position of the fifth nature was confirmed from the citations of Ǧābir's reference to the fifth nature or fifth principle in the *Small Book of Balance*, the *Book of Genera* and the *Book of Elite*, all of which were already presented by Kraus as witness of the fifth nature. With this overview of the fifth nature, our research will

[54] Besides, πέμπτη οὐσία is combined with Aristotle in Stobaeus, *Physical and Moral Eclogues I*, 535, ed. Meineke (1860), p. 146 where the arguments of Aristotle's *De caelo* are reproduced. See Easterling (1964), p. 79, n. 16.
[55] De Haas (1997), pp. 99-100.

hereafter embark on analysis of the *FN* and the *Copper* that have not been examined in spite of its dedication to the concept of the fifth nature.

2.5.1 Analysis of the *Book of the Fifth Nature*

The first half of the *Fifth Nature* contains the same texts as found in the *Copper*. Considering that the *Copper* many times refers to the *Books of Balances* in which the *FN* is supposed to be included,[1] it is reasonable to think that the *FN* was composed earlier than the *Copper*. Therefore, our research first surveys the *FN* by paraphrasing and analysing it hereunder in advance of the *Copper*. At the place where its text begins to intermittently overlap with that of the *Copper*, the numbering of the text starts such as [FN1] to facilitate the comparison of the *FN* with the *Copper*. The text before [FN1] are numbered from [FN0.1] to [FN0.7]. The same numbering is also found in the Arabic text of the *FN* in Appendix.

At the beginning of the *FN*, after praising God, Ǧābir starts with saying that nothing occurs from the basis (*al-qāʿida*) nor from a thing that is carried on the basis (*al-maḥmūl ʿalay-hā*), which, Ǧābir says, is a view already presented in the *Books of Balances* although it is not specified exactly where it is.

[FN0.1]: You should know that we have already mentioned, in our books on these balances according to all opinions, that each one of all things does not occur from the basis (*qāʿida*) nor from the carried (*maḥmūl*) in it (i.e., the basis).	فينبغي أن تعلم أنا قد ذكرنا في كتبنا في هذه الموازين على جميع الآراء ولكل واحد من جميع الأشياء وأحدث حادثا لا من القاعدة ولا من المحمول عليها

In the *FN*, Ǧābir uses the word ‘basis (*qāʿida*)’ as something fundamental and it works as a general term that means substance, substrate and matter, while ‘the carried (*al-maḥmūl*)’ means something that the basis bears, such as attributes, specific differences and form as the essence of the thing. Hence it follows that Ǧābir means that things are not brought about from their substrate or matter nor from their attributes or form. Provided that, although both the basis and the carried play a fundamental role in the generation and the corruption, none of them causes the occurrence of things in the world, there should be another principle as a cause of coming-to-be in the world. Ǧābir implies the existence of such a further primary cause that is even prior to the basic elements like substrate and form.

[FN0.2] shows what Ǧābir wishes to deal with in this treatise: (1) the inmost (*sirr*) of this basis or of what we call the second carried, and (2) the carrying (*al-ḥaml*) that is analogous to the essence (*ḏāt*) like the human to the body (*ǧism*).

[FN0.2]: What we are looking for in this treatise is (1) the secret of this basis and of the other that we call the second carried	والذي نروم في هذه الرسالة هو سر هذه القاعدة والآخر نسميه المحمول الثاني وهو الحمل الجاري

[1] The *FN* is numbered 94 out of the 136 *Books of Balances* in Kraus (1943), p. 95.

(*al-maḥmūl al-ṯānī*), and (2) the carrying (*al-ḥaml*) that is analogous to the essence (*ḏāt*) like a human is based on a body.	مجرى الذات كالإنسان على الجسم

As for (1) in [FN0.2], the inmost or secret of this basis seems to mean a further substrate of the basis, that is, anything hidden beyond the basis. If so, "what we call the second carried", written in parallel with "this basis", can be explained as a thing that is borne by the further substrate. Basically, the basis carries something else, yet moreover, Ǧābir assumes that the basis itself can also be carried in the further substrate. In this sense, the basis or something parallel to it can be called "the second carried".

The (first) carried	something carried	attribute, form
The second carried	the basis	substrate, matter
	the inmost or secret (*sirr*) of the basis	

As for (2), on the other hand, simply indicated is "the carrying (*al-ḥaml*)" which literally means the opposite of the carried and accordingly denotes matter or any substrate.[2] It is compared to the essence (*ḏāt*) which is an equivalent of οὐσία along with *ǧawhar* in the Corpus.[3] As οὐσία has been used equivocally, *ḏāt* also has a wide range of meaning from the individual as a composite of form and matter to the essence that represents what the thing is.[4] If one sticks to the literal meaning of "the carrying" with which *ḏāt* is put on a parallel, *ḏāt* might rather be understood as the substrate than the essence. However, its example is "the human on the body" where the human seems to mean the essence that

[2] The word *ḥāmil* corresponds to ὑποκείμενον along with *mawḍūʿ*. See Kraus (1942), p. 138.

[3] Kraus (1942), p. 283.

[4] According to Aristotle, οὐσία is called in two senses: the individual – 'this' thing that is not predicable – and the formula (λόγος) – the definition of a thing. Provided that Ǧābir adopted these two meanings of οὐσία, 'the essence' (*ḏāt*) here means the formula – *logos*. Cf. Aristotle, *Metaphsics Δ* 8, 1017b10-26, tr. Kirwan, (1993): "We call a *substance* both simple bodies, as for instance earth and fire and water and everything of that kind, and bodies in general and the things constituted out of them – animals and deities and the portions of these; all these are called substance because they are not said of a subject but the rest are said of them: in another sense, any constituent of such things (the things not said of a subject) which is cause of their being, as for instance the soul in the case of an animal: again, those constituent portions of such things which define and eliminated, as for instance the body with the plane's (as some assert) and the plane with the line's; in general it is thought by some that number is of this kind, on the grounds that when it is eliminated there is nothing, and it defines everything. Again, what it is to be, the formula of which is a definition, is also called each thing's substance. It follows, then, that a substance is so called in two senses: both the ultimate subject, which is not further said of anything else; and whatever, being a this, is also separable (such is each thing's shape and form); ed. Ross (1924): Οὐσία λέγεται τά τε ἁπλᾶ σώματα, οἷον γῆ καὶ πῦρ καὶ ὕδωρ καὶ ὅσα τοιαῦτα, καὶ ὅλως σώματα καὶ τὰ ἐκ τούτων συνεστῶτα ζῷά τε καὶ δαιμόνια καὶ τὰ μόρια τούτων: ἅπαντα δὲ ταῦτα λέγεται οὐσία ὅτι οὐ καθ᾽ ὑποκειμένου λέγεται ἀλλὰ κατὰ τούτων τὰ ἄλλα. ἄλλον δὲ τρόπον ὃ ἂν ᾖ αἴτιον τοῦ εἶναι, ἐνυπάρχον ἐν τοῖς τοιούτοις ὅσα μὴ λέγεται καθ᾽ ὑποκειμένου, οἷον ἡ ψυχὴ τῷ ζῴῳ. ἔτι ὅσα μόρια ἐνυπάρχοντά ἐστιν ἐν τοῖς τοιούτοις ὁρίζοντά τε καὶ τόδε τι σημαίνοντα, ὧν ἀναιρουμένων ἀναιρεῖται τὸ ὅλον, οἷον ἐπιπέδου σῶμα, ὥς φασί τινες, καὶ ἐπίπεδον γραμμῆς: καὶ ὅλως ὁ ἀριθμὸς δοκεῖ εἶναί τισι τοιοῦτος (ἀναιρουμένου τε γὰρ οὐδὲν εἶναι καὶ ὁρίζειν πάντα): ἔτι τὸ τί ἦν εἶναι, οὗ ὁ λόγος ὁρισμός, καὶ τοῦτο οὐσία λέγεται ἑκάστου. Συμβαίνει δὴ κατὰ δύο τρόπους τὴν οὐσίαν λέγεσθαι, τό θ᾽ ὑποκείμενον ἔσχατον, ὃ μηκέτι κατ᾽ ἄλλου λέγεται, καὶ ὃ ἂν τόδε τι ὂν καὶ χωριστὸν ᾖ: τοιοῦτον δὲ ἑκάστου ἡ μορφὴ καὶ τὸ εἶδος.

distinguishes the existence of the human from other material bodies. In this way, the meaning of *ḏāt* is ambiguous. To solve this vagueness of (2), a helpful expression is found in [FN9.2] where the second type of the fifth nature is said to be the carrying (*al-ḥaml*) that is specific difference like laughing for the human being and neighing for the horse. There, the carrying is not described as something that bears specific difference but specific difference itself. It means that the carrying is not a substrate but a synonym of the essence that defines things. Thus, *ḏāt* in (2) is more likely to be the essence rather than the substrate, and it can be concluded that two kinds of object in the *FN* were shown: the fundamental substrate and the essence.

Following the aim of this treatise, things called the fifth appear as something added to the four natures. This implies that the fifth thing is another principle of coming-to-be other than the four natures that constitute and define everything in the world.

[FN0.3]: It shall be known that the things added to natures are called the fifth [things], the meaning of which is that the occurrence of a thing is not [from] natures, four natures and others. Consequently, it (i.e., nature) is five [in number], which have reality (*ḥaqīqa*), and the sixth [nature] is a thing which occurs with no reality. Know that.

وليعلم أن الأشياء الزائدة على الطبائع تسمى الخوامس ومعنى ذلك أنه حادث شيء هو غير الطبائع والطبائع أربعة والآخر فقد صار خمسة لها حقيقة والسادس محادث لا حقيقة له فاعلم

Ǧābir says that there are five things that have reality and the sixth is, if any, not real existence. This could mean that the fifth is the utmost element of the real world. Since Ǧābir wanted to examine the fifth thing in this treatise, he named it the *Book of the Fifth Nature* (= the *FN*). Ǧābir says that we need to deal with the fifth nature to know what concerns the species (*aǧnās*) and what is above them within the world of the substance.

[FN0.4]: We called this book of ours the *Book of the Fifth Nature*. We need to refer to it [i.e., the fifth nature] according to the necessity of knowing what is about species and what is higher than them up to the world of substance of the composites, whose principles (*uṣūl*) are in fact not based on alternation. Now, consider it [i.e., the fifth nature] with the absolute intellect itself, setting up the way [to comprehend it], if the sublime and only God wills.

وقد سمينا كتابنا هذا كتاب الطبيعة الخامسة ونحتاج أن نقول في ذلك بحسب الواجب ليعلم ما في الأجناس وما هو أعلى منها إلى عالم الجوهر من المركبات أصولها على تحقيق لا على تحريف فانظر الآن في ذلك بعين العقل المطلق نصب الطريق إن شاء الله تعالى وحده.

The species (*aǧnās*) are not clear on their own, but they will become obvious later in this book, where ‘the three species’, i.e., animals, plants and minerals are mentioned. These species represent the world in which the generation and the corruption constantly

occur, whereas what is above the species means the world of which principles do not have change. The latter seems to be the celestial world while the former, as its counterpart, is the terrestrial one. In other words, the research into the fifth nature is necessary in order to know all of the world from the sublunar to the heavenly region. Ǧābir asks readers to ponder the fifth nature with the best intellect, and then, he starts to explain several kinds of nature as in the text below.

[FN0.5]: Know that the substance (*ǧawhar*) is in all things which are analogous to the simple things such as spheres, natures and all stars, which is the fifth nature. The body (*ǧism*) that occurs from the substance is in all composites that belong to the world of fire, air, water and earth, which is the third nature. The substance is [also] in every hotness, coldness, dryness and moistness, [in this case,] which is the second nature. The one who speaks for the second nature believed that the soul is the substance. Another one who speaks for the third [nature] believed that there is the appetite (*šahwa*) with it (i.e., the third nature).

اعلم أن الجوهر في جميع الأشياء التي تجرى مجرى البسائط كالأفلاك والطبائع والنجوم كلها هو الطبيعة الجامسة والجسم الحادث من الجوهر في جميع المركبات من عالم النار والهواء والماء الأرض هو الطبيعة الثالثة والجوهر في جميع الحرارة والبرودة واليبوسة والرطوبة وهو الطبيعة الثانية فمن قال الطبيعة الثانية اعتقد النفس الجوهر ومن قال الثالثة اعتقد معها الشهوة

The fifth nature is the substance that is under every simple thing such as celestial spheres, natures and stars. The third nature is the body, derived from the substance, and underlies every composite in the world of the four elements: fire, air, water and earth. The second nature is again the substance, but it is the one that underlies the four qualities or natures: hot, cold, dry and moist. The first and the fourth natures are not mentioned. The summary of these explanations is as follows:

Fifth nature	—	Substance of simple things like celestial spheres, natures and stars
Third nature	—	Body of the composite of the four elements
Second nature	—	Substance of the four qualities / of the four natures

Albeit every nature is similarly underlying something else, each nature has its own layer in the world. The third nature is clearly different from the other two natures in that it is said to be the body (*ǧism*), not the substance (*ǧawhar*). Indeed, the body functions in some sense like the substance as Ǧābir himself explains later, but it cannot be identified with the substance. The body has three dimensions while the substance does not have such a dimension. When the substance acquires the length, the width and the depth, it becomes the body. Therefore, the third nature is a three-dimensional substrate of everything that is constituted of four elements. On the other hand, the difference between

the fifth and the second natures is confusing at a glance not only because they are both said to be the substance, but also because of the ambiguity of the word 'natures (*ṭabāʾiʿ*)' which is put along with celestial bodies in the definition of the fifth nature (the underlined one in the above chart). Since the four qualities are often called 'natures' in the Corpus, the explanation of the second nature can be rewritten as the substance of the four natures. Accordingly, both the fifth and the second natures can be equally the substance of natures. However, they must differ because Ǧābir gives them different names. One of the hypotheses to keep their difference is that the natures as examples of simple things in the definition of the fifth nature are celestial components of heavenly bodies, while the four natures concerning the second nature are terrestrial ingredients of the four elements that compose material things. It means that the second nature is the substance for terrestrial creatures, whereas the fifth nature is the substance for celestial existence. If this distinction is valid, the fifth nature as a substrate of celestial bodies can correspond to Aristotle's aether that began to be called the fifth element by the later doxographers.[5] Still, the 'natures' written with celestial bodies remain unclear whether they designate the four qualities or have a wider meaning than the four qualities/natures.

After describing the second nature, Ǧābir adds that the one who speaks for the second nature believes that the soul (*nafs*) is the substance (*ǧawhar*), and the one who speaks for the third nature believes that the appetite (*šahwa*) is with it (i.e., the third nature).[6] Some clarification is needed for the soul and the appetite. All natures explained above, i.e., the fifth, the third and the second, are the substances of something that exists. However, the substance itself does not bring anything about to the world. Any agent is required to generate something. It was the soul that Ǧābir formulated in the coming-to-be process. In the other works than the *FN*, Ǧābir describes the function of the soul as follows: the soul adheres to the substance and directs the appetite – a kind of impetus – to incorporeal natures, and then, the substance acquires natures. With this process, natures gain materiality.[7] If this idea is applied to the *FN* as well, the passages concerning the

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[5] Aristotle himself did not explicitly call aether the fifth element. The appellation of the fifth element to Aristotle's aether is a production of his commentators. See Hahm (1982), pp. 65-66; Chapter 2.5, n. 7.

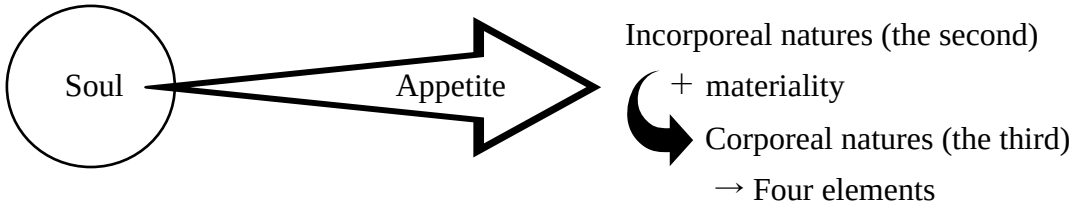
[6] This pronoun can be both the third nature and the soul. See n. 8 below.

[7] As for the function of the soul and the appetite toward natures, another Ǧābirian work, the *Book of the Field of the Intellect* gives us its outline, cf. tr. Kraus (1942), p. 155, n. 19: "Thus, it became clear that the soul clings to the substance whether for the appetite as we mentioned or for other [reasons]"; ed. Kraus (1935), p. 211, 2-3: فإذا وضح أن النفس تتشبّث بالجوهر إما لشهوة كما ذكرنا أو غير ذلك ;

cf. tr. Kraus (1942), p. 159: "If it (i.e., the substance) proceeds through this void (not *ḫilāf* but *ḫalāʾ*) according to the appetite (*šawq*) that the soul directed to one of the elements, it acquires one of the natures first: if the soul is desirous of the hotness, it will become the Hotness [possessed by the substance, if the soul is desirous of] the coldness, it will become the Coldness, if the moistness, the Moistness, or if the dryness, the Dryness. The principle and the origin of the balances derive from the appetite (*tawaqān*) that the soul [directs] to the elements. Every existence with the soul must have its cause in it (i.e., the balances); ed. Kraus (1935), p. 211, 14- p. 212, 3:

فإذا صار في هذا الخلاف بحسب شوق النفس إلى أحد العناصر يكون أوّل ما يأخذ من الطبائع أمّا إن تكون مشتافة إلى الحرارة فالحرارة، البرودة فالبرودة، أو الرطوبة فالرطوبة، أو اليبوسة فاليبوسة. فنُسِب أصل الموازين وكونها لِتَوْقان النفس إلى العناصر،

soul and the appetite in [FN0.5] can be interpreted like the following: as for the second nature, namely, the substance of the four qualities, it is believed to be the soul itself or perhaps to be with the soul that is an agent of sending the appetite. Given that the appetite that was sent to the four qualities by the soul makes them corporeal and transforms them into the four elements, it is understandable to say that the appetite exists with the third nature, i.e., the material body as a substrate of the composite made up of the four elements.[8]



ووجب أنّ كل موجود ذي نفس علّته فيها.

Some remarks should be required to interpret this passage. Firstly, Kraus confidently suggested the replacement of *ḫilāf* with *ḫalāʾ* in Kraus (1942), p. 159, n. 5 on the ground that *ḫālāʾ* appears before and after the passage in question, i.e., Kraus (1935), p. 211, 12 & p. 212, 11, where it provides a comprehensible meaning in the contexts while *ḫilāf* brings us a kind of confusion. Secondly, elements (*ʿanāṣir*) and natures (*ṭabāʾiʿ*) can be identified in terms of the indicated contents. See Kraus (1942), p. 165, n. 6. Thirdly, it is also Kraus' suggestion that the last pronoun (*-hā*) designates the balances. See Kraus (1942), p. 159, n. 6. It is ideal for Ǧābirian theory of balance if the cause of everything with the soul is the balance. Still, there is another possibility that the pronoun denotes the soul and accordingly the cause of every existence is not the balances but the soul. In any case, the appetite or the soul that transmits the appetite is an agent of the generation in the world. Such a cause of the coming-to-be is described in another work as well. In the *Compendia* (See T11 in Chapter 1.3), Ǧābir calls it the first motion (*al-ḥarakat al-ūlā*) which is mentioned as 'this motion' in the following passage from the *Compendia*: "Since it became clear, I say that the origin of the coming-to-be (*kawn*) of all in this world is this motion. For, it is a cause of coming-to-be of the sphere of the fire and the air in particular. The land which is a centre is a cause of coming-to-be of the water. According to the mixture of these [four] and the affinity among them, there exist three species, that is, animals, plants and stones. That is, these are the mixture of the four and their composite. These are material (*ṭīna*), matter (*mādda*) and hyle (*hayūlā*) of the world where the coming-to-be and the perishing are permanent. It (i.e., the species) is based on that (i.e., the mixture and the composite of those four) [extending] from inside of the lunar sphere to the centre of the land. What is beyond it does not come-to-be from natures, rather it is what creates natures and gives them its influence (*aṯar*)"; [ج, 8b-9a; ب 5321, 75b]:

وإذ قد بان ذلك فأقول : وإنّ أصل كون ما في هذا العالم كله هو هذه الحركة. وذلك أنها سبب كون فلك النار والهواء خاصّة، والأرض التي هي المركز سبب كون الماء، وبامتزاج هذه وتصادقها كانت الأجناس الثلاثة أعني الحيوان والنبات والحجر. وذلك أن هذه مزاج تلك الأربعة وتركيبها وهذه هي طينة العالم ومادته [ج-9أ] وهيولاه الدائم الكون والفساد، وهو على ذلك من لدن باطن فلك القمر إلى منتهى مركز الأرض. وأما ما عدا ذلك فإنه ليس كائنا من الطبائع لكنّ ذلك هو الشيء المكوّن للطبائع والمؤثّر فيها أثره

This text says that the three species in the sublunar world are described as composites of the four elements (fire, air, earth and water), and something beyond them is not regarded as being from 'natures'. This 'nature' seems to be a different notion from the nature written in the *FN*, or rather, to be similar to the existence (*kawn*) in the *FN*.

[8] If the soul always clings to the substance, it is also possible to regard the pronoun in "*iʿtaqada maʿa-hā al-šahwa*" as the soul, not the third nature, and to say that the appetite is believed to be with the soul concerning the third nature.

Ǧābir does not expand the topic of the soul and the appetite. Instead, he begins to focus on the fifth nature by saying that everything in the world should be examined from the point of view of the fifth nature. This view is followed by his brief explanation of the fifth nature.

ويجب عليك أن تبحث عن كل شيء في العالم بالطبيعة الخامسة وهو الذى يسمى القاعدة كالجوهر ومعناه كالموضوع لأن غير ذلك إنما هو محمول حتى تأتى إلى عالمنا نحن أعني الحيوان والنبات والحجر فإنك تجد قواعدنا وطبائعنا الخوامس هو شيء غير الجوهر وغير الجسم وإن كان منها لكن ينبغي أن يعتقد أن الجوهر هو البسيط الذي لا حدّ له يطول غيره

[FN0.6]: You must examine everything in the world in terms of the fifth nature, which is called a basis like the substance and its meaning is to be like a substrate (*maʾḍūʿ*) since other things are nothing but carried in order to arrive at our world – 'our' means the animal, the plant and the stone, and you find our bases and our fifth natures, which are not the substance nor the body – although it (i.e., the substance or the body) derives from it (i.e., basis or nature) –, but it must be believed that the substance is a simple thing with no end without which it (i.e., a simple thing) [continuously] extends.

The fifth nature is called the basis (*qāʿida*) like the substance (*ǧawhar*), and its meaning is the same as the substrate (*mawḍūʿ*) since everything other than it has to be carried to come into our world. 'Our' is reworded with the animal, the plant and the stone, which are later expressed by Ǧābir as three species (*ṯalāṯa aǧnās*). Thus, the fifth natures are our bases.[9] However, the fifth nature is not exactly the substance (*ǧawhar*) nor the body (*ǧism*). Indeed, both the substance and the body originate from the fifth nature, but they are not identified with the fifth nature. Ǧābir starts explaining those words that represent substrates in various levels.

وقد استوفينا حدوده في غير موضع ونحن ندلّك عليه بجوهر بسيط لا مقدار فيه يعني الكمية والجسم الذي له طول وعرض وعمق والفضل بين أن ليس ذلك فيها هو أن الجسم وإن كان طويلا عريضا عميقا فإنه لا كون له ونحن فالذي تكوّننا

[FN0.7]: We treated its definitions exhaustively in a different place. [However,] we will indicate it to you by [mentioning] a simple substance that has no magnitude (*miqdār*), namely, quantity (*kammiyya*), and the body that has length, width and depth. The superiority [of the substance to the body] proved that it (i.e., the substance) is not [bound] in it (i.e.,

[9] The reason why the fifth nature here is expressed in the plural is probably that the variety of species is taken into account. However, the fifth nature is usually used in the singular and is described as single existence even if it is a basis of various kinds of things. Another example of the fifth nature in the plural in the *FN* is only found at the beginning of it, which is "the fifth [natures] additional to [other four] natures" in [FN0.3].

quantity) since a body – although it has length, width and depth – has no existence (*kawn*). As for us, a thing from which we were generated – I mean, three species – is coming from the body that came from the substance, but it has existence.

منه أعني الأجناس [34ب] الثلثة فإنما هو من جسم قد كان من جوهر لكن له كون

The substance (*ǧawhar*) is simple or unfolded (*basīṭ*) thing that has no edge without which it can extend endlessly. Saying that its definition is already presented in other places, Ǧābir rephrases it here: the unfolded substance does not have measure (*miqdār*) or quantity (*kammiyya*). On the other hand, the body (*ǧism*) has the length, the width and the depth. The superior substrate lacks something that the inferior has. The body has three dimensions but does not have the existence. The next level of substrate is a thing from which we – three species – are formed. It derives from the body that came from the substance and has the existence (*kawn*) that the substance and the body do not have.

[FN1]: For example, the substance was a substrate for the body. Then, length, width and depth were carried in the substance, and it became the body. Then, existence was carried in it, and it became the material (*ṭīna*) of these three species – praise the Maker, Creator and Former –, and then, everything that you saw and discovered was produced from these species. You must know that everything is told in philosophy. [However,] since it is possible that what were presented [in philosophy] in a [seemingly] correct order are [actually] either out of order or in a contradictory manner, beware of receiving something from that (i.e., the discourse in philosophy).

ومثاله أن الجوهر كان موضوعا للجسم ثم حمل على الجوهر الطول والعرض والعمق فصار جسما ثم حمل عليه كون فصار طينة هذه الثلثة الأجناس سبحان الخالق البارئ المصوّر ثم أنه عمل من هذه الأجناس جميع ما رأيت وكشفت وينبغي أن تعلم أن كل شيء يخبر به في الفلسفة فإنه ممكن أن يكون ما كانت المقدمات منظومة نظما صحيحا فإما وهي فاسدة النظم أو يحمل وجوه النقيض فإياك وقبول شيء من ذلك

From here, the text of the *FN* begins to overlap with that of the *Copper*. Ǧābir demonstrates the transition from the superior to the inferior substrate: the substance is a substrate of the body. When the substance carries the length, the width and the depth, it becomes the body. Then, when the body carries the existence, it becomes the material (*ṭīna*) of the three species, i.e., animals, plants and stones. Everything that we see is made from these species by the Creator. The word ‘material’ (*ṭīna*) is introduced here for the first time as the substrate of three species. Now, three kinds of substrate are clearly shown as follows:[10]

[10] These three layers of the basis is not a fixed foundation in the Corpus but there is another classification

The substance (*ǧawhar*): simple (*basīṭ*) and extended without measure (*miqdār*)
The body (*ǧism*): with measure (i.e., length, width and depth); without existence (*kawn*)
The material (*ṭīna*) [of the three species]: with existence

According to [FN1], philosophers explained everything but there is still room to sort out what they have said since it was not presented properly and might include contradiction. Therefore, Ǧābir recommends, we should think enough when we learn something from philosophers' words.

[FN2]: Since we already clarified that the | وإذ قد بيّنا أن الجوهر هي القاعدة الأولى فغير

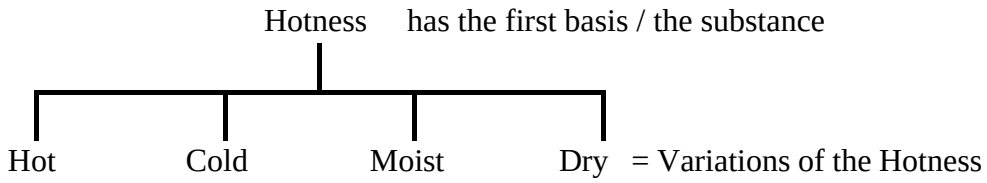
of the substrate. For instance, the *Compendia* presents four kinds of matter as the substrates of the world: "I say that matter (*mādda*), hyle (*hayūlā*) and all indicated as substrate (*mawḍūʿ*) are divided into four parts. The first of them is the noble first matter which is eternally in actuality. That (i.e., being eternally in actuality) means that form is with it (i.e., the first matter) so that the first matter is said to be a mere form. This is matter of celestial bodies (*al-aǧrām al-ʿuluwiyya*). Grasp this from the latter chapters of this book because it is the place where this is to be stated. For, the explanation about this matter is beyond this chapter where we are. The second matter is four natures (*ṭabāʾiʿ*), i.e., the elements (*ʿanāṣir*) of this world, that is, fire, air, water, and earth. This is the principle of the things that come to be in this world as we said first, which mean the animal, the plant and the stone. For, if everything that is a principle of something perished, that existence (*mawǧūd*) would perish with its disappearance. It is its matter (*mādda*), its material (*ṭīna*), its hyle (*hayūlā*), and not others. Since individuals (*aǧzāʾ*) in the animal, the plant and the stone come to be from fire, air, water, and earth, and these three species perish and come to nothing when these four elements perish, these elements are matter of the species, material, hyle, substrate and other similar things with such names. The third matter is the unlimited body (*al-ǧism al-muṭlaq*). This exists only in words and does not exist by itself. Many philosophers agreed it and said "we found a body when we analysed the existences and related one of them to the other. Besides, qualities do not exist by themselves. They do not come into being if they are not in the substrate existing by itself, which does not need, for its existing by itself, the other by which it exists. What does not exist by itself exists by it (i.e., the substrate existing by itself)." The fourth matter is the matter of the rest of what is composed by one another. It exists for all the rest. For instance, the matter of bread is wheat, the matter of theriaca is simple medicaments, the matter of juice are grapes, and the matter of the human body is the elements (*arkān*) such as the bone, the nerve, the blood vessel, the muscle and others"; [ج, 9a; ب 5321, 75b-76a]:

فأقول إن المادة والهيولى وكل ما يومئ إليه أنه موضوع تنقسم إلى أربعة أقسام. أولها المادة [ب-76أ] الأولى الشريفة التي هي بالفعل أبدا. وذلك أن الصورة معها وحتى قد قيل إنها الصورة فقط، وهذه هي مادة اللأجرام العلوية. وخذ هذا من الأبواب الأخيرة من هذا الكتاب فإنه الموضع الذي يجب أن يذكر فيها، لأن الكلام في هذه المادة يتجاوز مقدار هذا الباب الذي نحن فيه. وأما المادة الثانية فهي الطبائع الأربعة وعناصر هذا العالم وهي النار والهواء والماء والأرض. وهذه أصول الكائنات فيه كما قلنا أولا أعني الحيوان والنبات والحجر. وذلك أن كل ما هو أصل لشيء إذا ارتفع ارتفع به ذلك الموجود فهو مادته وطينته وهيولاه لا غير ذلك. ولمّا كانت أجزاء الحيوان والنبات والحجر كائنة من النار والهواء والماء والأرض وكانت هذه الأجناس الثلاثة ترتفع وتعدم متى ارتفعت هذه العناصر الأربعة، كانت هذه العناصر مادة الأجناس وطينة وهيولى وموضوعًا وسائر ما أشبه ذلك من أسمائه. وأما المادة الثالثة فهي الجسم المطلق، وهذا إنّما يوجد قولا ولا وجود له بالذات. وقد أجمع كثير من الفلاسفة على ذلك وقالوا إنا إنما نجد الجسم إذا حلّلنا الموجودات وأضفنا بعضها إلى بعض. وأيضا فلأن الكيفيات لا تقوم بأنفسها ولا يكون كونها إلا في موضوع قائم بنفسه غير محتاج إلى قيامه بنفسه إلى غيره ليقوم به، ما لا قيام له بنفسه فيكون بذلك موجودا. وأما المادة الرابعة فهي مواد سائر المركبات بعضها من بعض. وذلك موجود لسائر الأشياء، فإن مادة الخبز الحنطة ومادة الدرياق الأدوية المفردة ومادة العصير العنب ومادة جسم الإنسان أركانه كالعظام والعصب والعروق والعضل وسائر الباقية.

substance is the first basis, there is no doubt that only the hotness has it (i.e., the substance) and there is its (i.e., of the hotness) four conditions, and that the body is a basis of all celestial spheres and even of the hotness, the coldness, the dryness and the moistness which are in 'our' world. They are [eventually] water, air, fire, earth and no other. Know that. The body called what possesses the existence (*kawn*) is a basis of what is after that.

شك أنه للحرارة فقط وأحوالها الأربعة وإن الجسم قاعدة جميع الأفلاك إلى الحرارة والبرودة واليبوسة والرطوبة التي في عالمنا نحن وهي الماء والهواء والنار والأرض لا غير فاعلم وإن الجسم المسمى ذا الكون قاعدة ما بعد ذلك

Since it was clarified that the substance is the first basis, Ǧābir says, there is no doubt that the substance is only for the hotness and there are four conditions (*aḥwāl*) transformed from the hotness, and that the body is a basis of all celestial spheres and even a basis of the hotness, the coldness, the dryness and the moistness which are in 'our' world. They are water, air, fire and earth in due course.[11] The body that possesses the existence (*kawn*) is a basis of what is ontologically after them. Ǧābir does not mention the word 'material (*ṭīna*)' in [FN2]. However, this word is implied by the phrase 'the body with the existence (*kawn*)'. Accordingly, the third basis described here is regarded as the material. What is notable in this part is that Ǧābir says that only the hotness has the first basis. There seems to be the priority of the hotness over the rest of the four qualities. On the other hand, the variations (*aḥwāl*) of the hotness are not said to be three but four, and the hotness is still put in the same line as other three qualities. Considering this point, the hotness given the first status here can be a different concept prior to the hotness as one of the four qualities.[12]



[FN3]: Philosophers argued with one another on it so much with respect to what we say: the substance is a principle (*aṣl*) of hotness, coldness, dryness and moistness; the body is a principle of the

وتنازع الفلاسفة في ذلك عظيم جدا من جهة ما نقول إن الجوهر أصل الحرارة والبرودة واليبوسة والرطوبة والجسم أصل الفلك المنير فقط والطينة

[11] There is ambiguity in the relation among the four conditions of the hotness, the four qualities and the four elements owing to the structure of the Arabic text. The interpretation of [FN2] that I presented here is grammatically awkward but somehow arranged so that it can be consistent with another explanation of the bases such as found in [FN3].

[12] In ancient Greek cosmology, there seems to have been an idea that θερμόν (heat) as the vital heat of living beings is also a cosmic principle. It is presented by one of the Hippocratics who wrote περὶ σαρκῶν (*De carnibus*), where he tried to make this θερμόν a cosmic principle and to invest it with attributes of divinity. See Solmsen (1957), p. 119.

luminous sphere only; the material (*ṭīna*) is a principle of everything beneath it (i.e., the sphere) because all of them are visible. Know that.

أصل ما دونه لأن جميعه مرئي فاعلم ذلك

Ǧābir says that philosophers have not been unanimous about these roles of each basis and then rephrases his view. The word 'origin (*aṣl*)' appeared here for the first time. Judging from its usage, it seems to convey the same meaning of the basis (*qāʿida*). The substance is, Ǧābir says, a basis of the four qualities, which might sound inconsistent with the previous description in [FN2] where the substance is said to be only for the hotness. However, since the four qualities are varieties of the primary hotness that has the substance as its basis, it is possible to say that the substance is also the basis of all four qualities. The body is limited to the basis of the celestial sphere in [FN3]. This restriction is partially common to [FN2] but does not precisely correspond to [FN2] where the body was not only for celestial spheres but also for the four qualities which are probably different from the four conditions of the primary heat, and eventually turn to the four elements. The material is said, as 'the body with the existence (*kawn*)' in [FN2], to be the basis of everything under the celestial spheres, namely, of the three species in the terrestrial area: animals, plants and minerals. In this way, although the explanation of the body includes a small difference, [FN2] and [FN3] are basically consistent. A remarkable description in [FN3] is that everything in the sublunar world is visible. Whether the basis is visible or not becomes an issue hereafter.

[FN4]: As for the matter (*hūlāy/hawlāy*), we say (1) that its entirety is not seen but one sees what it (i.e., matter) has, which is similar or almost equal to the material such as sources (*ʿuyūn*) of fire, air, water and earth, (2) that what we see is also not fire, air, water and earth themselves but we only see what dissolves the incompatible (*munāfin*) between perishing and coming-to-be, which connects each one of these elements (*ʿanāṣir*), and that (3) the material is connected to the portion (*ḥiṣṣa*) of it (i.e., elements) by the fire when it (i.e., material) dissolves the incompatible. We have known that (i.e., the phenomena described above) because we know of the first fire. What emerged by the increase and similar things to it is in the same manner. The explanation about four elements is like this although we do not attain [the perception of] them. If we reached them, for that we would conduct what we want with them. Know that.

فأما هولاى فنقول إن جميع ذلك غير مرئي لكن إنما يرى ما هو لها مجانس للطينة ومتقارب لها كعيون النار والهواء والماء والأرض وإن الذي نراه أيضا إنما هو غير النار والهواء والماء والأرض في ذواتها بل إنما نرى ما انحلّ منافي الفساد والكون المتصل بكل واحدة من هذه العناصر وإن الطينة إذا انحلّت منافيا تصلت بحصّتها بالنار رأينا ذلك لأنا نرى النار الأولى وكذلك ما خرج بالزيادة وأمثال ذلك فكذلك القول في العناصر الأربعة وإن هذه الأربعة لا نصل إليها ولو وصلنا إليها عملنا لها ما نريد فاعلم ذلك

[FN4] can be paraphrased as follows: the matter (*hūlāy/hawlāy*) is entirely unseen, and we just see what the matter has. The visible thing is compared to the material (*ṭīna*) like the sources (*ʿuyūn*) of fire, air, water and earth. It does not mean that fire, air, water and earth themselves are visible. we only see what dissolves (*inḥalla*) the incompatibility (*munāfin*) between the perishing and the coming-to-be, which is connected to each one of these elements (*ʿanāṣir*). The material (*ṭīna*) is connected to the portion (*ḥiṣṣa*) of the elements by the fire when the material dissolves the incompatibility, which probably means that the material sustains the change which is caused by the perishing and the coming-to-be.

At the beginning of [FN4], Ǧābir introduces a new term 'matter' or 'hyle' that is no doubt a transliteration of a Greek word ὕλη.[13] He does not give us any explanation about the matter (*hūlāy/hawlāy*) except that it is unseen. This character implies that Ǧābir might have given the matter (*hūlāy/hawlāy*) the same position as the substance (*ǧawhar*) that was defined as the first basis that is simple and unfolded without end.[14] The matter itself is invisible, yet what the matter has can be seen. Ǧābir compares this visible thing

[13] هولای (*hūlāy/hawlāy*) is not a common transliteration of ὕλη, which is usually transcribed with هیولی (*hayūlā*). The usage of the terms meaning 'matter' differs in each Ǧābirian work. The word *mādda*, which is not used in the *FN*, is a representative equivalent of ὕλη. For example, in the *Compendia*, Ǧābir mainly uses *mādda* to mean ὕλη, and hyle (*hayūlā*) is just counted as one of the various names of 'matter' (*mādda*) along with *ṭīna* and *ǧism*: "I say that matter is mentioned in various ways and called by many names such as matter (*mādda*), substrate (*mawḍūʿ*), material (*ṭīna*), hyle (*hayūlā*), base (*uss*), foundation (*asās*), land (*arḍ*), structure (*haykal*), body (*ǧism*) and what is similar to them in terms of how to be called and said. I say that the unlimited matter (*al-mādda al-muṭlaq*), which is the first substance and what is said to exist in potentiality based on the condition we explained a little before this chapter, is not what has nature (*ṭabʿ*) and never has the faculty to affect a thing. As well, if we indicate something like an expression about the body, since here is the essence existing, we indicate it as we indicate the substance. That is, the body is also the substance, and the difference between the body and the matter is that the body is a composite substance while the matter is a simple, unlimited and isolated substance in which no combination is and [the matter] is not what has nature, i.e., a body, but is a substrate for receiving influence carried on it and for receiving opposites since it is the definition of the opposites that they are said to be on the same substrate"; [ج, 9a-b; ب 5321, 76a-b]:

فأقول [ج-9ب] إن المادة قد تقال على وجوه وتسمى بأسماء كثيرة وهي المادة والموضوع والطينة والهيولى والأسّ والأساس والأرض والهيكل والجسم وما هو مشابه لذلك في النعت والقول. وأقول إن المادة المطلقة التي هي الجوهر الأول [ب-76ب] والذي يقال فيه إنه موجود بالقوة على ما قد شرحنا من حاله قبل هذا الفصل قليلا ليس بذي طبع ولا له قوة على فعل شيء البتة. وكذلك إذا أومأنا إلى نحو العبارة عن الجسم، على أن هناك عينا قائمة، فإنما نومئ إليه كإيمائنا إلى الجوهر. والجسم أيضا جوهر، والفرق بينه وبين المادة أن الجسم جوهر مركّب والمادة جوهر بسيط مطلق مفرد لا تركيب فيه، ولا بذي طبع أعني الجسم بل هو موضوع لقبول الآثار المحمولة عليه ولقبول الأضداد إذ كان حد الأضداد أنها التي تقال على موضوع واحد.

[14] The matter in question does not seem to be the Aristotelian matter as a counterpart of the form, but it is rather like the prime matter that is more fundamental than the normal matter. Kraus pointed out that the identification of the substance (οὐσία) with prime matter (πρώτη ὕλη) found in the Corpus is based on the Stoic thought. See Kraus (1942), p. 170. As for the importance of the Stoic notions to understand Arabic alchemical and philosophical texts, I was greatly inspired by personal correspondences with Thijs Delva, who is investigating the fifth nature in relation with another fundamental concept 'first substance' in the *Book of Balīnūs on Making Nature and Secrets of Creation*, so-called pseudo-Apollonius' *Sirr al-khalīqa*, which is preserved with the *FN* in the same manuscript ([ب 5099]). See Chapter 2.1.

to the material (*ṭīna*) and describes it as sources (*ʿuyūn*) of the four elements. Still, the four elements themselves are unseen. What is visible is something that solves the incompatibility of the coming-to-be and the perishing, which can be interpreted as something that persists throughout the generation and the corruption. The material persists despite the change of things and connects with the elements by the fire. Ǧābir does not make clear what this fire is and how it works, but he says that we know of the first fire. Probably he believed in the existence of such fire that helps the generation and the corruption and regarded it as a principle that does not require a specific explanation. Things that are brought about after this kind of primary generation also follow the same process for coming-to-be. Here, Ǧābir stops his words about the four elements (*ʿanāṣir*). Admitting that we cannot reach these four elements, he says that we would be able to carry out what we wish to do if we attained what the elements are.

فقد وضح من قولنا أن الطبيعة الخامسة هي بالضرورة القاعدة لجمع الحامل من جميع الأعراض والفصول الملازمة والمفارقة والعامة والخاصة وخاصة الخاصة فاعلم ذلك

[FN5]: It has become clear from our words that the fifth nature is necessarily the basis for the collection (*ǧamʿ*) of what carries all attributes (*aʿarād*), differences which are inherent, separated, universal and proper, and the property of the property. Know that.

Ǧābir asserts, saying that the fifth nature was clarified by the discourse above, that the fifth nature is consequently the basis for the collection (*ǧamʿ*) of what carries (*ḥāmil*) all attributes (*aʿarād*), differences (*fuṣūl*) which are inherent, separated, universal and proper, and the property (*ḫāṣṣa*) of the property.[15] Contrary to Ǧābir's declaration, it seems that the fifth nature itself has not been discussed enough so far. Instead, the substance and other bases have been presented. Nevertheless, Ǧābir concluded that the fifth nature was explained. That is probably because the fifth nature was earlier called the basis like the substance although it is precisely said to be different from the substance. Since the substance turned out to be the first basis in [FN1]-[FN4], it can mean that the fundamental character of the fifth nature is depicted as well. Hence, Ǧābir summarised that the fifth nature is an ultimate substrate that bears every attribute.

فقد أوجبنا اختراع الأشياء أو بعضها لنا كالاختراع الأول سواء فاعلم ذلك ولا بشك فيه وذلك واجب متى أوجدنا شيئا من الألوان لم يكن إذ الجوهر لنا والكل فاعلم

[FN6]: We had to devise things or make some of them equally like the first device for us. Know that. There is no doubt about it (i.e., that we have to device something). That is necessary when we produce any of the colours (*alwān*). It would not exist if neither we nor everything had substance. Know that. The

[15] Basically, I translate *ḫawāṣṣ* in the Corpus with 'occult properties'. However, when this term seems to have any relation with Aristotelian terminology that does not mean 'occult', I simply express it as 'properties'. See Chapter 1.2, Section [3]: the science of properties.

opposite [opinion] of this exists among some proponents of the view that colours, all of which are limited, cannot increase in themselves nor decrease less than themselves. The answer to it is that if they (i.e., colours) are in potentiality and all or some of them (i.e., colours) become in actuality through what we brought out from potentiality to actuality, it is our device. Although it is not requisite that what we brought out from potentiality to actuality [successfully] come out, yet it is our invention or something similar to that.

ذلك وهذا الممتنع عند بعض أصحاب النظر من قبل أن الألوان كلها محصورة لا يمكن أن يزيد فيها ولا ينقص منها فالجواب في ذلك إنها إذا كانت في القوة كلها أو بعضها بالفعل مما أخرجنا من القوة إلى الفعل فهو اختراع لنا ومع أنه لا يلزم أنا ما أخرجناه من القوة إلى الفعل وقد خرج فهو اختراع لنا وأمثال ذلك

Following the definition of the fifth nature in [FN5], Ǧābir mentions that we need the invention (*iḫtirāʿ*) of 'things' or some of them for us like the first invention (*al-iḫtirāʿ al-awwal*). 'Things' seem to mean what generally exists in the world. On the other hand, it is not clear what should be invented and what the first invention means. Moreover, the invention is said to be necessary when we produce any colours (*alwān*) that did not exist since we and everything have the substance. An interpretation is required here: the substance is a common basis for everything including us, i.e., the human being. When the substance changes attributes that it bears in it, things – composites of the substance and its attributes – cease existing, and different things newly come into being. This is a process of the generation and the corruption. The substance continues to exist during the changes, yet attributes lose their existence when they go away from the substance. Everything has the substance. The colour is one of the attributes that is not realised without the substance. Therefore, producing any colour artificially is a kind of creative action that realises attributes by combining them with the substance. This action can be called our invention. According to Ǧābir, this idea that we need the invention is rejected by people who think that colours themselves neither increase nor decrease. He replies that we can bring something in potentiality into actuality (*min al-quwwa ilā al-fiʿl*). Moreover, it is not even necessarily required to bring the aimed thing from potentiality to actuality in the real world. Even if it is still in potentiality, its existence can be proved epistemologically. This seems to be 'our invention' that Ǧābir mentioned. Consequently, 'the first invention', although it is still obscure, can mean the natural creation in opposition to artificial one. In the following text, Ǧābir relies on geometry presented by Euclid in order to illustrate how to produce things from potentiality to actuality.

[FN7]: [The objects of] geometry, [described] in [the book of] Euclid, are in potentiality, I mean, in themselves. When we want to prove how one cuts the known angle in half and we make the known

فإن الهندسة إنما هي في إقليدس في القوة أعني في ذاتها فإذا فلما نريد أن نبين كيف يقطع زاوية معلومة بنصفين ونجعل الزاوية المعلومة التي من

ب أ د فإذا أردنا أن يقطع زاوية **ب أ د** بنصفين فإنا نعلم على خط **أ ب** نقط **د** وعلم خط **أ ب** نقطة ه ونجعل **أ ه** مثل **أ د** ونصل **ه ب د** بخط ونعلم عليه مثلثا متساوى الاضلاع عليه **د ه د** و نصل **أ ب د** بخط فأقول إنا قد قطعنا الزاوية بنصفين. برهان ذلك أنه قد استبان أن خط **ذ أ** مثل خط **أ ه** وخط **ب ه** مشرك بخط **أ د** وإذ قاعدة **ه د به** قاعدة **ه به** والزاوية التي من **د أ به** مساوية التي **ه أ به** فقد قطعنا الزلوية التي من **ب أ د** [35أ] بنصفين بخط **أ د** وذلك ما أردنا أن نبين فقد أخرجناه من القوة إلى الفعل وقد كان في ذاته صحيحا فاعلم ذلك

angle BAD_1, if we want to cut the angle BAD_1 in half, we will put the point D_2 on the line AB, the point H on the line AB [AD_1], make AH equal to AD_2 and connect H to D_2 with a line. We put an equilateral triangle on it (i.e., HD_2), namely, D_2HD_3 on it and we connect A to D_3 with a line. I say that we have cut the angle in half. Its proof is that it is already clear that the line D_2A [D_2A] was like the line AH and the line BH [AD_3] is shared with the line AD_3 *[since the base HD_2D_3, the base HD_3] [16] and the angle D_2AD_3 is equal to HAD_3. we have cut the angle which is part of BAD_1 in half by the line AD_3. That is what we wanted to prove. We brought it out from potentiality to actuality and it was correct in itself. Know that.

The citation of the geometrical description is not specified but can be identified with Proposition 9 of the Euclid's *Elements I*, which demonstrates the construction of an arbitrary angle divided into half. In [FN7], Ǧābir says, after its citation, that we brought what we wished to prove from potentiality to actuality, and it was correct on its own.

ومن جود النظر في باب العلوم الأربعة التي علمناك إياها علم ذلك بسهولة وهو قولنا أعيان الأمور في ذواتها فإن الهندسة وجميع المقادير الخفية حق في ذاتها وإن لم تعلم ولا يقال بحسب جهل من قال لا أقول إن العسل حلو إن لم أذقه فإن هذا عناد الحق والصواب إذ قرب الأجوبة فيه فيجب أن يكون كلما ذيق مما هو حلو بالحلارة حامض بالحموضة ولا يجوز عليه المنتقل من حال إلى حال غيرها وهذا عناد الحق فاعلم ذلك

[FN8]: A person who thoroughly considered the chapter of the four sciences that we taught you would easily understand it, namely, our saying that the sources (*aʿyān*) of things are in themselves. For, geometry and all unseen magnitudes are true in themselves even if it was not known. It is not said due to the ignorance of a person who said "I do not say that honey is sweet unless I taste it". This is opposed to the truth and the correctness. The answer is easy to understand. All that is tasted is to be sweet by sweetness or sour by sourness. It is not possible that it moves from one condition to the other one. This is a resistance to the truth. Know that.

[16] Following to the previous sentence, I regarded به as D_3. However, the text in *[ ] still does not seem to make sense.

Ǧābir adds that those who well leaned the four sciences (*al-ʿulūm al-arbaʿa*) can easily understand that the sources (*aʿyān*) of things are in themselves. Even unseen magnitudes in geometry are true on their own despite their not being known. Likewise, it is due to the ignorance to say, "I cannot tell that honey is sweet unless I taste it". The taste is determined by sweetness or sourness that cannot change from one to another. If the four sciences here mean the Pythagorean fourfold classification of mathematics, they are arithmetic (*ʿilm al-ʿadād*), geometry (*al-handasa*), astronomy (*al-tanǧīm*), and musical composition (*al-taʾlīf*).[17] However, considering that the importance of logics is mentioned later in [FN9], Ǧābir might intend another classification of the four sciences that includes logics. The doubt about the sweetness of honey might presuppose the sceptics of the Cyrenaics.[18] Both the four sciences and the scepticism for the quality before actual experience seem to have roots in ancient Greek knowledge even if their sources are not indicated in the text.

[FN9]: Then, conception of them (i.e., the sources) is with the intellect.[19] For, the intellect is also divided into four parts

ثم تصورها للعقل فإن العقل قد ينقسم أيضا أربعة أقسام قد علمناك أيضا كما يقال في حدود الموضوع

[17] Proclus reports the Pythagorean fourfold classification of mathematics in his *Commentary on Euclid's Elements I*, tr. Morrow (1970), pp. 29-30: "The Pythagoreans considered all mathematical science to be divided into four parts: one half they marked off as concerned with quantity (ποσόν), the other half with magnitude (πηλίκον); and each of these they posited as twofold. A quantity can be considered in regard to its character by itself or in its relation to another quantity, magnitudes as either stationary or in motion. Arithmetic, then, studies quantity as such music the relations between quantities, geometry magnitude as rest, spherics magnitude inherently moving"; ed. Friedlein (1873), pp. 35, 21 - 36, 3: τοῖς μὲν οὖν Πυθαγορείοις ἐδόκει τετραχὰ διαιρεῖν τὴν ὅλην μαθηματικὴν ἐπιστήμην, τὸ μὲν αὐτῆς περὶ τὸ ποσόν, τὸ δὲ περὶ τὸ πηλίκον ἀφορίζουσι καὶ τούτων ἑκάτερον διττὸν τιθεμένοις· τό τε γὰρ ποσὸν ἢ καθ' αὑτὸ τὴν ὑπόστασιν ἔχειν, ἢ πρὸς ἄλλο θεωρεῖσθαι κατὰ σχέσιν, καὶ τὸ πηλίκον ἢ ἑστὼς ἢ κινούμενον εἶναι· καὶ τὴν μὲν ἀριθμητικὴν τὸ καθ' αὑτὸ τὸ ποσὸν θεωρεῖν, τὴν δὲ μουσικὴν τὸ πρὸς ἄλλο, γεωμετρίαν δὲ τὸ πηλίκον ἀκίνητον ὑπάρχον καὶ τὴν σφαιρικὴν τὸ καθ' αὑτὸ κινούμενον· This classification was adopted in al-Kindī's epistle *On the Number of Aristotle's Books (Fī kammiyyat kutub Arisṭū)*, tr. Ighbariah (2012), p. 58: "These are the enumerations of his [i.e., Aristotle's] writings that we have mentioned earlier; the complete philosopher needs to acquire their knowledge after the science of mathematics. [...] For if one lacks the knowledge of the mathematical sciences – which consists of arithmetic (*ʿilm al-ʿadād*), geometry (*al-handasa*), astronomy (*al-tanǧīm*), and [musical] composition (*al-taʾlīf*) – and then studies (lit. uses) those [i.e., Aristotelian books] all his life, he shall not complete the knowledge of any of them, and his effort will earn him nothing but [the ability] to recite them verbally, [and that] if he is of good memory; but acquiring their profound knowledge is not at all possible (lit. does not exist) if one lacks the knowledge of mathematics", ed. Abū Rīda (1950), pp. 369-70, Cf. p. 376.

[18] There is no reference to Cyrenaics in the *FN*. However, this kind of criticism does not seem to rise without knowing scepticism. That the sweetness is a cause of honey's being sweet is indicated in Aristotle's *Categories*, 8, 9a31-34, tr. Ackrill (1963), p. 25: "That these are qualities is obvious, for things that possess them are said to be qualified in virtue of them. Thus honey because it possesses sweetness is called sweet, and a body pale because it possesses paleness, and similarly with others"; ed. Minio-Paluello (1949): ὅτι μὲν οὖν αὗται ποιότητές εἰσιν φανερόν· τὰ γὰρ δεδεγμένα ποιὰ λέγεται κατ' αὐτάς· οἷον τὸ μέλι τῷ γλυκύτητα δεδέχθαι λέγεται γλυκύ καὶ τὸ σῶμα λευκὸν τῷ λευκότητα δεδέχθαι· ὡσαύτως δὲ καὶ ἐπὶ τῶν ἄλλων ἔχει.

[19] The pronoun in ثم تصورها للعقل seems to be أعيان الأمور although أعيان is a bit far from ها, since it is later said that إذ قد حكمنا وجوّدنا القول في أعيان الأمور وذوات الأشياء وفي تصورها للعقل فغير شك إنها .

الانتهاء فإن هذه كلها سهلة على المرتاض بالمنطق وهو قوله في الموضوع قد يقال على موضوع وهو في موضوع ولا يقال على موضوع وليس في موضوع ولا يقال على موضوع فهو في موضوع. فإن العقل قد يتصور شيئا وقد يكون له حقيقة وقد يبقى شيء لا يتصوره ولا له حقيقة وقد يتصور شيئا ولا حقيقة له في ذاته ولهذه العلل وحق سيدنا علمناك المنطق فاعلم ذلك وكيف هو نصب الطريق إن شاء الله تعالى وحده العزيز واتعب يا أخي ما في هذه الأربعة في العقل أن يتصور ما له حقيقة على يقين ويبقى ما لا حقيقة له فإنك إذا صرت في هذه المنزلة نلت إلى آخر العلم الفلسلة والسلم.

which we also taught to you as said in the definitions of the subject as the last thing. All of these are easy with practice in logic, that is, its saying about the subject; it is said of a subject and is in a subject; it is not said of a subject and not in a subject; and it is not said of a subject but is in a subject. For, the intellect conceives a thing that has reality, and there remains a thing that is neither conceived nor have reality. [On the other hand,] it conceives thing that does not have reality in itself. For these reasons, I swear to God, we taught you logic. Know that and how it prepares the way if the supreme, only and great God wills. Work hard, my brother, for [understanding] what is about these four [kinds] of the intellect: It certainly conceives what has reality and what does not have reality remains. If you come to this place, you will obtain the last [part] of philosophical knowledge. Let it be done.

Such sources of things are perceived by the intellect (*ʿaql*). Ǧābir says that the intellect is also divided into four parts which were already taught and said in the definition of the subject (*mawḍūʿ*). It is not certain why Ǧābir referred to the intellect as well and what the intellect is compared with, but yet it is well-known that four kinds of intellect were presented by al-Kindī and al-Fārābī in the Arabic world, whose writings might have been circulated when Ǧābir wrote the *FN*.[20] According to al-Kindī, the intellect is divided into the following four kinds: the first is always in actuality (*bi-al-fiʿl*), the second is in potentiality (*bi-al-quwwa*) and in the soul, the third is the one that came in the soul from potentiality to actuality (*min al-quwwa ilā al-fiʿl*). The fourth is the one called 'the second' (*al-ṯānī*).[21] Another possible source of the four intellects mentioned here is al-Fārābī's: potential (*bi-al-quwwa*), actual (*bi-al-fiʿl*), acquired (*mustafād*) and agent (*faʿʿāl*) intellects.[22] Both al-Kindī's and al-Fārābī's theories of intellect are in line with the one

[20] The *Books of Balances* to which the *FN* belongs is considered to be composed in the early tenth century. It is possible for its author to have learnt the four division of the intellect from the relevant treatises written by Abū Yūsuf Yaʿqūb ibn Isḥāq al-Kindī (ca. 800-870) and Abū Nasr al-Fārābī (b. 870 - d. December 950 / January 951) [Their birth and death dates are according to the *Stanford Encyclopedia of Philosophy*].

[21] In al-Kindī's *Treatise on the Intellect*, the four kinds of intellect are introduced. See ed. Jolivet (1971), p. 158: فنقول إن رأي أرسطالس في العقل أن العقل على أنواع أربعة الأوّل منها العقل الذي بالفعل أبدا والثاني العقل الذي بالقوة وهو للنفس والثالث العقل الذي خرج في النفس من القوة إلى الفعل والرابع العقل الذي نسمّيه الثاني.

[22] In al-Fārābī's *Treatise on the Intellect*, ed. Bouyges (1938), p. 12:
العقل الذي يذكره في كتاب النفس فإنه جعله على أربعة أنحاء عقل بالقوة وعقل بالفعل وعقل مستفاد والعقل الفعّال .

derived from Aristotle and oriented by Alexander of Aphrodisias who wrote *On Intellect (Mantissa 2)* where described are three kinds of intellects:[23] material intellect (νοῦς ὑλικός; *al-ʿaql al-hayūlānī*), dispositional intellect (νοῦς ἕχων ἕξιν or ὁ ἐν ἕξει νοῦς; *al-ʿaql la-hu al-malaka*), and productive intellect (νοῦς ποιητικός; *al-ʿaql al-fāʿil*).[24] The first three of the Kindī's intellects, although the terms and their order are different, correspond to those suggested by Alexander: material, dispositional and productive intellects.[25] Al-Kindī's fourth intellect is disputable since it is just called 'the second' and its meaning is not clear.[26] On the other hand, al-Fārābī's classification of the four intellects is characterised by the third one, 'acquired intellect (*ʿaql mustafād*)' of which the origin is obscure.[27]

After mentioning four divisions of the intellect, Ǧābir talks about being said to be *ʿalā mawḍūʿ* and being *fī mawḍūʿ*. Although he does not specify where this explanation derives from, the peculiar usage of prepositions (*ʿalā* & *fī*) makes us notice that it comes from Aristotle's *Categories* where introduced are four ways to say that a thing exists: (1) it is predicable of a subject (*ʿalā mawḍūʿ*: καθ᾽ ὑποκειμένου) but not present in a subject (*fī mawḍūʿ*: ἐν ὑποκειμένῳ), (2) it is present in a subject but not predicable of a subject, (3) it is both predicable of a subject and present in a subject, and (4) it is neither present in a subject nor predicable of a subject.[28] The four division of the intellect might have

[23] For the Greek text of Alexander's *On Intellect (Mantissa 2)*, see ed. Sharples (2008), pp.42-52; tr. Sharples (2004), pp.24-44, for the Arabic, ed. Badawi (1971), pp.31-42; ed. Finnegan (1956), pp.181-199.
[24] Finnegan (1957), pp. 138-146.
[25] Iwasaki (1953), p.52.
[26] In the Latin translation of Kindī's *Treatise on the Intellect*, the fourth intellect is described as *demonstrarivum* as in ed. Nagy (1897). p. 1: *quarta est intellectus, quem uocamus demonstratiuum*. Nagy provided two kinds of Latin edition of the beginning of Kindī's *De Intelectu*. The sentence cited above is from the Latin version that seems to have been translated by Johannnes Hispalensis. See Nagy (1897), p. XV. In the other version translated by Gerardus Cremonensis, *ʿaql* is translated with *ratio* as in ed. Nagy (1897), p. 2: *quarta ratio est illa, quam denominamus demonstratiuam*. In any case, however, the fourth intellect is said to be demonstrative. Jolivet considered that the Arabic manuscripts used by the Latin translators differed from the ones that Jolivet consulted and that is why the Latin translation does not meet 'the second' in Arabic. In addition, he introduced two possible alternatives of 'the second' (*ṯānī*), i.e., 'evident' (*bāʾin*) and 'emergent' (*nātī*), however, he said that it seems to be pertinent to keep the debatable word 'the second'. See Jolivet (1971), p. 12-13.
[27] Finnegan (1957), p. 147.
[28] In Aristotle's *Categories*, 2, 1a20-1b9, tr. Ackrill (1963), p. 4 (I changed the numbering from (a-d) to (1-4) for convenience in the later discourse)]: "Of things there are: (1) some are *said of* a subject but are not in any subject. For example, man is said of a subject, the individual man, but is not in any subject. (2) Some are in a subject but are not said of any subject. (By 'in a subject' I mean what is in something, not as a part, and cannot exist separately from what it is in.) For example, the individual knowledge-of-grammar is in a subject, the soul, but is not said of any subject; and the individual white is in a subject, the body (for all colour is in a body), but is not said of any subject. (3) Some are both said of a subject and in a subject. For example, knowledge is in a subject, the soul, and in also said of a subject, knowledge-of-grammar. (4) Some are neither in a subject nor said of a subject, for example, the individual man or individual horse – for nothing of this sort is either in a subject or said of a subject. Things that are individual and numerically one are, without exception, not said of any subject, but there is nothing to prevent some of them from being in a subject –the individual knowledge-of-grammar is one of the things in a subject"; ed. Minio-Paluello (1949): Τῶν ὄντων τὰ μὲν καθ᾽ ὑποκειμένου τινὸς λέγεται, ἐν ὑποκειμένῳ δὲ οὐδενί ἐστιν, οἷον ἄνθρωπος καθ᾽ ὑποκειμένου μὲν λέγεται τοῦ τινὸς ἀνθρώπου, ἐν ὑποκειμένῳ δὲ οὐδενί ἐστιν· τὰ δὲ ἐν ὑποκειμένῳ μέν ἐστι, καθ᾽ ὑποκειμένου δὲ οὐδενὸς λέγεται -ἐν ὑποκειμένῳ δὲ λέγω, ὃ ἔν τινι μὴ ὡς μέρος ὑπάρχον

been referred to by Ǧābir in relation to this fourfold classification of existing things. Concerning the categories of the existence, however, Ǧābir mentions only three of them: (3), (4) and (2) in this order, and adds three descriptions about the way to recognise by the intellect, i.e., (A) the intellect conceives a thing that has reality, (B) there remains a thing that is not conceived and not have reality, and (C) it will conceive a thing that does not have reality in itself [see the chart below]. Provided that Ǧābir intends that (3), (4) and (2) correspond to (A), (B) and (C) respectively,[29] the last pair of (2) and (C) seems to be important since it means that even if a thing is not predictable, i.e., with no reality, the intellect can conceive it because it is in a subject. This might be able to explain the existence of the sweetness of honey, geometrical magnitudes and ultimately the fifth nature which are not predictable but conceivable.

Here, it is meaningful to depict Ǧābirian theory of the intellect as a whole since it seems to be different from those that originated from Alexander's interpretation of Aristotle's *De amina*, by which the theory of the intellect in the Arabic world has been interpreted. Ǧābir seems to have combined four kinds of the existence (1)-(4) described in Aristotle's *Categories* with the four divisions of the intellect, of which only three – (A), (B) & (C) – are written in the *FN*. According to the order of Ǧābir's description, it follows that (A), (B) & (C) correspond to (3), (4) & (2) respectively. Then, the equations are found between 'present in a subject (*fī mawḍūʿ*: ἐν ὑποκειμένῳ)' and 'conceivable (*al-ʿaqlu yataṣawwaru šayan*)' and between 'predicable of a subject (*ʿalā mawḍūʿ*: καθ' ὑποκειμένου)' and 'with reality (*la-hu ḥaqīqatun*)'. Therefore, (D) can result as shown in the table in spite of its absence in Ǧābir's description.

ἀδύνατον χωρὶς εἶναι τοῦ ἐν ᾧ ἐστίν,- οἷον ἡ τὶς γραμματικὴ ἐν ὑποκειμένῳ μέν ἐστι τῇ ψυχῇ, καθ' ὑποκειμένου δὲ οὐδενὸς λέγεται, καὶ τὸ τὶ λευκὸν ἐν ὑποκειμένῳ μὲν ἐστι τῷ σώματί, -ἅπαν γὰρ χρῶμα ἐν σώματι,- καθ' ὑποκειμένου δὲ οὐδενὸς λέγεται· τὰ δὲ καθ' ὑποκειμένου τε λέγεται καὶ ἐν ὑποκειμένῳ ἐστίν, οἷον ἡ ἐπιστήμη ἐν ὑποκειμένῳ μέν ἐστι τῇ ψυχῇ, καθ' ὑποκειμένου δὲ λέγεται τῆς γραμματικῆς· τὰ δὲ οὔτε ἐν ὑποκειμένῳ ἐστὶν οὔτε καθ' ὑποκειμένου λέγεται, οἷον ὁ τὶς ἄνθρωπος ἢ ὁ τὶς ἵππος, -οὐδὲν γὰρ τῶν τοιούτων οὔτε ἐν ὑποκειμένῳ ἐστὶν οὔτε καθ' ὑποκειμένου λέγεται·- ἁπλῶς δὲ τὰ ἄτομα καὶ ἓν ἀριθμῷ κατ᾽οὐδενὸς ὑποκειμένου λέγεται, ἐν ὑποκειμένῳ δὲ ἔνια οὐδὲν κωλύει εἶναι· ἡ γὰρ τὶς γραμματικὴ τῶν ἐν ὑποκειμένῳ μέν ἐστιν. [καθ' ὑποκειμένου δὲ οὐδενὸς λέγεται (variant)]; ed. Badawī (1948), p. 34:

الموجودات : منها ما تقال على موضوع ما وليست البتة في موضوع ما كقولك: « الإنسان »: فقد يقال على إنسان ما وليس هو البتة في موضوع ما. ومنها ما هي في موضوع وليس تقال أصلًا على موضوع ما (وأعني بقولي : « في موضوع »، الموجود في شيء لا كجزء منه، وليس يمكن أن يكون قوامه من غير الذي هو فيه) ومثال ذلك : « نحو ما »، فإنه في موضوع، أي في النفس، وليس يقال أصلا على موضوع ما ؛ و « بياض ما » هو في موضوع، أي في الجسم (إذ كان كل لون جسم)، وليس يقال البتة على مو ضرع ما. ومنها ما تقال على موضوع وهي أيضًا في موضوع. ومثال ذلك : « العلم » ، فإنه في موضوع، أي في النفس، ويقال على موضوع أي على الكتابة. ومنها ما ليست هي موضوع، ولا تقال على موضوع، ومثال ذلك : « إنسانٌ ما »، أو « فرسٌ ما »، فإنه ليس شيء من ذلك وما جرى مجراه لا في موضوع، ولا يقال على موضوع ما. وبالجملة، الأشخاص والواحد بالعدد لا يقال على موضوع أصلا. فأما في موضوع، فليس مانع بمنع أن يكون بعضُها موجودًا فيه، فإن « كتابة » هي من التي في موضوع، أي في النفس، وليست تقال على موضوع أصلا.

[29] (A) and (C) look inconsistent, but both can be compatible since they indicate different cases.

Existence in Aristotle's *Categories*	Intellect in Ǧābir's *Fifth Nature*
(1) predicable but not present	[(D) not conceivable with reality]
(2) present but not predicable	(C) conceivable without reality
(3) both predicable and present	(A) conceivable with reality
(4) neither present nor predicable	(B) not conceivable without reality

While the four intellects of both al-Kindī's and al-Fārābī's have been considered to be four conditions of the intellect in the process of our recognition, Ǧābirian interpretation of the four intellects can be understood as a static classification in our recognition of existing things according to Aristotle's *Categories*. Ǧābirian theory of the intellect might look unique apart from the traditional understanding of the theory of the intellect largely influenced by Alexander. However, probably Ǧābir was not the first who understood the four intellects as four types of the existence like those in the *Categories*. For, al-Kindī's four divisions of the intellect, which has not become clear under the framework of traditional interpretation of the theory of the intellect, seem to convey the same idea as Ǧābir presented with his classification of the four intellects. In addition, their description order corresponds to the below in the chart.

Intellect in al-Kindī's *On the Intellect*	Intellect in Ǧābir's *Fifth Nature*
(a) always in actuality	(A) conceivable with reality
(b) in potentiality and in the soul	(B) not conceivable without reality
(c) in the soul from potentiality to actuality	(C) conceivable without reality
(d) called the second	(D) not conceivable with reality

Thus, through Ǧābir's framework of the four intellects, the four intellects by al-Kindī can be understood with the four types of the existence in Aristotle's *Categories* as follows [combine the two tables above]: (a) the existence always in actuality is (3) predicable and present, (b) the one in potentiality and in the soul is (4) neither present nor predicable, (c) the one in the soul from potentiality to actuality is (2) present but not predicable, and (d) the one called the second is (1) predicable but not present. Our focus is on the fourth intellect of al-Kindī, i.e., (d) the intellect called 'the second', which has been an enigma because nothing has been found to explain the meaning of 'the second'.[30]

If 'the second' is read in light of Chapter 2 of the Aristotle's *Categories*, it corresponds to (1) predicable but not present such as 'man' as a species in contrast to an individual man. The species as well as a genus like 'animal' are called secondary substance in contrast to such individual existence called primary substance by Aristotle in Chapter 5 of the *Categories*.[31] Thus, if Kindī's theory of four intellects is combined

[30] See n. 26.

[31] In Aristotle's *Categories*, 5, 2a11-19, tr. Kirwan (1993) Ackrill (1963), pp. 5-6: "A *substance* –that which is called a substance most strictly, primarily, and most of all –is that which is neither said of a subject nor in a subject, e.g. the individual man or the individual horses. The species in which the things primarily

with the four types of the existence in Aristotle's *Categories*, the meaning of 'the second' in al-Kindī's *Treatise on the Intellect* can turn out to be the secondary substance that are the species and genera of primary substances.[32] In this way, this interpretation possibly explains the enigmatic expression of the Kindī's fourth intellect 'the second', which can mean the secondary substance. That is why Ǧābirian understanding of the four intellects by combining them with the four classifications of the existence in Aristotle's *Categories* does not seem to be peculiar but rather seems to have been common at least within the school of al-Kindī. Moreover, even Latin translators might have understood the four intellects in the same way as Ǧābir did since al-Kindī's fourth intellect called the second was translated with *demonstrativus*,[33] which implies that the fourth intellect is something indicative and predictable, and eventually can mean species and genera although there is room for interpreting 'demonstrativus' in other ways.[34]

After presenting how the knowledge in logic helps comprehension of the four intellects, Ǧābir says that this is the reason why he taught us logic in advance. Although there is no lecture of logic in the *FN* itself, it probably means that Ǧābir provided logical knowledge elsewhere in other Ǧābirian writings. He repeats that the intellect surely conceives what has reality while what does not have reality remains, and says that if we reach this, we will obtain the last knowledge of philosophy.

[FN9.1]: Since we arrived at what the fifth nature is, we need to mention the completion (*tamām*) of these two because we made it necessary that the fifth nature is two things; one of them is internal and the other is external. You should know that we already finished [treating] one of them. Now, we need to talk about the second one according to what we talked about the first one, if the supreme, only and great God wills.

وإذ قد أتينا على ما هي الطبيعة الخامسة فإنا نحتاج أن نقول في تمامها إذ كنا قد أوجبنا أن الطبيعة الخامسة شيئان أحدهما داخل والآخر خارج فيجب على ذلك أن تعلم أنا قد فرغنا من واحد منهما نحتاج الآن أن نقول في الثاني حسب ما قلناه في الأول إن شاء الله تعالى وحده العزيز.

called substances are, are called *secondary substance*, as also are the genera of these species. For example, the individual man belongs in a species, man, and animal is a genus of the species; so these –both man and animal – are called secondary substances"; ed. Minio-Paluello (1949): Οὐσία δέ ἐστιν ἡ κυριώτατά τε καὶ πρώτως καὶ μάλιστα λεγομένη, ἣ μήτε καθ᾽ ὑποκειμένου τινὸς λέγεται μήτε ἐν ὑποκειμένῳ τινί ἐστιν, οἷον ὁ τὶς ἄνθρωπος ἢ ὁ τὶς ἵππος. δεύτεραι δὲ οὐσίαι λέγονται, ἐν οἷς εἴδεσιν αἱ πρώτως οὐσίαι λεγόμεναι ὑπάρχουσιν, ταῦτά τε καὶ τὰ τῶν εἰδῶν τούτων γένη· οἷον ὁ τὶς ἄνθρωπος ἐν εἴδει μὲν ὑπάρχει τῷ ἀνθρώπῳ, γένος δὲ τοῦ εἴδους ἐστὶ τὸ ζῷον· δεύτεραι οὖν αὗται λέγονται οὐσίαι, οἷον ὅ τε ἄνθρωπος καὶ τὸ ζῷον.

[32] The distinction between primary substance and secondary substance, defined in Chapter 5 of Aristotle's *Categories*, is unique to the *Categories*. There have been attempts to reconcile the universal character of secondary substance described in the *Categories* with Aristotle's claim in the *Metaphysics Z.* 13 that the substance cannot be universal. See Mahlan (2019), pp. 167-168, n. 2.

[33] Ed. Nagy (1897). pp. 1-2. See. n. 24 in this section.

[34] '*Demonstrativus*' can mean individuals that are called 'this', rather than universal existence like genus and species.

The topic returns to the fifth nature. Ǧābir says that it was shown what the fifth nature is, but he newly introduces two kinds of the fifth nature: the internal (*dāḫil*) and the external (*ḫāriǧ*). According to him, the first one was already specified before this, and we need to talk about the second, i.e., the apparent (*ẓāhir*) fifth nature which carries specific differences such as laughing for the human and neighing of the horse. This second aspect of the fifth nature, called external and apparent, seems to be a logical element. Then, how did Ǧābir define the first one of the fifth nature?

There have been so far three definitions of the fifth nature. Firstly, the fifth nature was said to be the substance in every simple thing such as celestial spheres, natures and stars. This description of the fifth nature as the substance of celestial bodies reminds us of Aristotle's aether that became to be called the fifth element later by doxographers. Secondly, since Ǧābir said that everything in the world should be examined with the fifth nature called the basis like the substance, and its meaning is ought to be like a substrate, it follows that the fifth nature is a thing laid under not only the celestial bodies but also every sublunar existence. This was rephrased by saying that the fifth nature is the basis for everything that carries attributes, differences and properties, which was the third description of the fifth nature. The last one seems to imply that the fifth nature is a logical substrate. However, this was the conclusion after Ǧābir explained what we see and cannot see in the physical world. Therefore, by the fifth nature here, Ǧābir seems to have intended a physical principle even if it is unseen. Or rather, owing to its invisibility, it had to be defined as if it were a logical base although it was to be regarded as a physical principle. To explain this subtle physical existence due to its invisibility, Ǧābir drew on the epistemology, i.e., four kinds of way to recognise the existence. If this framework is applied, the fifth nature is not predictable but present. In other words, it does not have reality but is conceivable like geometrical magnitudes and the sweetness of the honey before being tasted. By integrating all the comprehension above, something that enables us to obtain such rational recognition beyond the sense perception seems to have been called our invention (*iḫtirāʿ la-nā*).

Thus, one of the two sorts of the fifth nature, called the internal one, can be understood in short as a physical principle, whereas the second one, the external and apparent, can be a logical basis. Although Ǧābir does not use the antonym of the apparent (*ẓāhir*) in this book, the hidden (*bāṭin*) is easily imagined as another adjective to the internal fifth nature since it is often used as a counterpart of the apparent in the Corpus.[35] The fifth nature as a physical basis can be said 'hidden' considering that it was said to be unseen. However, the ascription of the meaning of the hidden to the invisibility of the fifth nature is not found explicitly in Ǧābir's words. This view apart, based on Ǧābir's texts, it is also possible to explain the difference between the internal and the apparent.

[35] In the *Seven Metals*, each metal is defined with apparent/exterior (*ẓāhir*) and hidden/interior (*bāṭin*) natures. This pair of concepts – *ẓāhir* and *bāṭin* is of great importance not only in Ǧābirian sciences but also in Islamic theology (especially the Shiite), mysticism and esotericism. See Poonawala, "al-Ẓāhir wa 'l-Bāṭin" in *Encyclopédie de l'Islam*, vol. XI (2004).

As we have seen, Ǧābir combined ‘four kinds of intellect’ (i.e., four ways to recognise the existence) with ‘four types of being’ described in Aristotle’s *Categories*. As a result of that, things that the intellect conceives turned out to be in the substance, and ‘being with reality’ meant to ‘be said on a subject’, namely, to be predicable. The latter equation is important hereafter to analyse the meaning of being apparent.

Now, it is useful to recall the classification of (1) to (4) in Aristotle’s *Categories* with examples. (1) Species and genera like ‘human’ and ‘animal’ are predictable and not present, (2) a certain attribute like ‘this’ white in individuals is present and not predictable, (3) species of a certain attribute like ‘white’ and ‘colour’ is both predictable and present, and (4) primary substance such as ‘this’ human, i.e., an individual, is neither predictable nor present. (1) and (3), being predicable, can be said to have reality. Consequently, not physical but logical existence, i.e., species and genera, is considered to have reality. If having reality is regarded as being apparent, then the logical realm will turn out to be apparent. This can be the reason why Ǧābir named the apparent or external fifth nature to the logical principle while the internal fifth nature to the physical basis. It might be the reverse of a common-sense view that logical existence is in our mind and the physical one appears in the real world. Nevertheless, according to the demonstration by Ǧābir, reality is combined with logical existence.

Aristotle’s *Categories*		Examples	Ǧābir’s *Book of the Fifth Nature*		
(1) predicable	not present	‘human’, ‘animal’	[(D) not conceivable]	[with reality]	apparent / outside (logical)
(3) predicable	present	‘white’, ‘colour’	(A) conceivable	with reality	
(2) not predicable	present	this white	(C) conceivable	without reality	[hidden] / inside (physical)
(4) not predicable	not present	this human	(B) not conceivable	without reality	

[FN9.2]: Know that the apparent fifth nature is the entirety of the carrying the specific difference such as ‘laughing’ for the human being and ‘neighing’ for the horse, which can be inverted, and we put the premises, the order and the conclusion about it. For example, as for ‘every human being is the laughing’, ‘every human being is the laughing’, namely, the first premise, is true. [Moreover, as for] our saying ‘every laughing is human being’, if it is inverted, it will be ‘every human being is the laughing’. The inverse is to make the first the last or the last the first. This is, of course, accompanied by the derivation (*ištiqāq*) of the word and the meaning. We repeatedly taught it to you as it had become clear. ‘Every neighing

اعلم أن الطبيعة الخامسة في الظاهر هو جميع الحمل الفصلي الخاصي كالضحاك للإنسان والصهيل للفرس الذي ينعكس فنضع المقدمات فيه والنظام والنتائج مثال ذلك أن كل إنسان ضحاك وكل إنسان ضحاك والمقدمة الأولى صحيحة وهي قولنا كل ضحاك إنسان فإذا عكست كانت فكل إنسان ضحاك والعكس أن يجعل الأول آخر أو الآخر أولا هذا بالطبع يلزمه اشتقاق الكلام

والمعنى قد علمناك ذلك في التقرير كما قد بانت وكذلك كل صهال فرس وإذا عكس نتج نتيجة لها حقيقة كالاول ولو لم يكن فصل الخاصي يفسد وإن كان قد يجوز في بعض الفصول الخاصية فقط والعامية فيقول فكل فرس صهال قول حق.

is a horse' is in the same way. If it is inverted, it will bring about the conclusion that has reality (*ḥaqīqa*) like the first. If it was not the difference of the specificity (i.e., specific difference), it would collapse (i.e., the sentence cannot keep reality when inverted). If it was possible for only part of the specific differences and the universal ones, it is said that 'every horse is the neighing' is a true saying.

The apparent fifth nature (*al-ṭabīʿa al-ḫāmisa fī al-ẓāhir*)[36] is defined as the carrying (*al-ḥaml*) that is specifically differential. Ǧābir gives its examples: laughing of the human and neighing of the horse. Ǧābir continues to say that the following propositions are both correct: 'Every human is what laughs' and 'Everything that laughs is the human'. Likewise, both 'Every horse is what whinnies' and 'Everything that neighs is the horse' are true. As long as a predicate is specific difference that defines a certain species exclusively, universal propositions with such predicates and the corresponding species are always true even if the subject is changed with the predicate.

كذلك نقول كل كمية ميزان وكل ميزان كمية قول صحيح وكل صبغ كيفية وكل كيفية تصبغ قول حق لا مراء فيه ولا منازعة وكل صابغ اكسير وكل إكسير صابغ

[FN9.3]: In the same way, we say "Every quantity is balance" and "Every balance is quantity" are correct propositions. "Every dye is quality" and "Every quality is dye" are true propositions which have no dispute nor controversy. "Everything that dyes is elixir" and "Every elixir is what dyes" [are the same].

It is followed by other examples: 'Every quantity (*kammiyya*) is balance (*māzān*)' and 'Every balance is quantity'; 'Every dye (*ṣibġ*) is quality (*kayfiyya*)' and 'Every quality is dye'; 'Everything that dyes (*ṣābiġ*) is elixir (*iksīr*)' and 'Every elixir is what dyes'. Each term in these propositions is intended to be specific difference by Ǧābir because these propositions are described as true even after the subject and the predicate are changed.

فأما في قسم الزيادة فيقع في نفوس الناس شك منه وهو قولنا وكل كثير قليل فقد يصح أن يكون قليل كثيرا بالإضافة وهو موضع الشك إذا قلنا إن

[FN9.4]: As for the part of the increase, the doubt about it occurs among people. That is, [concerning] our words: "Every multitude is a few", it is right that the few [can] be relatively many. This is the place where the doubt is. If we say the few is

[36] The apparent fifth nature is expressed as الطبيعة الخامسة في الظاهر only in [FN9.2] where '*fī*' is written on '*al-ḫāmisa*'. The others hereafter in the *FN* are all الطبيعة الخامسة الظاهر.

part of the multitude, the premises (*qaḍāyā*) are true. Like this, we intend to establish this art from every aspect.	القليل هو أجزاء الكثير فقد صحت القضايا فكذلك نريد أن نثبت هذه الصنعة من كل وجه

Next, Ǧābir mentions being many and a few as an issue that concerns the field of increase or addition (*qism al-ziyāda*). If we say "[a]: Everything that is many is a few", people must question it. Ǧābir explains that "[b]: A few can be many in relation" to something else. Nonetheless, he says, [a] is doubtful. Ǧābir continues further and says that it will be correct if it is said that "[c]: Something that is a few is part of what is many". The [a] seems to be a variation of universal propositions in [FN9.3] regarding the increase, i.e., being large in quantity. It is not certain whether there is any source of [a] outside the Corpus, but [b] seems to relate again to Aristotle's *Categories* where it is suggested that 'a few' and 'many' can be said not absolutely but relatively compared with others in its kind.[37] The [c] or even a sentence similar to it is not found in the *Categories*. If there is anything relevant to [c] in the ancient literature that did enter the Arabic world, it might be Definition 1 of Euclid's *Elements V*: "A magnitude is a part of a magnitude, the less of the greater, when it measures the greater".[38] Indeed there is a clear difference between [c] dealing with discrete objects, i.e., number, and Definition 1 of the *Elements V* with continuous objects, i.e., magnitudes, but Ǧābir sometimes confuses discrete and continuous adjectives as in [Copper 9.3] where he identifies being 'large' with being 'many', and 'small' with 'a few'.

[37] Aristotle's *Categories*, 6, 5b11-30, tr. Ackrill (1963), p. 15: "Next, a quantity has no contrary. In the case of definite quantities it is obvious that there is no contrary; there is, for example, no contrary to four-foot or five foot or to a surface or anything like that. But might someone say that many is contrary to few or large to small? None of these, however, is a quantity; they are relatives. For nothing is called large or small just in itself, but by reference to something else. For example, a mountain is called small yet a grain of millet large – because one is larger than other things of its kind while the other is smaller than other things of its kind. Thus the reference is to something else, since if a thing were called small or large in itself the mountain would never be called small yet the grain of millet large. Again, we say that there are many people in the village but few in Athens – though there are many times more here than there; and that there are many in the house but few in the theatre – though there are many more here than there. Further, 'four-foot', 'five-foot', and the like all signify a quantity, but 'large' or 'small' does not signify a quantity but rather a relative, since the large and the small are looked at in relation to something else. So it is clear that these are relatives"; ed. Minio-Paluello (1949): Ἔτι τῷ ποσῷ οὐδέν ἐστιν ἐναντίον, (ἐπὶ μὲν γὰρ τῶν ἀφωρισμένων φανερὸν ὅτι οὐδέν ἐστιν ἐναντίον, οἷον τῷ διπήχει ἢ τριπήχει ἢ τῇ ἐπιφανείᾳ ἢ τῶν τοιούτων τινί, -οὐδὲν γάρ ἐστιν ἐναντίον), εἰ μὴ ἄρα τὸ πολὺ τῷ ὀλίγῳ φαίη τις εἶναι ἐναντίον ἢ τὸ μέγα τῷ μικρῷ. τούτων δὲ οὐδέν ἐστι ποσὸν ἀλλὰ τῶν πρός τι· οὐδὲν γὰρ αὐτὸ καθ᾽ αὑτὸ μέγα λέγεται ἢ μικρόν, ἀλλὰ πρὸς ἕτερον ἀναφέρεται, οἷον ὄρος μὲν μικρὸν λέγεται, κέγχρος δὲ μεγάλη τῷ τὴν μὲν τῶν ὁμογενῶν μεῖζον εἶναι, τὸ δὲ ἔλαττον τῶν ὁμογενῶν· οὐκοῦν πρὸς ἕτερον ἡ ἀναφορά, ἐπεὶ εἴγε καθ᾽ αὑτὸ μικρὸν ἢ μέγα ἐλέγετο, οὐκ ἄν ποτε τὸ μὲν ὄρος μικρὸν ἐλέγετο, ἡ δὲ κέγχρος μεγάλη. πάλιν ἐν μὲν τῇ κώμῃ πολλοὺς φαμεν ἀνθρώπους εἶναι, ἐν Ἀθήναις δὲ ὀλίγους πολλαπλασίους αὐτῶν ὄντας, καὶ ἐν μὲν τῇ οἰκίᾳ πολλούς, ἐν δὲ τῷ θεάτρῳ ὀλίγους πολλῷ πλείους ὄντας. – ἔτι τὸ μὲν δίπηχυ καὶ τρίπηχυ καὶ ἕκαστον τῶν τοιούτων ποσὸν σημαίνει, τὸ δὲ μέγα ἢ μικρὸν οὐ σημαίνει ποσὸν ἀλλὰ μᾶλλον πρός τι· πρὸς γὰρ ἕτερον θεωρεῖται τὸ μέγα καὶ τὸ μικρόν· ὥστε φανερὸν ὅτι ταῦτα τῶν πρός τί ἐστιν –.

[38] Tr. Heath (1956), p. 113; α΄. Μέρος ἐστὶ μέγεθος μεγέθους τὸ ἔλασσον τοῦ μείζονος, ὅταν καταμετρῇ τὸ μεῖζον.

فقد صح ووجب أن يكون كل تأثير غير ذاتي كائن لم يكن ثم ظهر أن القاعدة السالمة وهو الطبيعة الخامسة لأنا قد علمناك أن الطبيعة الخامسة متضمنة قسمين

[FN9.5]: It was true and necessary that no affection (*taʾṯīr*) existed without its own existence. Therefore, it became clear that the intact basis is the fifth nature because we taught you that the fifth nature includes two parts.

Ǧābir concludes that affection (*taʾṯīr*) without essence (*ḏātī*) is a being that did not exist. *Taʾṯīr*, which suddenly appeared here, is a word that can be used as an equivalent to πάθος as in Aristotle's *Physics*.[39] In Alexander's *Quaestiones I*. 21 as well, it is confirmed, as we have seen in Chapter 1.3,[40] that πάθος is translated with *aṯar* that has the same root as *taʾṯīr*.[41] According to Aristotle, the affection (πάθος) is the third kind of quality.[42] Then, *taʾṯīr* (affection) here can mean quality that is carried in the substance as its attribute. Therefore, when Ǧābir says that affection is a thing that did not exist, it may be complemented by this phrase: "without its being carried in the substance". Then, Ǧābir adds that it became obvious that the intact basis is the fifth nature since it has two parts. This statement sounds a bit sudden, but there seem to be two reasons why the fifth nature is said to be an intact basis: firstly, compared with the affection, the fifth nature exists on its own without any basis that carries it because it is a fundamental subject itself. Secondly, as Ǧābir said "since it has two parts", the fifth nature can be a perfect basis because it is the first basis that covers both physical and logical fields according to our interpretation of [FN9.1] where two kinds of fifth nature, internal and external, were introduced.

وإن كان ما قال جالينوس حقا فإن الروح تابعة المزاج البدن على تفسير الحمقاء فإذن [35ب] الحيوة هي الطبيعة الخامسة وهي بغير شك من فوق وإن كان ما قال به حقا على تفسير المحقين وهو إن كان المزاج فاسدا كانت الروح فاسدة وإن كان معتدلا كانت معتدلة وأمثال ذلك فهي الطبيعة الخامسة الظاهرة

[FN10]: If what Galen said is right since the spirit follows the mixture of the body (*badan*) according to the explanation of the foolish, then the life is the fifth nature and it is, without doubt, superior. If what he said about it is right according to the explanation of the wise (lit. people who say the truth), that is, if mixture perishes, the spirit will perish, if it (i.e., the mixture) is balanced, it (i.e., the spirit) is balanced, and so on, it is the apparent fifth nature.

[39] Aristotle's *Physics IV* 9, 217b24-26, tr. Hardie & Gaye (1930): "for the dense and the rare are productive of locomotion in virtue of *this* contrariety, and in virtue of their hardness and softness productive of passivity (πάθος) and impassivity, i.e. not of locomotion but rather of qualitative change"; ed. Ross (1936): τὸ γὰρ πυκνὸν καὶ τὸ μανὸν κατὰ ταύτην τὴν ἐναντίωσιν φορᾶς ποιητικά, κατὰ δὲ τὸ σκληρὸν καὶ μαλακὸν πάθους καὶ ἀπαθείας, καὶ οὐ φορᾶς ἀλλ᾽ ἑτεροιώσεως μᾶλλον.

[40] See Chapter 1.3, esp. T9.2.

[41] The word πάθος is translated with 'affection' by Sharples in his translation of Alexander's *Quaestiones*.

[42] Aristotle's *Categories*, 8, 9a28, tr. Ackrill (1963), p. 25: "A third kind of quality consists of *affective qualities* and *affections*": Τρίτον δὲ γένος ποιότητος παθητικαὶ ποιότητες καὶ πάθη.

Following [FN9.5], Ǧābir mentions Galen's view that the spirit or pneuma (*rūḥ*) follows the mixture of the body. (1) If what Galen said is true, that is, the spirit follows the mixture of the body according to the explanation of the foolish, then the life is the fifth nature which is no doubt superior. (2) If what he said is true according to the explanation of the wise, that is, if the mixture disappeared, the spirit would disappear, and if the mixture was balanced, the spirit would be balanced. Then, 'it (*hiya*)' is the apparent fifth nature. In [FN10], although only one view of Galen is introduced, Ǧābir provides two sets of conditionals, i.e., (1) and (2) shown above. The pronoun *hiya* in (2) – the last pronoun in [FN10] – can indicate the spirit or the life. If it is not the spirit but the life, (1) and (2) will have the same apodosis, and (2) will just be another way to say (1). Here, questions arise regarding these two points: (X) how to explain the difference between 'according to the explain of the foolish' and 'according to that of the wise' in protases of (1) and (2), and (Y) how to deny the possibility that the fifth nature in (1) is the inside one as a counterpart of the apparent fifth nature that explicitly written in (2). Now, it does not seem to be reasonable to deny the latter possible difference between (1) and (2) [=(Y)], since, considering that [FN9.5] finished by emphasising that the fifth nature is intact because it consists of two parts, the explanation about both of the two kind of the fifth nature is expected to come in [FN10]. Moreover, the former question [=(X)] seems to rather be proof that (1) and (2) are different propositions. There seems to be no need to present two conditions (1) and (2) if the same thing is intended in both. Thus, the *hiya* in question is more likely to be the spirit. Consequently, the core meaning of [FN10] can be as follows: the internal fifth nature is the life and the apparent fifth nature is the spirit if the spirit follows the mixture of the body. In other words, the life is the physical primary principle and the spirit is the logical principle for living things, given that the internal fifth nature is physical principle and the apparent one is logical as interpreted in [FN9.1]. If the spirit disappears when the mixture of the body disappears, the spirit cannot be the physical principle that should persist all the time. On the other hand, the spirit can be specific difference that defines the living thing. Even if the spirit is physically corrupted at the same time when the mixture of the body disappears, it continues to exist as logical crucial difference that can form the matter into the living thing.

In addition to this interpretation, the spirit (*rūḥ*) here might mean the soul (*nafs*) considering that Galen wrote *That the Capacities of the Soul Follow the Mixtures of the Body* (Ὅτι ταῖς τοῦ σώματος κράσεσιν αἱ τῆς ψυχῆς δυνάμεις ἕπονται), whose abbreviation is the *QAM*.[43] Kraus regarded Galen's words in [FN10] as less accurate than that in the *Compendia* where the view that the soul (*nafs*) follows the mixture of the body is ascribed to Galen.[44] Kraus' judgement is comprehensible because *rūḥ* was used as

[43] The *QAM* stands for "*Quod animi mores corporis temperamenta sequantur*", of which English translation is in Singer (2013), pp. 374-409. See Chapter 1.3, n. 33.

[44] Kraus (1942), p. 330, n. 5; Cf. ibid. n. 4. See the *Compendia*:

[147a]ج وهذا هو الذي قال جالينوس من أجله ان النفس تابعة لمزاج البدن; [177a]ج فإن جالينوس إنما غلط في هذه الموضع الغلط الذي صار به مثلا من قبل أنه يتوهم أن النفس تستحيل إلى الطبائع فقال إنها تابعة لمزاج البدن.

synonym for *nafs* at least in the Islamic theology and they were easily substituted for each other.[45] Nevertheless, our analysis does not dispose the *rūḥ* as a mere miswriting or confusion in the course of transmission but try to explain why it is the spirit (*rūḥ*) instead of the soul (*nafs*). The *QAM* refers to the Stoics belief that soul is some kind of breath.[46] This fact offers the reason for the equation of the spirit with the soul in Galenic text although the Stoa is never mentioned in [FN10]. In the *QAM*, following the Stoic view, Galen discusses the question whether people can be praised or blamed for their element-based characters, and says "perhaps someone will say that neither should Chrysippus be praised for his intelligence nor those individuals admonished for their foolishness". This reference to the intelligent and the foolish might relate to the phrases 'according to the explain of the foolish' in (1) and 'according to the explanation of the wise' in (2) although nothing proves the connection between the *QAM* and [FN10], and even if proved, the meanings of the foolish and the wise in [FN10] will be still obscure. However, it might show some relevance of the paragraph of the *QAM* to [FN10] and the possibility that Galen's view introduced in [FN10] is a stoicised one.

It is not certain whether the *QAM* is really a source of Galen's view in [FN10], yet, provided that Ǧābir knew the *QAM*,[47] there can be another reason why the soul was changed into the spirit. Right before introducing the Stoic view that the soul is pneuma in the *QAM*, Galen says, referring to the Peripatetics, that 'the mortal [part] of the soul actually is precisely this: the mixture of the body'.[48] This proposition can question the statement: the soul follows the mixture of the body. For, it would be restated like the following: 'the soul follows the mortal part of the soul'. This sounds tautology unless the subject 'the soul' is defined as the one that is different from its mortal part. It is never certain whether Ǧābir considered this discourse on the mortal part of the soul. Still, it does not seem misguided to think about the parts of something like the mortal part of the soul because Ǧābir begins to talk in [FN11] about 'part' in contrast to [FN 9.2, 9.3 & 9.4] where he treated universal propositions about 'all'.

[FN11]: If any parts of the elixir were not dyeing, it would be correct that the fifth nature, since that dyeing is a section of the elixir, consists of parts other than the dyeing. Know that.	وإن كان الإكسير قد لا تكون أجزاؤه صابغة فقد صح أن الطبيعة الخامسة إذ ذلك الصبغ فصل له من الأجزاء عن الصابغة فاعلم ذلك

This passage seems to presuppose the propositions in [FN9.3], i.e., every dyeing is elixir, and every elixir is dyeing. In the same way as 'laughing' is specific difference of the human being, 'dyeing' is specific difference of the elixir. It means dyeing is the apparent fifth nature of the elixir. This is true as long as every elixir is dyeing and the reverse is

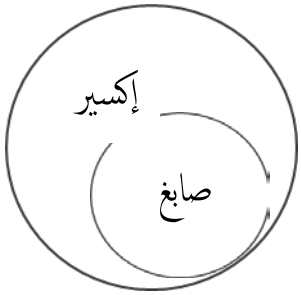
[45] See Chapter 1.3, n. 37.
[46] Tr. Singer (2013), p. 387; ed. Muller p. 45, 6.
[47] The Arabic version of the *QAM* has survived. See Biesterfeldt (1973).
[48] Tr. Singer (2013), p. 387; ed. Muller p. 44, 7-8.

also true. However, if not every part of the elixir is dyeing, the dyeing cannot be the fifth nature of the elixir, since the dyeing does not cover the same range as the elixir but just a portion of the elixir. Therefore, the fifth nature contains non-dyeing parts.

Every elixir is dyeing

The fifth nature
= dyeing = specific difference

Parts of the elixir are not dyeing



The fifth nature
= dyeing & non-dyeing parts

[FN12]: This is, I swear to God, a subject (*mauḍūʿ*) of the apparent fifth nature. The conclusion comes from that and the usefulness is with what was presented. It is our saying that what the bases of these things are. I inform you of the substances (*ǧawāhir*) of all these things in a book of these books, seek it since I do not indicate it to teach you the place of the benefit. Precisely, it must be affirmed that the parts other than red are white and one name encompasses all of them. If you know that, understand it and search for it preparing the way, if the sublime, only and great God wills.

فهذا وحق سيدنا هو موضوع الطبيعة الخامسة الظاهرة فالنتيجة من ذلك والفائدة مع ما تقدم فهو قولنا ما هي قواعد هذه الأشياء وقد أنبّأ عن جواهر هذه الأشياء كلها في كتاب من هذه الكتب فاطلبه فإني لا أسميه لتعرف موضع المنة عليك فالتحقيق يوجب أن الأجزاء في الأحمر غيرها هي الأبيض وقد يحصرها كلها اسم واحد إن علمت ذلك فاعرفه وابحث عنه تصب الطريق إن شاء الله تعالى وحده العزيز

This is a subject (*mawḍūʿ*) of the apparent fifth nature and, Ǧābir says, ‘these things’ are the bases. He declares that the substances (*ǧawhar*) of these things will be mentioned in ‘a book of these books’. Here, some vague expressions should be explained. ‘These things’ probably means the fifth nature. ‘A book of these books’ can mean one of the *Books of Balances* in which the *FN* is included. To these conclusive remarks, Ǧābir adds that some parts are red while the rest parts are white, and all of them are defined by one name. This is a sudden statement of which relation with the adjacent passages is not clear except for the probability that it might be another saying of the proposition in [FN11]. It means, when some parts of the elixir are not red but white, then the fifth nature of the elixir is both red and white, that is, one name defines both parts.

Ǧābir had discussed the fifth nature from a general point of view, namely, first physically and then logically, before he focused on the elixir and the colour in relation with the fifth nature in [FN11 & 12]. In the course of this, Ǧābir relates the fifth nature with medicament.

[FN13]: Now, consider from [the viewpoint of] the fifth nature, whether the thing is made from one medicament or from multiple medicaments. The views on that among philosophers are many and long.

وانظر الآن من الطبيعة الخامسة هل يجب أن يكون الشيء من دواء واحد أو من أدوية كثيرة فإن الخصوصة في ذلك بين الفلاسفة كثيرة طويلة

Ǧābir suggests considering whether the fifth nature should be one medicament or be composed of plural medicaments. On this point, it is said that philosophers have varied their views for a long time. The appearance of the word 'medicament (*dawāʾ*)' might call to mind its relationship with the elixir. Hereafter, however, the 'medicament' is replaced with a more universal word 'thing' and whether it is one or many becomes the main theme afterwards.

[FN14]: To be precise, the proponents of one thing say that things are not equal in terms of one nature. If they were equal in terms of the nature and the definition, they would be separate dye. It is just in the same thing, and many things that existed do not equal to each other. A person who said that it is not equal depends on the first premise.

وذلك أن أهل الشيء الواحد يقولون إن الأشياء لا يتساوى في طبع واحد ولو تساوت في الطبع والحد لكانت هي الصبغ الفاصل إنما يكون في الشيء الواحد ولا يتساويه ما كانت من أشياء كثيرة ومن قال إنها لا يتساوى على القضية الأولى

The proponents of 'one thing' say that things are not equal in the same nature. For, if things were equal in terms of a nature and a definition, they are separate 'dyes' that just happen to be in the same thing and it is impossible that many things are equal to one another. Since 'dye' is mentioned, Ǧābir might still think of the colour. However, the equality of plural things in a single nature seems to be a more important issue for him than colour. Ǧābir proceeds his discourse by saying that a person who states that things are not equal fails to understand an elementary issue.

[FN15]: The congregation replied in the answer to it – upon my life – that you deemed that things are not equal in the same definition. What they do not know is that many things of the same genus act it more or less than the action of that one. By 'that act', I mean 'quality'. Know what we

وقالوا أصحاب الجماعة في جواب ذلك لعمرى إنكم قد صدقتم أن الأشياء لا يتساوى في حد واحد فما ينكرون أن يكون أشياء كثيرة من جنس واحد تعمل ذلك إما أكثر وإما أقل من عمل ذلك الواحد

will say. Now consider, O my brother, where the truths are, with the intellect itself with God – the Pursuer, Dominant, Merciful and Beneficent, and you will find it (i.e., where the truths are), I swear to God, in two aspects at the same time. Verily, you will find it closer and fewer in the chapter of congregation, and more distant and copious in the chapter of congregation concerning the same sentence. It must be related to it. Work hard, and that is all.

وأعني بذلك العمل الكيفية فاعلم ما نقول وانظر الآن يا أخي بعين العقل بالله الطالب الغالب الحمن الرحيم أين الحقائق فإنك تجده وحق سيدنا في الوجهين جميعا إلا أنك ستجده في باب الجماعة أقرب وأقل في باب الجماعة على جملة واحدة أبعد وأعزر ويجب أن يضاف إليه واتعب والسلام

The congregation (*aṣḥāb al-ǧamāʿ*) answered that the opponents failed to consider that things can be different even if they have the same definition. Many things in the same genus act more or less in the same way. Ǧābir clarifies that the action means 'how it is', i.e., quality. In his words, it is not mentioned what kind of group the congregation is, but they seem to be simply those who are opposed to the proponents of 'one thing'. The same word '*ǧamāʿ*' soon later appears as in 'the chapter of the Congregation (*bāb al-ǧamāʿ*)' in [FN15]. To try to interpret the latter part of [FN15], it means, according to Ǧābir, the readers will find what he means in two ways both. People can find less of the fact in the nearer 'chapter of the Congregation' and more in the farther 'chapter of the Congregation'. 'The chapter of the congregation' is not identified. Although there are chapters with the same name in Hadith, Ǧābir rather seems to intend a certain part of his books. Perhaps the *Book of Concentration (al-taǧmīʿ)* – one of the *Books of Balances* – might be related considering the resemblance of the title since both have the same root, i.e., *ǧ-m-ʿ*. 'The chapter of the Congregation' is altered with 'the chapter of Three' and 'that of Two' in the corresponding text [Copper 15] of the *Copper* where the similar sentences are found.

[FN16] Since we reached this place about the fifth nature, we need to say about it completely as for other two parts. Since we expressed an opinion and said well about the sources of issues (*umūr*) and the essence of things and about conceiving it by the intellect. There is no doubt that, since they are four and we already presented that we talked about two of them, and that the rest two [should be dealt with,] which are 'the phonetic' of them and 'the writing' of them.

وإذ قد أتينا على هذا الموضع من الطبيعة الخامسة فإنا نحتاج أن نقول في تمام ذلك في القسمين الآخرين. إذ قد حكمنا وجوّدنا القول في أعيان الأمور وذوات الأشياء وفي تصورها للعقل فغير شك أنها لما كانت أربعة وقد كنا قدمنا أن الإثنين منها قد تكلمنا عليها وأن الباقي إثنان وهما اللفظ بها والكتابة لها

Ǧābir concludes that the two of the four aspects of the fifth nature have already been dealt with. Precisely, sources of issues (*aʿyān al-umūr*) and essence of things (*ḏawāt*

al-ašyāʾ) are presented in relation to how the intellect perceives them. The word ‘sources (*aʿyān*)’ was used here for the first time, but the same root word ‘sources (*ʿuyūn*)’ is found in [FN4] where it meant something like the basis of the four elements. In addition, the word ‘sources’ (*aʿyān*) is also found in [FN8] where it was used to mean the unseen core of physical existences such as geometrical magnitudes and sweetness of honey. Accordingly, by analogy, ‘sources (*aʿyān*)’ in [FN16] can be interpreted as a physical basis. On the other hand, essence (*ḏawāt*) can be related to the essence (*ḏāt*) which was mentioned when Ǧābir explained the aim of this treatise in [FN0.2] where the essence (*ḏāt*) meant, as long as our analysis of [FN0.2] is valid, something that defines things such as ‘human’ against a mere material ‘body’ and as, according to [FN9], ‘laughing’ for the human. Thus, the essence (*ḏawāt*) can mean the definition of things, namely, logical fundament. Now, it is possible to reinterpret the aim of this book that was written in [FN0.2]. Ǧābir wished to deal with the inmost of the basis and the essence, which might correspond to the internal and the apparent fifth nature.

<table>
<tr><th>Physical</th><th colspan="2">Logical</th></tr>
<tr><td>(The first carried) = the carried = attribute, form</td><td>the essence = ḥaml
[the apparent fifth nature]</td><td>e.g.,
human</td></tr>
<tr><td>The second carried = the basis = substrate, matter</td><td rowspan="2">the basis</td><td rowspan="2">e.g.,
animal</td></tr>
<tr><td>the inmost (sirr) of the basis
[the internal fifth nature]</td></tr>
</table>

This result of the attempt to find consistency in Ǧābirian description is fragile since the meaning of *ḥaml* that was reworded as the essence in [FN0.2] is still not grasped well. Considering that several forms of *ḥ-m-l* are used as a translation of κατηγορέω in Aristotle’s *Organon*, exhaustive examination into its usage in Arabic logical works might be able to eventually give a reason to *ḥaml* in the *FN*. This kind of research will be required for real understanding of the Corpus.

Ǧābir says that his discourse afterwards should treat the rest two of the fifth elements: the phonetic (*lafẓ*) and the writing (*kitāba*) aspects. And then, he starts to discuss the science of letters in the latter half of the *FN*. Although Ǧābir says that these are part of the fifth nature, Ǧābir focuses on the balance of the letter and does not really refer to the fifth nature itself in the texts after [FN16]. Moreover, the correspondence of the text between the *FN* and the *Copper* ceases at [FN16] except for some short phrases, which will be mentioned in the next chapter. Therefore, analysis of the fifth nature in the *FN* stops here as well. In the next chapter, this analysis is used as a start point to examine the corresponding texts in the *Copper*.

2.5.2. Analysis of the fifth nature in the *Book of Copper*

The *Copper* is said, in the very book, to be the most important of the *Seven Metals*.[1] As for its length as well as its significance, it is the first one of the seven books. However, when each manuscript is separately investigated, this book does not always look the longest one because MS Tehran Mağlis 729 [ط] lacks a relatively long text that is preserved in MS Paris BnF Arabe 2606 [ب] and MS Cairo Ṭalʿat Kimiyāʾ 187 [ق], which is the middle part of the *Copper*. The text in question is found in the *FN* instead. In other words, MS Paris BnF Arabe 5099 that contains the *FN*, partially replaces [ط], i.e., one of the three manuscripts of the *Copper*. The *FN* is regarded as one of the *Books of Balances* which are mentioned in the *Seven Metals*. Hence it is natural to think that the description of the fifth nature in the *Copper* is a partial copy of the *FN*.[2] Ǧābir freely selected passages from the *FN* and put them in the *Copper* with some revisions. That is why the explanation of the fifth nature is not always the same between the two books. Sometimes the difference helps us understand the text by providing new information, but sometimes it confuses us by bringing crucial inconsistency about the point each author intends. In the hope of a better understanding of the concept of the fifth nature, the comparison of the corresponding texts in these two books comes hereafter, which is according to the analysis of the *FN* that was done in Chapter 2.5.1.

In the *Copper*, after the soul was discussed, Ǧābir mentions the oneness of the existence in the three species.

Know that all of the animal, the plant and the mineral, even if its existence (*kawn*) derives from material body (*ǧism*), are one existence.	واعلم أن الحيوان كله والنبات والمعدنية وإن كان كونه من الجسم فهو كون واحد

Animals, plants and minerals exist variously as individuals, and their existence comes from their corporeal aspect that brings diversity to them. However, despite their difference on the surface, their existence is the same one. Now, it should be recalled that, according to [FN1], the existence is a difference of the material (*ṭīna*), which is the substrate of the three species, from the material body (*ǧism*). It is not certain whether the same definition of existence can be applied to this text, since *kawn* here might simply mean to 'be' rather than 'existence' as a term indicating the difference between the material and the body. After presenting the view that *kawn* is one among the three species,

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[1] "Know that we composed these seven books to reach, by them, the great issue. We made this book the chief of them" واعلم أنا قد ألّفنا هذه الكتب السبعة لتوصل بها إلى أمر عظيم وجعلنا هذا الكتاب أميرها in the *Copper* [ب 35b; ق 24b; ط 62b].

[2] The overlapping text in the *Copper* cannot be said to be a citation but just a copy since Ǧābir did not mention where he took the texts from.

Ǧābir starts to talk about the substance, which is the beginning of the text overlapping with the *FN*. [Copper1] is almost the same as [FN1] except some choices of the words, among which the crucial difference is the replacement of colour (*lawn*) for existence (*kawn*).[3]

[Copper 1]		[FN1]
For example, the substance was a substrate for the body. Then, length, width and depth were carried in the substance, and it became the body. Then it carried colour (*lawn*) on itself, and it became the material (*ṭīna*). This is a description of the three species – praise the Maker, Creator and Former –, and then everything that you saw was produced from these species.	ومثاله أن الجوهر كان موضوعا على الجسم ثم حمل على الجوهر الطول والعرض والعمق فصار جسما ثم حمل عليه لونا فصار طينة فهذا صفة الثلاثة الأجناس فسبحان الخالق البارئ المصوّر ثم أنه تكون من هذه الأجناس جميع ما رأيت	ومثاله أن الجوهر كان موضوعا للجسم ثم حمل على الجوهر الطول والعرض والعمق فصار جسما ثم حمل عليه كون فصار طينة هذه الثلثة الأجناس سبحان الخالق البارئ المصور ثم أنه عمل من هذه الأجناس جميع ما رأيت وكشفت وينبغي أن تعلم أن كل شيء يخبر به في الفلسفة فإنه ممكن أن يكون ما كانت المقدمات منظومة نظما صحيحا فإما وهي فاسدة النظم أو يحمل وجوه النقيض فإياك وقبول شيء من ذلك

The material (*ṭīna*) consists of the body (*ǧism*) and the existence (*kawn*) according to [FN1], whereas the same material is described as a composite of the body and colour in [Copper1]. Since the colour (*lawn*) and the existence (*kawn*) can be easily confused for their shapes in Arabic letters, there is a possibility that *lawn* (لون) in question is a mere insufficient form of *kawn* (كون). However, ك is always written in a complete form in both MS Paris [ب] and MS Cairo [ق].[4] Moreover, not only here but also in [Copper 2], *lawn* appears instead of *kawn* to explain the material in both manuscripts. Therefore, it can be said that the author of the *Copper*, or at least one of the transcribers of the manuscripts, did not mean *kawn* but *lawn* as what distinguishes the material from the body. The existence (*kawn*) in [FN1] was a thing that produces three species out of the body that only has three dimensionality. As such a decisive factor like the existence, the colour (*lawn*) is introduced here. Albeit *kawn* is also used right before [Copper 1] as shown in the first citation above, the *kawn* there seems to have a wider meaning like the core of the

[3] For convenience of explanation, the text of the *Copper* begins to be numbered such as [Copper 1] corresponding to [FN1].

[4] Although three manuscripts are extant for the *Seven Metals*, the texts that are examined in this chapter are not preserved in [ط] but only found in [ب] and [ق].

presence, not the same as in [FN1] where *kawn* means a component that forms three species by being carried in the body. After praising God, in [FN1], Ǧābir says that we must be careful if we try to learn anything from philosophy because, although philosophers explained everything, their presentations contain impropriety. This remark does not appear in [Copper 1], and [Copper 2] starts right after [Copper 1].

[Copper 2]		[FN2]
Since I already clarified that the substance is the first basis, there is no doubt that the hotness and its sisters – four [in total] – have it (i.e., the substance), and that the body is a basis of all celestial spheres and even of the hotness, the coldness, the moistness and the dryness which are in 'our' world. They are [eventually] the elements that are fire, air, earth, water and no other. Know that. The body with colour called material (*ṭīna*), is a basis of what is after that.	وإذ قد بينت أن الجوهر هو القاعدة الأولى بغير شك أنه للحرارة وأخواتها الأربعة وإن الجسم قاعدة جميع الأفلاك إلى الحرارة والبرودة والرطوبة واليبوسة التي في عالمنا نحن، وهي العناصر التي هي النار والهواء والأرض والماء لا غير فاعلم وإن الجسم ذا اللون المسمى طينة قاعدة ما بعد ذلك	وإذ قد بينا أن الجوهر هي القاعدة الأولى فغير شك أنه للحرارة فقط وأحوالها الأربعة وإن الجسم قاعدة جميع الأفلاك إلى الحرارة والبرودة واليبوسة والرطوبة التي في عالمنا نحن وهي الماء والهواء والنار والأرض لا غير فاعلم وإن الجسم المسمى ذا الكون قاعدة ما بعد ذلك

The word "material (*ṭīna*)" is used in [Copper 2] while it is not found in [FN2]. Here again, the material is distinguished from the body by colour (*lawn*) as in [Copper 1], not by existence (*kawn*) as in [FN1]. In addition, [Copper 2] has other differences from [EN2]. Firstly, the occupation of the substance by the hotness is not emphasised in [Copper 2] by omitting "only (*faqaṭ*)" of "only the hotness has it" in [FN2]. Secondly, the four conditions (*aḥwāl*) of the hotness in [FN2] are replaced with its four sisters (*aḫawāt*). Lastly, the order of the four elements, i.e., fire, air, earth and water, differs from that in [FN2] and they are collectively called elements (*ʿanāṣir*). However, these are not remarkable disparity between two texts in terms of the meaning. The texts continue to overlap in [Copper3] and [FN3].

[Copper 3] & [Copper 4]		[FN3] & [FN4]
[Copper3] Ancient philosophers argued with one another on it so much with respect to what we say: the substance is an origin of the hotness, the coldness, the dryness and the	[Copper3] وتنازع قدماء الفلاسفة في ذلك عظيم جدا من جهة ما نقول إن الجوهر أصل الحرارة والبرودة واليبوسة	[FN3] وتنازع الفلاسفة في ذلك عظيم جدا من جهة ما نقول إن الجوهر أصل الحرارة والبرودة واليبوسة والرطوبة والجسم

أصل الفلك المنير فقط والطينة أصل ما دونه لأن جميعه مرئي فاعلم ذلك [FN4] فأما هولاى فنقول إن جميع ذلك غير مرئي لكن إنما يرى ما هو لها مجانس للطينة ومتقارب لها كعيون النار والهواء والماء والأرض	والرطوبة والجسم أصل الفلك النير فقط والطينة أصل كل شيء هو دونه لأن جميعه من شيء واحد [Copper4] لكن إنما [ق-18أ] نرى ما هو لنا مجانس أي مجانس الطبيعة مقارب لها يعنون النار والهواء والماء الأرض	moistness; the body (*ğism*) is an origin of a luminous sphere only; the material (*ṭīna*) is an origin of everything that is beneath it (i.e., the sphere) because all of them derive from the one thing, [Copper 4] but we only see what is similar to us, namely, similar and almost equal in terms of the nature, meaning fire, air, water and earth.
وإن الذي نراه أيضا إنما هو غير النار والهواء والماء والأرض في ذواتها بل إنما نرى ما انحل منافي الفساد والكون المتصل بكل واحدة من هذه العناصر وإن الطينة إذا انحلت منافا تصلت بحصّتها بالنار	وإن الذي نراه أيضا إنما هو غير النار والهواء والماء والأرض وذواتها بل إنما نرى ما انحل ما في الفساد والكون المتصل لكل واحدة من هذه العناصر فإن الطينة إذا انحلت منّا ماءً فاتصلت بحقيقها بالنار	Moreover, what we see is also not fire, air, water, and earth themselves, but we only see what dissolves, namely, something that between the perishing and the coming-to-be which connects each one of these elements. For, material, if it is dissolved away from us to be water, it will connect to its reality by fire.
رأينا ذلك لأنا نرى النار الأولى وكذلك ما خرج بالزيادة وأمثال ذلك	رأينا ذلك لأنا نرى النار الأول وكذلك نرى ما خرج بالزناد / بالرماد وأمثال ذلك [ب-26أ]	We have known it because we know of the first fire. In the same way, we see what came out with flint (*zinād*) / ashes (*ramād*) and others.
فكذلك القول في العناصر الأربعة وإن هذه الأربعة لا نصل اليها ولو وصلنا إليها عملنا لها ما نريد فاعلم ذلك	وكذلك القول في الهواء والماء والأرض وإن هذه الأربعة لا تصل إليها ولو وصلنا إليها عملنا بها ما نريد فاعلم ذلك	The explanation about air, water and earth is like this although you do not attain these four. If we reached them, by that we would conduct what we want. Know that.

In the *FN*, there is a break between [FN3] and [FN4] in terms of the contexts, whereas this separation is not applied to the *Copper*. Nevertheless, I did put a mark of [Copper 4] in the text above just to compare these two books although [Copper 3] connects to [Copper 4] as a continuous sentence. At the beginning of [FN4], Ǧābir initiated his discourse on the invisibility of the bases by introducing the matter that is completely unseen. In contrast, the reference to matter (*hūlāy/hawlāy*) is seen neither in [Copper 3] nor in [Copper 4]. Instead of mentioning the matter, it is said, at the end of [Copper 3], that everything comes from the same thing, which sounds similar to what was written

right before [Copper 1], i.e., the three species are the same existence.[5] Furthermore, what we see is differently explained. It is said that something similar to the material is visible in [FN4] while material (*ṭīna*) is replaced with nature (*ṭabīʿa*) in [Copper 4]. The word *ṭabīʿa* طبيعة might have occurred just as mistranscription of *ṭīna* طينة. However, provided that *ṭabīʿa* in [Copper 4] is exactly as the author intended, then this passage means that nature is corporeal elements like the four elements.

Next two points show the disparity of the words in the same position. One of them is the incompatibility (*manāfin*) of the perishing and the coming-to-be that appears twice in [FN4]. Although it is not certain in the first place whether *manāfin* is exactly the word that the author of the *FN* intended, our analysis proceeds ahead by presupposing that *manāfin* is an original word that the author, Ǧābir, wrote. Both of two *manāfin* in [FN4] are changed into different words in [Copper 4]. The first one is turned into "what is in (*mā fī*) the perishing and the coming-to-be". In this case, the meaning does not change since a thing which lies between the perishing and the coming-to-be is equal to a place where things are incompatible. The second case is that منافا in [FN4] becomes متّاماءٔ (MS Paris) and مِناماءٔ (MS Cairo) in [Copper 4]. The words in [Copper 4] perhaps represent a combination of two words متّا ماءٔ though its meaning is not easy to understand even after this separation of the word. The other point lies in بالزيادة in [FN4], whose corresponding word in [Copper4] is بالزناد (MS Paris) or بالرماد (MS Cairo). The handwriting بالرماد is possibly read as بالزناد . In any case, however, the difference between [FN4] and [Copper 4] is clear in that the words in [FN4], i.e., incompatibility (*manāfin*) and increase (*ziyāda*), is more abstract than those in [Copper 4], water (*māʾ*) and flint (*zinād*) or ashes (*ramād*). In fact, considering the whole tendency of the two books, the *Copper* has more practical contents than the *FN* does. Both books are ascribed to Ǧābir, but probably they have different authors, and their intentions certainly differ.

After mentioning 'the first fire', [Copper 4] says "the explanation about air, water and earth is like this", where fire is excluded. On the other hand, [FN4] says "the explanation about four elements is like this". [FN4] implies that the first fire is completely different existence form the fire that is one of the four elements, while [Copper 4] can mean that the fire has a special position separated from the other three elements.

The *Copper*	The *FN*
The first Fire	The first Fire
Air, Water and Earth	Fire, Air, Water and Earth

As for the priority of the fire compared with other three elements, it could have derived from Empedoclean view of the four elements.

[5] See the citation that is put before [Copper 1] in this Chapter.

> Aristotle, *Metaphysics*, 985a31-985b2
> Again, he [Empedocles] was the first to speak of four material elements; yet he does not *use* four, but treats them as two only; he treats fire by itself, and its opposite – earth, air, and water – as one kind of thing. We may learn this by study of his verses. This philosopher then, as we say, has spoken of the principles in this way, and made them of this number.[6]

Empedocles is famous for having suggested the four elements. However, the four were practically two though grouping, not even 'two and two' but 'one and three', i.e., the fire and the other three. This asymmetrical dichotomic theory reveals the peculiarity of the fire.[7] Ǧābir then gives a definition of the fifth nature in the following passage.

[Copper 5]		[FN5]
It has become clear to you from our words that a thing which should be called the fifth [added] to the natures is necessarily the basis for the collection of what carries on itself attributes, differences which are inherent in themselves, separated, universal and proper, and the property of the property. Know that.	فقد وضح من قولنا لك الشيء الذي ينبغي أن يسمى خامسا للطبائع هو بالضرورة القاعدة لجميع ما يحمل عليه من الأعراض والفصول الملازمة منها والمفارقة والعامة والخاصة وخاصة الخاصة فاعلم ذلك	فقد وضح من قولنا أن الطبيعة الخامسة هي بالضرورة القاعدة لجمع الحامل من جميع الأعراض والفصول الملازمة والمفارقة والعامة والخاصة وخاصة الخاصة فاعلم ذلك

Both [Copper 5] and [FN5] convey the same meaning as a whole. The fifth nature is expressed as a thing that should be called 'the fifth' in addition to the natures that are probably equal to the four qualities, and as a basis for what carries all attributes and differences. However, [Copper 5] is slightly more explanatory than [FN5]. For, "the carrier (*al-ḥāmil*)" in [FN5] is replaced with "what carries [the followings] on it (*mā yaḥmilu ʿalay-hi*)" in [Copper 5]. This feature is also found in [Copper 6] that is a little more amplified than [FN6].

[Copper 6]		[FN6]
It was necessary for us regarding this speech to have the power to invent things.	فقد أوجبنا بهذا الكلام أن لنا قوة على اختراع الأشياء وبعضها	فقد أوجبنا اختراع الأشياء أو بعضها لنا كالاختراع الأول

[6] Tr. Smith & Ross (1908), vol. VIII; ed. Ross (1924) ἔτι δὲ τὰ ὡς ἐν ὕλης εἴδει λεγόμενα στοιχεῖα τέτταρα πρῶτος εἶπεν (οὐ μὴν χρῆταί γε τέτταρσιν ἀλλ᾽ ὡς δυσὶν οὖσι μόνοις, [985β] [1] πυρὶ μὲν καθ᾽ αὑτὸ τοῖς δ᾽ ἀντικειμένοις ὡς μιᾷ φύσει, γῇ τε καὶ ἀέρι καὶ ὕδατι: λάβοι δ᾽ ἄν τις αὐτὸ θεωρῶν ἐκ τῶν ἐπῶν): οὗτος μὲν οὖν, ὥσπερ λέγομεν, οὕτω τε καὶ τοσαύτας εἴρηκε τὰς ἀρχάς.

[7] Besides Empedocles, the Stoics would have to be taken into account in order to analyse the fundamental character of the fire in the Corpus.

سواء فاعلم ذلك ولا بشك فيه	كاختراع الأول سواء فاعلم ذلك ولا تشك فيه فقد وجب لنا أن تقتدى بالطبيعة وتقتضى آثارها حتى نفعل في بعض الأشياء مثل فعلها أو قريبا من فعلها	Some of them are equal to the invention of the first. Know that and do not doubt it. It was necessary for us to imitate the nature and to require its influences until we can make, in some things, the same as its action or something close to its action.
وذلك واجب متى أوجدنا شيئا من الألوان لم يكن إذ الجوهر لنا والكل فاعلم ذلك	وذلك واجب متى أوجدنا شيئا من الألوان لم يكن إذا الجوهر لنا والكل أيضا فاعلم ذلك	That is necessary when we produce any of the colours. It would not exist if neither we nor everything had the substance. Know that.
وهذا الممتنع عند بعض أصحاب النظر من قبل أن الألوان كلها محصورة لا يمكن أن يزيد فيها ولا ينقص منها	وهذا ممتنع عند بعض أصحاب النظر من قبل أن الألوان كلها محصورة لا يمكن أن تزيد أو تنقص	This is not admitted among proponents of the view that all colours, all of which are limited, cannot increase nor decrease.
فالجواب في ذلك إنها إذا كانت في القوة كلها أو بعضها بالفعل مما اخرجنا من القوة إلى الفعل فهو اختراع لنا	فالجواب في ذلك أنها إذا في القوة كلها أو بعضها في الفعل فما أخرجناه من القوة إلى الفعل مما قد كان في القوة ولم يخرج إلى الفعل فهو اختراع لنا	The answer to it is that if all or some of them – [which were] in potentiality – become in actuality, what we brought from potentiality to actuality is a thing which had been in potentiality but had not come out to actuality, this is our invention.
ومع أنه لا يلزم أنا ما اخرجناه من القوة إلى الفعل وقد خرج فهو اختراع لنا وأمثال ذلك	ومع أنه يلزم أنه ما أخرجناه من القوة إلى الفعل بما لم يخرج من القوة إلى الفعل وقد خرج فهو أيضا اختراع لنا وأمثال ذلك	Although it is requisite that what we brought from potentiality to actuality [is] through what did not come out from potentiality to actuality but [later] came out, it is also our invention or something like that.

The clearest difference between [Copper 6] and [FN6] is that, in [Copper 6], Ǧābir asserts the necessity to imitate natures and to produce the same function as the nature has. This is not written in [FN6]. Like this, [Copper 6] seems more explanatory than [FN6]. As for "our invention", it can be understood as artificial production in contrast to natural creation called "the first invention" since [Copper 6] explains the invention in the same way as in [FN6]. The last part of [Copper 6] differs from that of [FN6] in some expressions which

prevents from comprehension of the contents. One of them is *yalzamu* (it is requisite) that was a negative phrase, *lā yalzamu* (it is not requisite), in [FN6].

After this part, the correspondence between the two texts temporarily disappears. [FN7] contains a citation from Proposition 9 of the Euclid's *Elements V* to illustrate how to produce things from potentiality to actuality. However, the *Copper* does not have any citation from Euclid's *Elements*. Therefore, I skipped numbering [Copper 7] and named the next passage [Copper 8] since the text right after [Copper 6] refers to "four sciences" which is also mentioned at the beginning of [FN8].

[Copper 8]		[FN8]
We elucidate what we say, so that you [can] make your intelligence greater and see the way to the balance. We have to mention, right here, our words about four sciences which are the way and the link to what we deal with. We taught [it] to you in the whole twenty books, [their] preface and other books of ours. It will make it easy for you [to reach] what you want,	فنبين ما نقول لتقوى فطنتك وترى الطريق إلى الميزان وينبغي أن نذكر ههنا قولنا في العلوم الأربعة التي هي الطريق والوصلة إلى ما نحن بسبيله وقد علمناك إياك في الجمل العشرين كتاب وفي الأمامة وغيرها من كتبنا فانه يسهل عليك ما تروم	ومن جود النظر في باب العلوم الأربعة التي علمناك إياها علم ذلك بسهولة
namely, our saying that the sources of things are in themselves. For, geometry and all real magnitudes are true in themselves even if it was not known. It is not said due to the ignorance of a person who said "I do not say that honey is sweet until I taste it". This is opposed to the truth and the correctness. Verily, everything is related to the knowledge and the known about it.	وهو قولنا أعيان الأمور في ذواتها فإن الهندسة وجميع المقادير الحقيقية[8] حق في ذواتها وإن لم تعلم لا يقال بحسب جهل من قال لا أقول إن العسل حلو حتى أذوقه فإن هذا عناد الحق والصواب إذا إن يضاف كل شيء إلى العهود منه المعلوم فيه	وهو قولنا أعيان الأمور في ذواتها فإن الهندسة وجميع المقادير الخفية حق في ذاتها وإن لم تعلم ولا يقال بحسب جهل من قال لا أقول إن العسل حلو إن لم أذقه فإن هذا عناد الحق والصواب إذ قرب الأجوبة فيه فيجب أن يكون كلما ذيق مما هو حلو بالحلارة حامض بالحموضة ولا يجوز عليه المنتقل من حال إلى حال غيرها وهذا عناد الحق فاعلم ذلك

[8] As for *al-ḥaqīqiyya*, its original form in both [ب] and [ق] is *al-ḥaqīqa*. From a grammatical point of view, I changed *al-ḥaqīqa* into *al-ḥaqīqiyya* so that it can modify *al-maqādīr*.

In [Copper 8], after Ǧābir mentioned the necessity of the four sciences that can lead us to what we deal with, the sources (*aʿyān*) of things were explained with examples of geometrical magnitudes and sweetness of honey. Geometrical magnitudes were modified by "hidden" (*ḫafiyy*) in [FN8], whereas they are called "real" (*ḥaqīqī*) in [Copper 8]. At first glance, 'hidden' and 'real' seem inconsistent. However, if our interpretation of [FN9] in Chapter 2.5.1 is valid, and the thing that has reality (*la-hu ḥaqīqatun*) is something predicable (*yuqālu ʿalā al-mawḍūʿi*), 'real magnitudes' (*al-maqādīr al-ḥaqīqiyya*) can mean predicable magnitudes that are not always realised in the physical world but can exist only in our mind. In other words, the magnitudes are 'hidden' in our consciousness and do not appear in the tangible world. Thus, the expression, 'real magnitudes', can be compatible with the notion of 'hidden magnitudes'. After the sweetness of the honey was mentioned in the same way as in [FN8], [Copper 8] says that everything is related to the known. This phrase does not appear in [FN8].

[Copper 9]		[FN9]
Then the second perceives them (i.e., the sources) with the intellect. For, the intellect is also divided into four parts. We also taught you in particular what is said about the definitions of the subject.	ثم الثاني تصوّرها للعقل فإن العقل أيضا قد ينقسم أيضا أربعة أقسام قد علمناك أيضا ما يقال في حدود الموضوع لا سيما	ثم تصورها للعقل فإن العقل قد ينقسم أيضا أربعة أقسام قد علمناك أيضا كما يقال في حدود الموضوع الانتهاء
All of these are easy with practice in logic, that is our saying about the subject; it is said [to be] in the place (cor. 'of a subject') and is in a subject; it is said of a subject and not in a subject.	فإن هذه كلها سهلة على المرتاض بالمنطق وهو قولنا في الموضوع قد يقال في موضع (/ على موضوع) وهو في موضوع فلا يقال على موضوع ولا هو في موضوع	فإن هذه كلها سهلة على المرتاض بالمنطق وهو قوله في الموضوع قد يقال على موضوع وهو في موضوع ولا يقال على موضوع وليس في موضوع ولا يقال على موضوع فهو في موضوع
For, the intellect conceives a thing that has reality, and it refuses a thing that it does not conceive and [a thing that] does not have reality in itself.	فإن العقل قد يتصور شيئا ويكون له حقيقة وقد ينفي شيئا لا يتصوره ولا له حقيقة له في ذاته	فإن العقل قد يتصور شيئا وقد يكون له حقيقة وقد يبقى شيء لا يتصوره ولا له حقيقة وقد يتصور شيئا ولا حقيقة له في ذاته
For these reasons, I swear to God, we taught you logic. Know that and how it leads to the way, and work	ولهذه العلل وحق سيدي علمناك المنطق فاعلم ذلك وكيف	ولهذه العلل وحق سيدنا علمناك المنطق فاعلم ذلك وكيف هو

hard for what happens in the four parts of the intellect: It conceives what has reality with it.	هو تصب الطريق واتعب ما يجيء في أربعة أقسام العقل أن يتصور ما له حقيقة له	نصب الطريق إن شاء الله تعالى وحده العزيز واتعب يا أخي ما في هذه الأربعة في العقل أن يتصور ما له حقيقة على يقين ويبقى ما لا حقيقة له
Verily, a person who reached this place has obtained the ultimate in philosophy, gained mastery over it and been worthy of being called a philosopher.	فإنه من بلغ إلى هذه المنزلة فقد نال أقاصى الفلسفة واستحوذ عليها واستحق أن تسمى فيلسوفا	فإنك إذا صرت في هذه المنزلة نلت إلى آخر العلم الفلسلة والسلم.

An enigma is “the second” which suddenly appears at the beginning of [Copper 9], but the contents of [Copper 9] are mostly the same as [FN9]. As for a specific point, *lā siyyamā* (لا سيما) in [Copper 9] corresponds to *al-intihāʾ* (الانتهاء) in [FN9] which is a conjectural reading of unclear letters in MS Paris BnF Arabe 5099 (i.e., الاىها). The letters in question can be a corrupt form of لا سيما whose role is easily understood in the context while الانتهاء remains unclear regarding its meaning. Or, considering that the *FN* was composed earlier than the *Copper*, *lā siyyamā* is just a created form for unreadable letters in the manuscript that the transcriber consulted. Another notable difference between the two texts is the number of the intellects that are exemplified in each text. In [FN9], (A), (B) and (C) in the table below are presented in this order. On the other hand, given that the same interpretative framework as [FN9] works also in [Copper 9], [Copper 9] mentions only (A) and (B).

Four types of the existence in the *Categories*	Ǧābir’s four division of the intellect
(1) predicable but not present	[(D) not conceivable with reality]
(2) present but not predicable	(C) conceivable without reality
(3) both predicable and present	(A) conceivable with reality
(4) neither present nor predicable	(B) not conceivable without reality

This fact that [Copper 9] refers to only two of the four intellects might be a clue for understanding the contents of the next [Chapter 9.1] which never corresponds to [FN9.1] where two kinds of the fifth nature were mentioned.

[Copper 9.1]

The rest two aspects of the four are with logic about them and [there are] books on them. This is to bring them to actuality. No	فالوجهين الباقيين من الأربعة للمنطق بها [ب-

27أ] والكتب لها وهذا هو إخراجها إلى الفعل فإنه لا يمكن أحد في الدنيا أن يخرج إلى الفعل إلا ما هو موجود قبل ذلك في القوة فإن غير ذلك هو المحال الصرف ولولا أن الخاصية التي تحدثها نحن بجمعنا بين الأجساد وتسويتنا الكمية التي توجب تلك الخاصية بقصدنا وإرادتنا واختيارنا

وفكّر ما رويناها موجودة في تلك الأجساد بالقوة قبل ذلك ما أمكنا إخراجها إلى الفعل إلا بذلك العمل الذي نعمله بالمهنة وبتلك الزيادة والنقصان الذي يريده في بعضها وينقصه من بعضها ثم تذيبها بالنار لنمزجها فتمتزج فإذا أمتزجت كان الحادث بالمزاج هو ذلك الذي طلبناه ورمناه فربما سميناه ذلك الحادث طبيعة سادسة فإنه كما بينت قبل أن الطبائع أربع وهي قائمة في جوهر والجوهر هو الخامس لها وهذا الانقلاب وهذا الكون الذي لم يكن سميته طبيعة سادسة لأنه شيء حدث بالخاصية فإن شيت أن تسمى تلك الغلبة والانتقالات الطبيعة السادسة فافعل لأن الغلبة والانقلاب عن الخاصية كان والخاصية عن الكمية فاعلم ذلك

one in this world can come out into actuality without what exists in potentiality before that. For, things other than that are devoid of change. If the occult property which we produce with our entirety was not between the bodies, our equalization of the quantity that restricts the occult property would be done by our intention, our decide and our choice.

Think that what we told exists in those bodies in potentiality before that. We could not bring them into actuality without such operation that we work on professionally and without such addition and reduction that adds it to some of them and reduces it from some of them. Then dissolve them with fire so that we [can] mix them, and they will mix. If it is mixed, what appears by mixture is a thing which we sought and desired. We possibly call that occurred thing ‘the sixth nature’. For, as I elucidated earlier, natures are four and exist in a substance and the substance is the fifth of them (i.e., the natures). This transformation and this coming-to-be that did not exist are called the sixth nature because a thing occurs by occult property. If you want to call those conquering and transformations ‘the sixth nature’, do it because the conquering and the transformation come from the occult property and [the change of] the occult property [comes] from [the change of] quantity. Know that.

At the beginning of [Copper 9.1], Ǧābir mentions “the rest two kinds of the four”. Considering that only two of the four intellects, i.e., (A) and (B), were referred to in [Copper 9], the rest two can be (C) and (D) shown in the above table on the previous page. Ǧābir begins to talk about bringing things in potentiality to actuality. Nothing in this world can come out into actuality without what exists in potentiality before that. If there is no such potential existence, it follows that things are unchangeable. The bodies, namely, metals have occult properties that are determined by our balancing the quantity. Although it is not specified what this quantity is of, probably it means the quantity of elements or natures. Ǧābir urges us to think that what potentially exists in bodies before they come to actuality. By the professional operation of adding and reducing the elements of the things

that exist in potentially, we can bring them into actuality. Following this explanation, a manipulation procedure is introduced in the text. When things are dissolved by fire and mixed, the mixture that appeared is what we did seek. Ǧābir says that this mixture can be called the sixth nature and reminds us of other natures that exist before the sixth nature by saying that natures are four, which exist in a substance and the substance is the fifth of them (i.e., the natures). This means that 'the fifth' is the substance as a thing that is beyond the four natures. This idea that the fifth nature is the substance of the four natures was already mentioned in the text before starting to overlap with the *FN* as follows:[9]

The *Copper* [MS Paris 2606, 23b; MS Cairo 16a-b] = part of [Copper 0.2][10]

If you want to mix them (i.e., two bodies) with turning [them] over in terms of occult property which is a thing that exists in everything in the world of composite bodies – a thing whose nature is the fifth –, know that the nature of every simple thing, that is called the fifth, is a substance by its superiority. (…) This is the substance that is a thing in which there exist attributes called qualities, which are hotness, coldness, dryness and moistness, and they are assigned to natures. You need to research [them] after that (i.e., the substance). Since they (i.e., qualities) exist in everything in the world of composite material bodies (*aǧsām*) [derived from] what is the fifth nature, know that the nature of every simple thing, that is called the fifth, is the substance whose description we presented.	فإذا أردت مزاجها التقلب فيه بالخاصية التي شيء في كل شيء من العالم من الأجساد المركبة ما طبيعته الخامسة فاعلم أن طبيعة[11] كل شيء من البسائط التي تسمى الخامسة [ق-16ب] هو الجوهر بفضله (...) وهو الجوهر هو الذي تقوم فيه أعراض تسمى الكيفيات وهي الحرارة والبرودة واليبوسة والرطوبة وهي تدعى إلى طبائع ويجب عليك أن تبحث بعد ذلك وإذ قد تحصل في كل شيء من العالم من الأجسام المركبة ما طبيعة الخامسة فاعلم أن طبيعة كل شيء من البسائط التي تسمى الخامسة وهو الجوهر الذي قدمنا ذكره

The underlined texts in this citation are coincident with each other as if they share the same source or one of them are just a copy of the other. That is why the reasoning of this text seems to circulate, but the relation of the terms can be explained like the following: properties are in every composite body. On the other hand, natures are in every simple thing and called the fifth. The fifth nature is equal to the substance in which there are qualities that can be called 'natures'. Since composites are made of simple things, the substance, i.e., the fifth nature is in everything. Although it was said that the fifth nature is not the substance in [FN06], there it was called the basis like the substance. Therefore,

[9] Kraus already mentioned that the conception of the substance under the title of the fifth nature as a substrate of the four natures is found in MS Paris 2606, f. 23b of the *Copper*. Moreover, it is pointed out that the same idea is in the *Books of Seventy*. See Kraus (1942), p. 153.

[10] The text from [Copper 0.1] to [Copper 0.5], which is before [Copper 1], is analysed in Chapter 2.6.

[11] طبيعة is a grammatically modified form of طبيعته that is originally written in both manuscripts.

when the fifth nature is said to be the substance in the text above (i.e., part of [Copper 0.2]), the substance here means the basis or the principle, not precisely the substance itself. Now, if the twofold dichotomy between physical and logical principles and between the internal and external fifth nature as we found in [FN9] and [FN9.1] respectively can be also applied to the interpretation of the fifth nature in the *Copper*, the fifth nature described here seems to be a physical principle that can be called the internal fifth nature.

The focus of [Copper 9.1], however, does not seem to be on the fifth nature but on the sixth nature. What was produced by the transformation in the aforementioned procedure written in [Copper 9.1] is a thing that did not exist. Ǧābir calls it the sixth nature because it occurred by the occult property. Through manipulation, some natures in a thing prevail over others. The resulted victory or defeat transforms the manipulated thing into another. The transformation involves the change of its occult properties that depend on the quantity of each nature. Ǧābir says that the thing transformed in this way can be called the sixth nature. What is emphasised in [Copper 9.1] is that the transformation is related to occult properties. This emphasis is understandable considering the difference between occult properties and natures. The artificial transmutation is manipulation of the composites, not of the simple things. Accordingly, what is changed in the transmutation is not nature (neither four natures as qualities nor the fifth nature as the substance) but occult properties that result from the combination of natures. After [Copper 9.1], bibliographical information is inserted like this:

[Copper 9.2]

I have to make clear what I promised in these seven books. It is what we stipulated in the thirty-two books. We demonstrated it in the last part of the *Book of Principles*, praised it, specified its recitation in the *Book of Stored Knowledge*, and I mentioned the more of that in this book.	ولا بد من تبيين ما وعدت به في هذه الكتب السبعة فإنما هي التي نصصنا عليها في الاثنين وثلثين كتابا ودلّلنا عليها في آخر كتاب الأصول ومدحناها وخصصنا على قراءتها في كتاب العلم المخزون وأكثر ذلك ذكرته في هذا الكتاب

What is clarified in these seven books was already presented in the thirty-two books, the last part of the *Book of Principles* and the *Book of Stored Knowledge*. However, Ǧābir says, “this book” has more about it than other books. Although Ǧābir spoke about the *Seven Metals* at the beginning of [Copper 9.2] by saying “these seven books”, he finally mentioned only “this book”, probably the *Copper*. Here, the significance of the *Copper* compared with the other six books appears. And then, Ǧābir starts talking about logic.

[Copper 9.3]

We taught you logic. You should know that and how it leads to the way and should work hard for what my lord performs lastingly.	وقد علمناك المنطق فاعلم ذلك وكيف هو تصف الطريق واتعب ما يجيء سيدي مزمنة ومضى

Enough discourse was presented about the balance. The Mighty God exists over everything although what went away cannot know [that]. Now, consider what we say about our word ‘large’ in relation of a son to a father and a father to a son, and [the relation] of a slave to a master and a master to a slave. Our word ‘large’ is nothing but ‘many’ in relation to ‘a few’. Our word ‘small’ is just in relation to what is larger than it. Likewise, our word about what is said to be master would not be a master unless it was with the existence of a slave. The salve is in the same way.

متقدما كلام كافي في الميزان فإن الله القادر القائم على كل شيء وإن لم يعلم مما مضى فانظر الآن إلى ما نقول في قولنا كبير بالإضافة الابن إلى الأب والأب إلى الابن والعبد الى المولى والمولى الى العبد إن قولنا كبير إنما هو كثير بالإضافة إلى القليل وقولنا صغير إنما هو بالإضافة إلى ما هو أكبر منه وكذلك قولنا فيما يقال المولى لم يكن مولى إلا عند وجود العبد وكذلك العبد

It was said that this is nullity of the realities because we call everything by a name in the realm of relation, which is what is said of it in the realm of relation. Accordingly, a thing which is its reality is in his soul, whether it is small or large. For, we say these are names we agreed on regarding what we differentiated to know things. Then, it became their reality owing to that knowledge and that conception into our souls.

فإن قال قائل إن هذا هو بطلان الحقائق لأنا نسمى كل شيء اسما من باب الإضافة مما يقال عليه من باب الإضافة فما حقيقته هو في نفسه أصغير أم كبير فإنا نقول له إن هذه أسماء اصطلحنا عليها فيما بيّنا لتعريف الأشياء فقد صارت حقيقتها لذلك التعريف وذلك التصور إلى نفوسنا

I swear, what it is said of in relation does not have, in itself, reality in the realm of what it is not said of. However, it must have a certain reality. It is a thing which we said that the expression of it is nothing but the knowledge about it. [It is] obvious in this way as well.

ولعمري إنما يقال عليه بالإضافة ليس له في ذاته حقيقة من باب ما لا يقال عليه لكن لا بد من أن يكون له حقيقة ما وهو الذي قلنا إن تلك العبارة عنه إنما هو المعرفة فيها بينا كذلك أيضا

Saying “large” is explained with examples of the relations between a son and a father, and between a slave and a master.[12] Ǧābir says that being “large” is to be “many” in relation to “a few”, and that being “small” is said in relation to what is larger than the thing in question. In the same way, what is said to be a master cannot be a master without the existence of a slave. Then, Ǧābir supposes that someone will think that everything that is called by a name in relation to something else cannot have reality (*ḥaqīqa*). Ǧābir refutes this question. Those names that are said in relation to something are the ones that we agreed on to know things in terms of their differences. Such things have their reality through being known and conceived by us, i.e., through being in our soul. Indeed, what

[12] An example of the relation between a slave and a master is used in the section that deals with the category of relation in Aristotle’s *Categories*, 7, 6b29.

is predicable in relation does not have such reality that what is not predicable (e.g., 'this' human) has, i.e., physical reality, but Ǧābir insists, it must have a certain reality because an expression of the relation is known as something differentiable.

It is understandable why Ǧābir explained the reality that what is predicable has. In [Copper 9], two equations appear: being "present in a subject (*fī mawḍūʿ*)" is equal to being "conceivable (*al-ʿaqlu yataṣawwaru šayan*)", and being "predicable of a subject (*ʿalā mawḍūʿ*)" to being "with reality (*la-hu ḥaqīqatun*)". The latter seems to be incompatible to our experience in the physical world. For, what is said of a subject is universal and logical (e.g., genus and species) while what is not said of a subject is individual and physical (e.g., 'this' human). It is seemingly absurd that the logical existence has reality as already mentioned in the interpretation of [FN9.1],[13] but it can be explained here in [Copper 9.3] by saying that what is known in the soul has reality. Concerning this, it should be recalled that geometrical magnitudes that are not actualised but exist in our mind were modified with *ḥaqīqī* in [Copper 8].

The next passage, [Copper 9.4], partially corresponds to [FN9.3] where introduced are universal propositions that are true not only themselves but also their converse. In [Copper 9.4], Ǧābir adds some words to each example of the propositions.

[Copper 9.4]		[FN9.3]
We say "every quantity is balance" and "every balance is quantity" are correct propositions. According to this, pursue [them] concerning lightness, heaviness, form and colour.	نقول كل كمية ميزان وكل ميزان كمية قول صحيح فقس على هذا في الخفة والثقل والصورة واللون	كذلك نقول كل كمية ميزان وكل ميزان كمية قول صحيح
In the same way, we say "every dye is quality" and "every quality is dye" are true propositions which have no dispute nor controversy. According to this, pursue [them] concerning lightness, heaviness, form and colour.	وكذلك أيضا نقول كل صبغ كيفية وكل كيفية صبغ [ب-28أ] قول حق لا مرآء فيه ولا منازعة فقس على هذا في الخفة والثقل والصورة واللون	وكل صبغ كيفية وكل كيفية تصبغ قول حق لا مرآء فيه ولا منازعة
Like that, "everything that dyes is elixir" and "every elixir is what dyes". Then, how does one say about what is said of in other realm of relation? Is not it correct that its realities are in his soul? It is necessary to say yes. It is said to them that we	فلذلك كل صابغ إكسير وكل إكسير صابغ فكيف يقول القائل فيما يقال عليه من غير باب الإضافة أليس يصح حقائقه في نفسه فلا بد من نعم فيقال لهم فقد وجدنا حقائق	وكل صابغ إكسير وكل إكسير صابغ

[13] Our analysis at the end of [FN9] also dealt with the idea that the logical existence has reality.

found realities of things.	الأشياء

Viewpoints of lightness, heaviness, form and colour are suggested for those propositions that describe the relations between quantity and balance, between quality and dye, and between what dyes and elixir. From these combinations, it can be seen that quantity is connected to weight and quality to colour. Lastly, Ǧābir questions whether what is predicable in other realms than relation has reality or not, and replies that it has.

[Copper 9.5]

It was correct and necessary that you gathered all two heads, two medicaments or two eagles. For, you are one in terms of the natural quality [made] of each one of the two mixed things. The third natural quality is produced in and for the two by the mixture. Our saying 'the mixture produces it' means that it did not exist but then came to existence.	وصح ووجب أن كل رأسين أو دوائين أو عقابين خرجتهما فإنك واحد فيما طبع كل واحد من الممتزجين وطبع ثالث أحدثه فيهما ولهما المزاج وقولنا أحدثه المزاج أي لم يكن ثم كان
We referred to this meaning itself in the *Book of Secret of Creature and Truth of the Truth* with what is sufficient and reaching the correctness of what we call. However, since we guaranteed that we would elucidate [it] in these *Books of Balance* by means of verification and clarification, we had to fulfill the guarantee. We say that this third natural quality which the mixture brought is action of the soul.	وقد ذكرنا هذا المعنى بعينه في **كتاب سر المكنون وحق الحق** بما فيه كفاية وبلاغ على صحة ما ندعى لكن لما كان ضماننا أن نبين في هذه **الكتب الميزان** على تحقيق ووضوح لم يكن بد من الوفآء بالضمان فنقول إن هذا الطبع الثالث الذي أحدثه المزاج هو فعل النفس

In [Copper 9.5], Ǧābir refers to the third natural quality (*ṭabʿ ṯāliṯ*) as a thing that the mixture produces out of two things. The production here means to bring a thing that did not exist to this tangible world by the mixture of two things. Ǧābir says that its meaning was already written in the *Book of Secret of Creature and Truth of the Truth*. However, he declares he will give its explanation also in "these" *Books of Balance*. Here is an important bibliographical information. The pronoun "these" that modifies *Books of Balance* indicates that the text here belongs to the *Books of Balance*, whereas this book that we are analysing is the *Copper* which is considered to have been written after the *Books of Balances*. Therefore, "these" can be evidence that this middle part of the *Copper* was once in the *Book of Balances*. This explains the fact that the text of the *Copper* more or less overlaps with the *FN* which is counted as one of the *Books of Balance*. To return to the story that Ǧābir tells, the third natural quality is said to be an action of the soul. To try to clarify the third natural quality, Ǧābir quotes Galen's view that the spirit follows the mixture of the body in [Copper 10].

[Copper 10]		[FN10]
Consider that if what Galen said is right, that is, the spirit follows the mixture of the body according to the explanation of the foolish, then, the life is the sixth nature and it is, without doubt, above the action of the soul. If what he said is right according to the explanation of the wise, that is, (i) if the mixture perishes, the spirit will perish, (ii) if it (i.e., the spirit) is balanced, it (i.e., the mixture) will be balanced, and so on, this occurrence that the occult property performed, namely, the occurrence in the mixture is absolutely an action of the soul.	فانظر فإن كان ما قاله جالينوس حقا إن الروح تابع المزاج البدن على تفسير الحمقى فإذن الحياة هي الطبيعة السادسة وهي بغير شك فوق فعل النفس وإن ما قال حقا على تفسير المحققين وهو أنه إن كان المزاج فاسدا كانت الروح فاسدة وإن كانت معتدلة كان معتدلا وأمثال ذلك فإن هذا الحادث الذي فعل الخاصية والحادث في المزاج هو فعل النفس لا محالة	وإن كان ما قال جالينوس حقا فإن الروح تابعة المزاج البدن على تفسير الحمقاء فإذن [35ب] الحيوة هي الطبيعة الخامسة وهي بغير شك من فوق وإن كان ما قال به حقا على تفسير المحقين وهو إن كان المزاج فاسدا كانت الروح فاسدة وإن كان معتدلا كانت معتدلة وأمثال ذلك فهي الطبيعة الخامسة الظاهرة

Galen's work that Ǧābir had in mind is probably *QAM*,[14] in which Galen insists that the capacity of the soul follows the mixture of the body. One of the notable differences between [Copper 10] and [FN10] is that the soul (*nafs*) does not appear in [FN10] but it is mentioned in [Copper 10]. Another difference is that the life (*ḥayāt*) is said to be the sixth nature in [Copper 10] while it is the fifth nature in [FN10], which is crucial inconsistency. In the *Copper*, the fifth nature has been described as a fundamental principle in the same way as in the *FN*. However, the fifth nature no longer seems to weigh in [Copper 10] where the reference to Galen is used to support different notions from the fifth nature. The life, called the sixth nature, is an existence beyond the realm of the soul that controls the mixture. This means that the life is not affected by the mixture. On the other hand, the spirit disappears at the same time when the mixture is dissolved. Thus, [Copper 10] distinguishes the spirit from the soul in contrast to the ambiguity of their distinction in [FN10]. As for the sixth nature, only once is it mentioned in the *FN* like this: "the sixth" is a thing without reality (*ḥaqīqa*) and next to five natures that have reality (as said in [FN0.3]) although it cannot be asserted that 'the sixth (nature)' in the *FN* is exactly the same concept as described in [Copper 10].

Other minor differences between [Copper 10] and [FN10] are found when the latter half of the text is examined. Firstly, *al-muḥaqqīn* in [FN10] is altered into *al-muḥaqqiqīna*. However, since both derive from the same root *ḥ-q-q*, the core meaning of

[14] As for Ǧābir's reference to *Quod animi mores corporis temperamenta sequantur (QAM)*, see the interpretation of [FN10] in Chapter 2.5.1 and also the introduction to Galen's works in the Corpus in Chapter 1.3.

them does not differ and means those who say the truth in contrast to people who commit a folly (*al-ḥamqāʾ*). Secondly, the subjects of this phrase "if the spirit is balanced, the mixture will be balanced" in [Copper 10] was reversed in [FN10] like "if the mixture is balanced, the spirit will be balanced". Although the subject of the conditional clause should be the mixture as written in [FN10] as long as it is premised on that "the spirit follows the mixture of the body" is true, it does not seem to matter for the author of the *Copper*. The point of [Copper 10] is what depends or does not depend on the soul. Everything that happens in the course of mixture is an outcome of the action of the soul, while something that is beyond the mixture, e.g., the life as the sixth nature, does not concern the soul.

[Copper 11]		[FN11]
If it is a body that overwhelms what mixed with it, its parts are not dyeing, not spreading and not diffusive. Then, it becomes dyeing [only] after it and others are combined since that dye has an action of the body described as in that its parts are not dyeing by mixture. [Thus,] the expression of it and the first description became invalid.	وإن كان الجسد الغالب لما مازجه فلا تكون [ب-28ب] أجزاءه صابغة ولا منتشرة ولا متفشية ثم يصير بعد الجميع بينه وبين غيره صابغة إذ ذلك الصبغ فعل له من الجسد الموصوف بان أجزاؤه غير صابغة بالمزاج وبطلت العبارة عنه والصفة الأولة	وإن كان الإكسير قد لا تكون أجزاؤه صابغة فقد صح أن الطبيعة الخامسة إذ ذلك الصبغ فصل له من الأجزاء عن الصابغة فاعلم ذلك

In contrast to [FN11], the fifth nature does not appear in [Copper 11] of which subject should be elixir although it is expressed with "the body" instead. For, "the expression about it and the first description" at the last part of [Copper 11] can mean "every dye is elixir and every elixir is dye" in [Copper 9.4]. Ǧābir says, if it conquers others that are mixed with it, not every part of it is dyeing. This means that some parts of it are not dyeing on their own but only are dyed by the conquering part. Thus, concerning this kind of dye as a result of mixture, its parts are not dyeing. This is a counterevidence that ruins "the first description", i.e., the universal proposition shown in [Copper 9.4]. However, it is also said that, once it and those parts that do not have power of dye are combined, such parts can be the dyeing as well as it. Each part in the mixture has its own quality, whereas every part of the thing after combination has the same quality. Here is a strict distinction between mixture (*mizāǧ*) and combination (*ǧamīʿ*).

[Copper 12]		[FN12]
Understand, I swear to God, that this is a subject of what indicates the balance. This was sufficiently	فافهم هذا وحق سيدي موضوع الدلالة على الميزان وفيه كفاية مع	فهذا وحق سيدنا هو موضوع الطبيعة الخامسة الظاهرة

فالنتيجة من ذلك والفائدة مع ما تقدم فهو قولنا ما هي قواعد هذه الأشياء وقد أنبّأ عن جواهر هذه الأشياء كلها في كتاب من هذه الكتب فاطلبه فإني لا أسميه لتعرف موضع المنة عليك	غيره وكل ذلك فقد أتينا به ههنا أعني في هذا الكتاب	[described] with things other than it and all of that [things]. We arrived at it here, I mean, in this book.
فالتحقيق يوجب أن الأجزاء في الأحمر غيرها هي الأبيض وقد يحصرها كلها اسم واحد	فالحق قد أوجب أن الأشياء في الأحمر غير ما في الأبيض وقد يخصّوها كلهم اسم شيء	The truth is necessarily that things in red are not what is in white. Everyone specified them with a name of a thing.
إن علمت ذلك فاعرفه وابحث عنه تصب الطريق إن شاء الله تعالى وحده العزيز	إن علت ذلك فاعرفه وابحث عنه وما هو فهو شيء غير صعب تصب الطريق إليه سهلا إن شاء الله تعالى	If I explain that, you should recognise it and search for it, namely, what it is. That is not a difficult thing, and you will easily pursue the way to it, if sublime God wills.

In [FN12] as well as [FN10] and [FN11], the fifth nature is mentioned, whereas it does not appear in the text from [Copper 10] to [Copper 12]. This implies that the aim of the *Copper* is no longer the fifth nature, which perhaps relates to the fact that the fifth nature in [FN9] was replaced with the sixth nature in [Copper 9]. Probably, the balance is a main theme in [Copper 12] instead of the fifth nature since "the subject" is not related to the fifth nature but to the balance in [Copper 12] while the subject is of the fifth nature in [FN12]. The proposition presented in [Copper 12], i.e., "things in red are not what is in white", is different from the one in [FN 12], but both convey the same meaning. The transition from غيرها in [FN12] to غير ما in [Copper 12] could have been caused by the obscurity of handwriting. Shifting from الأجزاء to الأشياء can also happen through the transmission of manuscripts. These changes do not make difference in the whole sentence. Furthermore, the difference between اسم واحد in [FN 12] and اسم شيء in [Copper 12] does not seem to affect the core meaning of the sentence because the former is "one name" and the latter can be "a name of one thing". What Ǧābir wanted to say is that even if a thing has two parts (e.g., red and white), it can be called by one name.

[FN13]		[Copper 13]
وانظر الآن من الطبيعة الخامسة	وقد بقي أن تكلم في شيء هو الأصل والقاعدة وما غرضنا بذكره في أحد هذه	It is left for us to talk about a thing that is the principle and the basis. What we aimed at by

referring to it in one of the seven [books] but not here, is [whether] a principle should be the mixture which is sought between only two bodies, or three parts of extending, or four bodies, or five, or six, or all of the seven. The argument among philosophers on it is many and long, and there are different claims. One of them said that it is not possible except only for two bodies. [Another] group said [that it is possible for] three. [Another] group said that it is not more than that. As for the argument of proponents of two bodies, they said “we wish to change a thing into something [else]. What we want is just to change one of them into the other. The third has no meaning at all”. [In this way,] they responded to proponents of three and [to] those who said [it is] more than that.	السبعة إلا ههنا وهو أصل يجب أن يكون المزاج المطلوب بين جسدين فقط أم ثلاثة أجزاء بماد أم أربعة أجساد أم خمسة أو ستة أم السبعة كلها فإن الخصومة بين الفلاسفة في ذلك كثيرة طويلة وفيها دعاوٍ مختلفة فمنهم من قال إنه لا يجوز أن يكون إلا جسدين فقط وقال قوم ثلاثة وقال قوم لا أكثر من ذلك فأما حجة أصحاب الجسدين فإنهم قالوا إنما نروم قلب شيء إلى شيء فليكن الذين نريد قلب أحدهما إلى الآخر فقط والثالث لا معنى له بتة وردوا على أصحاب الثلاثة ومن قال أكثر من ذلك	هل يجب أن يكون الشيء من دواء واحد أو من أدوية كثيرة فإن الخصوصة في ذلك بين الفلاسفة كثيرة طويلة

[Copper 13] is clearly dedicated to alchemy in its narrow sense because it treats the mixture of the seven bodies, i.e., metals.[15] Ǧābir introduces several opinions about how many bodies can be involved in the mixture. On the other hand, it was considered whether the thing comes from one medicament or more than two in [FN13]. Both texts discuss the number of components and report that philosophers have argued about the number, whether it is of medicament or of metal, which are the only features that are shared between [FN13] and [Copper 13].

[Copper 14]		[FN14]
They said that things are not equal in terms of definition nor natural quality. If they were equal in terms of the definitions and natural quality, they would equally be the prior dye. The prior dye is nothing but is in one thing. It is impossible for	فإنهم قالوا إن الأشياء لا يساوى في حد ولا طبع [ب-29أ] ولو تساوت في الحدود والطبع لكانت هي والصبغ الفاضل سواء والصبغ الفاضل إنما يكون في	وذلك أن أهل الشيء الواحد يقولون إن الأشياء لا يتساوى في طبع واحد ولو تساوت في الطبع والحدّ لكانت هي الصبغ الفاصل إنما

[15] Alchemy in its broader meaning is an eclectic science including medicine, philosophy, magic and theology. However, the art that transmutes metals can be called alchemy in particular.

يكون في الشيئ الواحد ولا يتساويه ما كانت من أشياء كثيرة ومن قال إنها لا يتساوى على القضية الأولى	شيء واحد ولا يجوز تساويه أن دخل ثم أشياء كثيرة فإن الثالث مثل السبعة كلها بلا فرق والدليل على ذلك إنها يتساوى على القضية الأولى إذا لم يتساوى لم يجز أن يحدث فيها كلها فعل واحد من جهة واحدة وهي محتلفة في الحد والطبع	something equal to it to enter [the one thing] and then [to be] many things. The third like all of the seven does not have difference. The demonstration of it is that they are equal according to the first theorem. If they are not equal, it is not possible for all of them to have the same action from the same aspect. They are different in terms of definition and natural quality.

The first half of the [Copper 14] is almost the same text as shown in [FN14], but the point of the reasoning is different although both texts introduce the same opinion that things are not equal regarding their definition and natural quality. [FN14] says that, even if plural things have the same definition and natural quality, it does not mean that they are equal but only indicates that separate (*fāṣil*) things are in the same thing. On the other hand, in [Copper 14], if plural things have the same definition and natural quality, each of them should be equally dominating (*fāḍil*). However, something dominating cannot be plural in one thing. Indeed, the key words here, i.e., 'separate (فاصل)' and 'dominating (فاضل)', can be easily swapped depending on the presence of only one dot on the second root letter, but they cannot be alternative considering the whole meaning of each text. Provided that the [Copper 14] is a partial copy of [FN14] according to the order of the supposed composition date, dominating (*fāḍil*) might have been just an outcome of mis-transmission of separate (*fāṣil*). Even if so, [Copper 14] with dominating (*fāḍil*) is a comprehensible text that has a different nuance from [FN14].

[FN15] & [FN16]		[Copper 15]
[FN15] وقالوا أصحاب الجماعة في جواب ذلك لعمرى إنكم قد صدقتم أن الأشياء لا يتساوى في حد واحد فما ينكرون أن يكون أشياء كثيرة من جنس واحد تعمل ذلك إما أكثر وإما إقل من عمل ذلك الواحد وأعني	وقال أيضا الجماعة في حول ذلك لعمري لقد صدقتم أن الأشياء لا يتساوى في طبع واحد فما تنكرون أن تكون أسماء كثيرة من جنس واحد تعمل ذلك العمل فيها العامل وبقلبها القالب إما باكثر وإما باقل من العمل في	The congregation also said about power (*ḥawl*) [or change (*ḥiwal*)] [16] of it. Upon my life, you deemed that things are not equal in one nature. What you do not know is that there are many names of the same genus with which the operator does that work. The transformation turns

[16] I keep both meanings, power (*ḥawl*) and change (*ḥiwal*), because the following topics are transmutation and transformation which can be related with both.

بذلك العمل الكيفية فاعلم ما نقول وانظر الآن يا أخي بعين العقل بالله الطالب الغالب الحمن الرحيم أين الحقائق	ذلك الواحد وأعنى بذلك العمل القلب والنقل إلى الفضية والذهبية فافهم وافقه ما نقول وانظر الآن يا أخي بعين العقل بسم الله العظيم الرحمن الرحيم الطالب الغالب أين الحق	the two by more or less of the work in the one thing. I mean, by that work, the transformation and turning into the silvery and the golden. Understand its suitableness of what we say and consider now, O brother, with the eye of the intellect by the name of God who is Great, Merciful, Compassionate, seeking and controlling the place where the truth is.
فإنك تجده وحق سيدنا في الوجهين جميعا إلا أنك ستجده في باب الجماعة أقرب وأقل في باب الجماعة على جملة واحدة أبعد وأعزر ويجب أن يضاف إليه واتعب والسلام [FN16] وإذ قد أتينا على هذا الموضع من الطبيعة الخامسة فإنا نحتاج أن نقول في تمام ذلك في القسمين الآخرين. إذ قد حكمنا وجوّدنا القول في أعيان الأمور وذوات الأشياء وفي تصورها للعقل فغير شك أنها لما كانت أربعة وقد كنا قدمنا أن الإثنين منها قد تكلمنا عليها وأن الباقي إثنان وهما اللفظ بها والكتابة لها	فإنك تجده وحق سيدي في الوجهين جميعا إلا أنك تجده في باب الثلاثة أقرب وأقل وفي باب الاثنين أغزر وأكثر وأبعد من الحديث واتعب قليلا ويجب أن نقول واتعب كثيرا ولا تظنّ أن قولي كثيرا إنه شيء يطول فإنه لا يتأخر لكن هذا الكثير إنما نقول عليه بالإضافة فافهم ما نريد وإلا فكل هذه الأعمال نهايتها أربعة ساعات من النهار لا زيادة فمتى زاد الزمان على هذا المقدار [ب-29ب] فليس هذا هو الطريق بل هو طريق آخر فافهم أن شاء الله تعالى	You will find it, I swear to God, in two aspects together but you will find the more probable and fewer in the chapter three and the more copious, more plentiful and more distant from *Ḥadīṯ* in the chapter two. Do not be worn out so much, but [also] we have to say: work hard a lot. Do not think that my word that a thing lasts long is exaggeration. Since it does not come late and this abundant [discourse] is verily what we will additionally talk about, understand what we want. All of these operations finish in four hours in the daytime. There is no increase when the time of this range increases. This is not the way but another way. Understand it if sublime God wills.

Except the last few sentences that urge readers to understand what Ǧābir intends, [Copper 15] has a similar text as in [FN15] where Ǧābir responds to the opinion he introduced in the previous paragraph by presenting his own view that things in the same genus can function as the same quality although there is a difference in their degree of the quality.

[FN15] explained ‘the action’ that things perform as ‘quality’, whereas [Copper 15] says ‘the action’ means the transformation into silvery or golden bodies. In this point again, it can be said that the *Copper* is more practical and alchemical than the *FN* that is relatively philosophical. There are other differences between the two texts: ‘one definition’ and ‘many things’ in [FN15] are replaced with ‘one natural quality’ and ‘many names’ in [Copper 15] respectively. It might not be appropriate to say again that [FN15] is more philosophical just for these two differences, but the expressions in [Copper 15] is at least more concrete than those in [FN15].

More complicated discrepancy is found in the last part of the texts that correspond between the two books. ‘The chapter of the Congregation (*bāb al-ǧamāʿ*)’, which appears twice in [FN15], is altered with ‘the chapter of Three’ and ‘the chapter of Two’ in [Copper 15]. It is hard to grasp what texts Ǧābir intends by these chapters are, but the *Ḥadīṯ* might work as a key to understanding the background of both [FN15] and [Copper 15] since the *Ḥadīṯ* is mentioned in [Copper 15] and the *Ḥadīṯ*, though it is not referred to in [FN15], has a chapter named the Congregation. The next paragraph is numbered [Copper 17] instead of [Copper 16] since the *Copper* does not have the text that fits [FN16] in terms of contents.[17]

[Copper 17]		Part of [FN17]	
As for this [view] that we have mentioned, we call [the proponents of] it the people of *al-taḏkiya* after *al-ḏakāʾ* (the flare). For, they say that what occurs from the mixture of natures is a thing which exists in a trice [like a flare]. This is – nothing in the world is sharper, faster, more flaring than this. I do not know why Arabs call the slaughter of what they slaughter “*al-taḏkiya*”. This is	وهذا الذي نحن بسبيل ذكره نسميه قوم التذكية مأخوذ من الذكاء وذلك أنهم يقولون إن الحادث من المزاج من الطبائع شيء يكون في أقل من لمح البصر وهذا فشيء ليس في الدنيا أحدّ منه ولا أسرع ولا أذكى ولا أدرى لم تسمى العرب ذبح ما يذبحونه تذكية وهو أحد أسباب	By that, we just intended the extension in the words. For, although *al-ḏakāʾ* has *fatḥa* of *fāʾ* and *ʿayn* according to the weight of *f-ʿ-l*, it does not have similarity with “*al-taḏkiya*” as the slaughter. The slaughter is one of the reasons of the death. It (i.e., *al-ḏakāʾ*) is [like this]. This has what is imposed on us, i.e., that Arabic vocabulary is very narrow. Know that.	(...) وإنما قصدنا بذلك التوسع في الكلام فإن الذكاء وإن كان على وزن فعل مفتوحة الفاء والعين فلا مثال له من التذكية الذبح والذبح أحد أسباب الموت فكان فلهذا ما أوجبنا أوّلا انّ الكلام العربي ضيق جدا فاعلم ذلك (...)

[17] I stopped the analysis of the *FN* with [FN16] in Chapter 2.5.1 because the fifth nature is virtually discussed only before [FN16] and the text after that does not mention the fifth nature except for the last phrase to finish the book. In fact, the text in [FN17]-[FN19] is not so considerably overlapping with the *Copper*.

one of the reasons of the death. It is fault in terms of the meaning and not fault in terms of the usage of names indicating what are called. This has what is imposed on us, i.e., that Arabic vocabulary is very narrow.	الموت وهو خطاء من جهة المعانى وغير خطاء من جهة الاصطلاح على الأسماء المشار بها على المسميات فلهذا ما أوجبنا أن كلام العربى ضيق جدا	

Although Ǧābir declared in [FN16] that he would treat the rest two parts of the fifth nature afterwards,[18] the word 'the fifth nature' is seldom found in the text after [FN16] until the end of the *FN*. In the latter half of the *FN*, the main theme is the balance of letters. In [FN17],[19] following examples of analysing letters in some words, the text cited above comes. The word, *ḏakāʾ*, means 'flare' or 'brightness' and 'intelligent' or 'cleverness'. One of its derived forms, '*al-taḏkiya*', indicates something bright or clever. On the other hand, '*al-taḏkiya*' also means slaughter to make a sacrifice to God. By referring this example of homonym, Ǧābir shows the limitation of Arabic language. Likewise, [Copper 17] concludes the inconvenience of Arabic but has more detailed explanation of the same example. Ǧābir calls a certain group of people '*al-taḏkiya*' on the ground that they deemed that the mixture of natures brings a thing which occurs in a shorter moment than the blink of an eye. According to this reasoning of his, '*al-taḏkiya*' as a name of the group is more likely to mean 'flash' or 'flare' rather than 'intelligent' or 'clever'. Therefore, '*al-taḏkiya*' in [Copper 17] seems to mean a group of a flash/flare.

Considering Ǧābir's words at the beginning of [Copper 17], i.e., "as for this [view] that we have mentioned", he should already have mentioned this group. It is recalled that 'the congregation' was mentioned in [Copper 15]. Although it is not possible to affirm that 'the congregation' is really equal to the group Ǧābir called '*al-taḏkiya*' since these texts of the *Copper* sometimes look patchy and it is not certain whether [Copper 15] and [Copper 17] are in the same series even if they are written continuously,[20] yet there is a possibility that they might be relevant. For, it was said in [Copper 15] that 'the congregation' talked about the power (*ḥawl*) or change (*ḥiwal*), which is followed by the explanation of transmutation and transformation, and in [Copper 17], the occurrence of things by the mixture of natures is referred to in the view of the group. If the mixture is regarded as a power to cause some changes, 'the congregation' and '*al-taḏkiya*' can be identified.

[18] See Chapter 2.5.1.
[19] [FN17] is not the text next to [FN16]. See the text of the *FN* in Appendix.
[20] To adjust the numbering of the *Copper* to that of the *FN*, [Copper 16] does not exist in my numbering and [Copper 15] directly connects to [Copper 17] in the text.

Thus, '*al-taḏkiya*' indicates instantaneous coming-to-be as a result of mixture. On the one hand, in a different situation, it can also represent death or perishing of a sacrifice to God as Ǧābir introduces another meaning of '*al-taḏkiya*'. Since the root *ḏ-k-y* does not principally mean 'slaughter', the latter usage of '*al-taḏkiya*' is wrong in terms of meaning. However, it is conventionally valid and enables people to recognise what it represents. In this point, it is not wrong. Ǧābir finishes this passage by saying that Arabic language is very narrow (*ḍayyiq*) – a negative adjective. Nevertheless, the fact is that he commits quite a few pages of his books to the science of Arabic letters. One of the many examples is the latter half of the *FN* that is devoted to the balance of letters.

[Copper 18]		[FN18]
Know that the soul has no weight. Likewise, its effects have no weight. Every attribute has no weight.	واعلم أن النفس لا وزن لها وكذلك أفعالها لا وزن لها ولا أعراض كلها لا وزن لها	
If one is generated from two, it is more extending and has more colours and more spreading than the natural quality that was the first in that thing.	فإذا حدث حادث عن اثنين كان أبسط وأكثر نقيشا وانتشارا مما كان أولا من الطبع في ذلك الشيء	فإذا ادخلت هذه الدواخل كانت أبسط وأكثر مما كانت عليه في الأول
For example, in this art, elixir works in three operations. It fixes mercury as silver, dyes copper into silver and dyes white ruby into red. People mentioned that all of these are false to be or to have reality, but we found it has reality and existence.	مثال ذلك في هذه الصناعة إكسير يعمل ثلاثة أعمال وهو عقد الزيبق فضة وصبغ النحاس فضة وصبغ الياقوت الأبيض أحمر وإن قوما ذكروا أن هذا كله محاله أن يكون أو يكون له حقيقة وقد وجدنا له حقيقة وكونا	ومثال ذلك في الصناعة اكسير يعمل ثلثة أعمال وهو عقد الزيبق فضة وصبغ النحاس فضة وصبغ الياقوت الأبيض الأحمر ليس في العرى مثله وأكثر الفلاسفة زعم أن هذا باطل ومعدوم أن يكون في العالم كذلك فاعلم ذلك فإنه يحتاج إلى الاستقاق والمضارعة

Suddenly, Ǧābir returns to the discourse on the soul. The first sentence of [Copper 18] does not connect well either [Copper 17] or the rest of [Copper 18]. Or rather, it seems relevant to the paragraph before [Copper 1] where it is said that the soul has no weight.[21] After mentioning the soul, Ǧābir provides concrete actions of the elixir that is an example

[21] The text before [Copper 1] is analysed in Chapter 2.6.

of a composite from two. From a philosophical point of view, notable is the last expression “it has reality and existence”. It is said that the effectiveness of the elixir is usually regarded as false. However, Ǧābir insists it is true. Both to have reality and to have existence generally mean to be truly or actually. According to the explanation that was already presented in [FN1], the ‘existence’ (*kawn*) distinguishes the material (*ṭīna*) that is the substrate for three species, i.e., animals, plants and stones, from the body (*ǧism*) that is only three dimensionality.[22] The ‘reality’ (*ḥaqīqa*) here seems to be used as a mere synonym of ‘existence’, but if our analysis in Chapter 2.5.1 is applied, the ‘reality’ represents logical trueness. Given that the discourse in the *FN* provides universal rules that are valid for other Ǧābirian books as well, Ǧābirian view of the world can be described with two aspects: the physical and the logical. Being physically means to have existence and being logically is to have reality. As long as these two sides are sufficient and necessary to describe the world, the phrase “it has reality and existence” simply means ‘completely true’.

[Copper 19]		[FN19]
We mentioned the demonstration of this in some of our books *Thirty-two Books* and other books of the *Books of balances* such as *Bringing out What in Potentiality to Actuality* and *Book of Cores*. If you consider them, it will become clear to you that the demonstration concerning what is needed is true.	وقد كنا ذكرنا من الدلالة على هذا في بعض كتبنا الاثنين وثلاثين كتاب وفي غيرها من **الكتب الموازينية** مثل **إخراج ما في القوة إلى الفعل** ومثل **كتاب المهج** فإن نظرت فيها بان لك الدليل فيما يحتاج على صحة ذلك	وقد كنا ذكرنا في ذلك شيئا يسيرا في الاثنين والثلثين فإذا قرأت **كتاب العمل بالطبائع وإخراج ما في القوة إلى الفعل** وكتاب **المقابلة** وأمثال ذلك بان لك من أعمال هذه الأشياء ونظمها على التحقيق شيء عظيم لأنا قد أوضحناه فيها ثم بغاية ما يكون وأرجو أن يسهّل الله تعالى أن أحب

Both texts are not strictly similar but have the same framework overall: ‘we already presented this in the books. If you read them, it will be clear to you’. Since this type of statement and the common phrases between [Copper 19] and [FN19] (underlined in the above text) are often seen in the Corpus, they are not so crucial elements to regard these texts as corresponding. Provided that [Copper 19] depends on [FN19] or they have the same source at least, these texts are the last corresponding parts between the two books. After [Copper 19], Ǧābir continues to explain the feature of the *Seven Metals* and especially the *Copper* as shown in [Copper 20].

[Copper 20]

[22] *Kawn* in [FN1] is replaced with *lawn* in [Copper 1]. See the analysis of [Copper 1] in this Chapter.

وإنما نحتاج إلى الوجه [ب-30أ] في العمل وكيفية تمامه والدلالة عليه وقد جودنا لك في هذه الكتب منثورا مبددا فيها وكذلك تحصل على جميع المتفرق وتفريق المجتمع فافهم هذا الكتاب خاصة فقد ذكرنا فيه ما لم نذكره في غيره بتة في الكتب أعني هذه الكتب السبعة وقد ذكرنا في غيره ما لم نورده فيه إلا أن هذا الكتاب أفضلها وأنفعها وكلما قلنا في كتاب أنه أفضل فإنما يعني أنه أنفع لأنا ما وضعنا كتبنا يشهد الله إلا لمنفعة الناس جميعا لا لنظلمهم ولا لنحيرهم ولم يكن بد من الرمز والتعمية وإلا كنت الكون ملعونا بين الفلاسفة وقد وحق سيدي فعلت ما الكون ملعونا عندهم وبخاصة في وضعي [ق-21أ] لهذه الكتب وغيرها من كتب الموازين

All that we need is a way of operation and how its completion and its demonstration are. We dispersed and spread about it for you in these books. Like this, you will acquire everything divided and [each] section of everything. Understand especially this book, where we mentioned what we never mentioned in the other books, I mean, these seven books. We talked in the other books about what we did not mention in this book. However, this book is the most excellent and most useful in these books. Whenever we said about a book that it is more excellent, it only means that it is more useful because we produced our books – God testifies – only for the usefulness for all people, not to harm them and not to confuse them. I was not able to avoid [using] a symbol and a riddle, otherwise, I would be cursed among philosophers. I swear God, I did what is cursed among them, especially when I produced these books and others of the *Books of Balances*.

The Ǧābirian writings are confusing in general because Ǧābir, whoever he is or they are, dispersed the secret knowledge in different books and used symbols and riddles to keep the treasure from those who are not entitled to this art. However, the author of this book tried to reduce the complexity as much as possible to convey the knowledge to everyone. This kind of attempt was seemingly prohibited by ‘philosophers’. That is why it was impossible for him to remove all veils in the writings and he had to use symbols and riddles to some extent. It means that this book is not completely easy to understand. Nevertheless, this book is said to be outstanding in its usefulness and can be exposure of the secret as the author says that he did what is cursed by philosophers.

After those philosophical parts of the *Copper* that have been analysed in this chapter, several alchemical recipes and some pieces of bibliographical information come until the end of the book. Another philosophical text that remains unexamined is found before [Copper 1], where the balance – an important concept in Ǧābirian theory – is mentioned along with the soul and four natures. In the next chapter, the notion of the balance is going to be explored.

2.6 The balance

The transmutation of metals is caused by the change of occult properties in each metal. Since the occult properties are determined by the quantity of each nature in the metals, it is possible to produce any intended metals through manipulation of the quantity of natures if it is precisely known how much each nature is in the metals. In this way, the significance of the quantity is stated in [Copper 9.1]. However, there was no explanation about the concept of the quantity in [FN0.1]-[FN16] and [Copper 1]-[Copper 20] which were analysed in Chapter 2.5.1 and Chapter 2.5.2 respectively, except that the quantity is barely known as an alternative concept of the balance on the ground that [FN9.3] and [Copper 9.4] say that "every quantity is balance" and "every balance is quantity" are correct propositions. In this chapter, the focus is on 'the balance' and its possible equivalent, 'the quantity'. The balance is described in part of the *Copper*, i.e., in [Copper 0.1] to [Copper 0.6] which is placed before [Copper 1].[1]

The weight, the substance and the qualities

[Copper 0.1] On the balance

I say that the balance – the action of which we talked about in the *Book of Concentration*, the *Book of the Excellents* and the others from the *Books of Balances* – is the balance by which you can tell a kind of disparity (*tafāḍul*) among soluble bodies in terms of gravity and lightness, and it indicates their (i.e., of soluble bodies) natures. If you get to know it (i.e., the disparity) by the balance which we described here, the ratio among them (i.e., natures) will be made freely.	فأقول إن الميزان الذي ذكرنا عمله في **كتاب التجميع** و**كتاب الأفاضل** وغيرها من **كتب الموازين** هو الميزان الذي تخبر به تفاضل ما بين الأجساد الذائبة في الوزانة والخفة ويكون ذلك دليلا على طبائعها فإذا تحصل ذلك بالميزان الذي وصفنا ههنا فقد جعلت النسبة فيما بينها على تحرر
If it works on it (i.e., a body) as we described with this balance, there also appears the disparity of other material bodies (*aǧsām*), spirits, all parts of every animal, plant and stone, and whatever you wanted by choosing its weight with this balance.[2] Thus, test it and, if you get to know its weight, write it in the course of its being close to you. If you	إذا عمل فيه كما وصفنا بهذا الميزان يخرج أيضا تفاضل سائر الأجسام والأرواح وجملة جميع أجزاء الحيوان والنبات والحجر كله ومهما أردت من اختيار وزنه بهذا الميزان فاخبره فاذا تحصل لك وزنه فاكتبه في مدرج يكون إلى جنبك فإذا

[1] The text [Copper 0.1]-[Copper 0.6] is preserved in [ب 22b-16b] and [ق 16a-17a] and not found in [ط]. See Chapter 2.2: Table of Contents of the *Seven Metals*.

[2] Although *iḫtiyār* (choice) is clearly written in both manuscripts, it might have been *iḫtibār* (precise knowledge). Then, "whatever you wanted by choosing its weight with this balance" can become like this: "precise information you wanted about its weight with this balance".

فرغت من الأجساد الذائبة فإنك غير محتاج وفي هذا الباب وهذا العمل خاصة إلى غيرها فهو يخرج كله ويقف العجائب [ب-23ب]
وقد قلنا لك إنه يخرج من كل جسدين من أي الأجساد كانا هذين الجسدين فإذا حصل لك بهذا الميزان وأثبته فقد حصل لك تفاضلها وفروقها في طبائعها فاحفظ واعرف نسبها

finish [treating] soluble bodies, you will not need other things in this section [3] and especially [in] this operation. For, the whole of it (i.e., weight) comes out, and amazing things happen.
We said to you that it would come out from every two bodies, whichever bodies these two are. If it (i.e., the weight) appears to you through this balance and proves it (i.e., the balance), you will get to know their disparity and their differences in their natures, then preserve and recognize their ratios.

According to Ǧābir, how the balance (*mīzān*) functions was already mentioned in the *Book of Concentration*, the *Book of the Excellents* and the other *Books of Balances*. This time, however, Ǧābir talks about the balance itself, not about its action. The balance tells us a certain disparity (*tafāḍul*) that soluble bodies have in terms of gravity and lightness, and the disparity indicates the natures of each soluble body. The word *tafāḍul*, which can be translated with 'superiority' or 'disparity', seems to be a Ǧābirian term indicating quantitative difference that each body has. If we get familiar with the disparity among the bodies by means of the balance, we can freely manipulate the ratio between their natures. That is to say, with changing a ratio of natures in a body, it would be possible to transform the body into another. This theory of balance is not limited to soluble bodies but applied to everything: not only bodies and spirits but also animals, plants and stones. In other words, every existence has its weight that indicates the disparity when it is compared with others. If once the weight is grasped by experimenting soluble bodies, Ǧābir says, other things will not need to be examined concerning this step of operation because the theoretical outcome of investigating the soluble bodies can be applied to other things. And then, he reminds us that the disparity exists between every two bodies whichever bodies they are. When the weight is recognised by the balance, the disparity of natures between two bodies appears. It is recommended to memorise it and comprehend the ratio between them.

Next, in [Copper 0.2], Ǧābir explains the occult property (*ḫāṣṣīya*) and mentions the fifth thing. When a body turns into another, it is nothing but the result of the change of its occult property that exists in everything in the world where things are made up of composite bodies. The nature of the occult property that everything has is a simple or diffused thing called the fifth, which is the substance.[4]

[3] This *bāb* probably means the step of operation rather than the chapter of any books. Ǧābir generally distinguishes three modes of operation, which are expressed with *al-bāb al-awwal*, *al-ṯānī*, *al-ṯāliṯ* or *al-tadbīr*. See Kraus (1942), p. 103.
[4] The text that mentions the fifth, i.e., part of [Copper 0.2], is already referred to in the analysis of [Copper 9.1] in Chapter 2.5.2.

[Copper 0.2] Occult property and the fifth

If you want to their (i.e., of two bodies) mixture by turning [them] over in terms of occult property which is a thing that exists in everything in the world of composite bodies – a thing whose nature is the fifth –, know that the nature of every simple thing, that is called the fifth, is a substance by its superiority.

فإذا أردت مزاجها التقلب فيه بالخاصية التي شيء في كل شيء من العالم من الأجساد المركبة ما طبيعته الخامسة فاعلم أن طبيعة[5] كل شيء من البسائط التي تسمى الخامسة [ق-16ب] هو الجوهر بفضله

Consider the measure of what was brought to you among gold, silver and copper, [namely, that] of gold to copper, copper to silver, and silver to gold.

فانظر مقدار ما خرج لك بين الذهب والفضة والنحاس من الذهب إلى النحاس ومنه إلى الفضة ومن الفضة إلى النحاس

Put a noble stone, according to their disparity, on their mixture that is in short by the amount to add one for every ten. That ‘ten’ is measure of the substance which we told you, in [the *Book of*] *the Stored Science* and others, that the measure of substance is in every composite body by the measure of ‘ten’ in its power.

فاجعل لفاضلها عند مزاجها في نقصان الحجر الشريف بمقدار زيادة الوضيع عليه لكل عشرة واحد فيكون ذلك العشر وهو مقدار الجوهر الذي ذكرنا لك في العلم المخزون وفي غيره أن مقدار الجوهر في كل جسم مركب بمقدار عشر قوته

This is the substance in which there exist attributes (*aʿrāḍ*) called qualities (*kayfiyyāt*), which are hotness, coldness, dryness and moistness, and they are assigned to natures. You should research [into natures] after that (i.e., the substance). Since they (i.e., natures) exist in everything in the world of composite material bodies (*ağsām*) [derived from] what is the fifth nature, know that the nature of every simple thing, that is called the fifth, is the substance whose description we presented.

وهو الجوهر هو الذي تقوم فيه أعراض تسمى الكيفيات وهي الحرارة والبرودة واليبوسة والرطوبة وهي تدعى إلى طبائع ويجب عليك أن تبحث بعد ذلك وإذ قد تحصل في كل شيء من العالم من الأجسام المركبة ما طبيعة الخامسة فاعلم أن طبيعة كل شيء من البسائط التي تسمى الخامسة وهو الجوهر الذي قدمنا ذكره

Since you gained a thing of which description we presented and we said that its measure in everything is ‘ten’ of its weight and it is a thing called the basis and the substrate, it is the fifth [added] to the four, two of which are active and the other two are passive.

إذ حصل لك الذي قدمنا ذكره وقلنا إن مقداره في كل شيء العشر من وزنه وهو الذي تسمى القاعدة والموضوع فهو خامس الأربعة التي اثنان منها فاعلان واثنان منفعلان

[5] طبيعة is a grammatically modified form of طبيعته that is written in both manuscripts ([ب] and [ق]).

It is recommended to consider the measure (i.e., quantity) of what appeared among gold, silver and copper, precisely, its difference of gold from copper, of copper from silver, and of silver from copper, and then, it is suggested to put the noble stone on the body that is short in terms of its nature to another body. Although what Ǧābir says is not so clear, 'ten' mentioned in the text seems to be a key number in the manipulation of natures. The adjustment of the natures is perhaps intended for making 'ten' in quantity by adding the noble stone. As for the measure of the substance, Ǧābir says that it is already dealt with in the *Book of the Stored Science* and other books.[6] Following the substance, he mentions attributes called qualities that are hotness, coldness, dryness and moistness. These four qualities are also called natures. These natures should be leant after the substance according to Ǧābir.

Ǧābir repeats the same sentence that lacks its subject (i.e., the underlined text in [Copper 0.2]) to explain different things. The first one is connected to the occult properties and means the occult properties are in everything. On the other hand, the subject of the second one is not the occult property but the pronoun that can indicate quality or nature. The latter half of the repeated text (the double underlined) conveys the same contents: the fifth nature is a simple or spread thing that sustains everything in the world consisting of composite bodies, and ultimately it is the substance. Then, Ǧābir summarises what the readers can gain from his presentation: the measure of the substance in everything is 'ten' in weight, and the substance that is called the basis (*qāʿida*) or the substrate (*mawḍūʿ*) is the fifth to the four of which two are active (*fāʿil*) and the other two are passive (*munfaʿil*). The distinction between active and passive natures is not explained by Ǧābir in the *Copper*. However, it seems to be basic knowledge about natures that the hot and the cold are active and the moist and the dry are passive. This division of the four natures may remind us of a pneumatist Athenaeus who, according to pseudo-Galen, regarded the hot and cold as productive causes, and the dry and wet as material as the Stoa did.[7]

The soul

After the measure (*miqdār*) of the substance, the soul (*nafs*) comes as the next topic in [Copper 0.3]. Ǧābir depicts: although the soul is in the four elements, it is superior to them and simpler than them. If something is composed of these four elements, it should have measure, i.e., quantity, of the substance. However, the soul is not such a thing. If something is not a composite of the four elements, it does not have the substance, the body nor the natures. The soul is a simple thing that is not defined and described. Nothing is attributed to the soul. It is known only apophatically, which means that the only way to describe the soul is to say that it is not like something else. However, there seems to be

[6] The *Book of the Stored Science* is no. 333 in Kraus (1943), pp. 85-86.
[7] The text about Athenaeus' view is found in Chapter 2.5, T6. See also Chapter 2.3, T13.

only one exception that the soul has, which is the appetite (*šahwa*) that is also not described by something made of natures.

[Copper 0.3] On the soul (introduction)

Know that this is just in the elements (*ʿanāṣir*) and [it is] what is above them, namely, simpler than them. [If] it was composed of these four elements, there would be measure of the substance in it. [However,] it is not the one that we elucidated. For, other thing than such composite is a thing without substance, material body and natures. It is a thing called the soul, which is a simple thing with no definition, no attribute and no description except negation. To be precise, it is known only through negation, namely, "it is not (*laysa*) like this" and "it is not (*lā*) like this" except one thing that it – I mean the soul – has, which is the appetite (*šahwa*). It is also a thing that is not described by anything made of natures.	واعلم أن هذا إنما هو في العناصر [ب-24أ] وما هو فوقها مما هو أبسط منها فأما كان مركبا من هذه العناصر الأربعة فإن مقدار الجوهر فيه فهي غير ما بيّنا وذلك أن غير هذه المركبة شيء هو غير الجوهر وغير الجسم وغير الطبائع وهو الذي يسمى النفس وهو شيء بسيط لا حد له ولا عرض ولا صفة غير السلب وذلك أنه لا يعرف إلا بالسلب أي ليس هو كذى ولا هو كذى إلا شيء واحد هو لها أعني النفس هو الشهوة وهو أيضا شيء غير موصوف بشيء من الطبائع
The measure of the substance is in these composites that are four different composites. It (i.e., the measure) is in simple things that are close to them up to what was simpler and close to the others. They (i.e., the composites) are much different in terms of this [point].	فمقدار الجوهر في هذه المركبات الذي هو مركّب مركب مركب مركب تختلف فيكون فيما قريب منها من البسائط إلى ما كان أبسط قرب من الغير وتختلف في هذا اختلافا كثيرا

The measure of the substance is found in the composites of the four elements that are themselves composite. Moreover, the simple thing – close to the composite and even what is simpler – can have the measure.

After mentioning that the soul (*nafs*) and the appetite (*šahwa*) are not composite, the quantity and the change of qualities are described in [Copper 0.4].

[Copper 0.4] On the quantity

You should know that the material body (*ǧism*) with length, width and depth has no colour in sight that is ours. What perceives the colour is not a material body. The definitions of the colour derive from the settlement (*ḥulūl*) of four natures in a substance, sooner or later, in terms of the measure that is quantity. The quantity	وينبغي أن تعلم أن الجسم الطويل العريض العميق لا لون له في العين التي فينا إنما يدرك اللون لا الجسم وحدود اللون إنما هو من حلول الأربع الطبائع في الجوهر بالسبق والتأخير بالمقدار الذي هو الكمية فالكمية تجعلها لها وهذا

represents those (i.e., definitions) of them (i.e., natures). This is really amazing. From here, the savants sought information about these composites. They knew that the difference of their (i.e., of composites) mixture [depends] on the quantity with which quality that did not exist occurs when they have quantity that did not exist.

عجيب جدا فمن ههنا استدل الحكماء على هذه التراكيب وعلموا أن اختلاف مزاجها بالكمية تحدث لها كيفية لم تكن إذا أحدث لها كمية لم تكن

Ponder these subjects well, pursue [them], be guided by the settlement of hotness and coldness. The duration changes depending on bodies in this world. The degrees of quality change following the change of the duration. You will find that every composite body changes by the change of time into other condition than the first one. In this way, colours, that are the attributes of bodies, turn [other] colours caused by the transition according to the hotness and the coldness in proportion to the moistness and the dryness.

فتأمّل هذه المواضع حسنا وقس واستدل بحلول الحرارة والبرودة وتغير الأزمنة على الأجسام في هذا العالم وكيفية تغير مراتبها تابع لتغير الأزمنة فإنك تجد كل جسم مركب يتغير بتغيّر الزمان إلى حال غير حالة الأولي وكذلك تنتقل الألوان التي هي أعراض الأجسام بحسب الحرّ والبرد على قدر الرطوبة واليبس ألوانا من الانتقال

Ǧābir says that it should be known that the body has length, width and depth but does not have colour that we can perceive. The colour – a crucial feature of things in alchemy – is defined by the measure or quantity of the four natures that were settled in the substance. Hence it follows that the quantity represents the definition. Therefore, the wise tried to know the composites through the quantity. They knew that new quality that did not exist appears when the mixture becomes different in quantity. Ǧābir urges us to pursue how the settlement (*ḥulūl*) of the four natures in the subject is. In addition, it is said that every composite body changes as time goes by, which implies that the quality changes in terms of degree as time passes. Moreover, the colours, being attributes of bodies, are said to be transformed according to the proportion of the hotness and the coldness by taking account of the ratio of the moistness and the dryness. Interesting is that there are two pairs of the four natures, which seems to be related to the classification of the active and passive natures that was suddenly introduced at the last of [Copper 0.2].

Following these discourses on the soul and the quantity, Ǧābir begins to talk about four seasons, which might sound irrelevant to what he has dealt with in this book, but it is possible to regard this description of the four seasons as an illustration of his earlier reference to the change of qualities as time flows.

[Copper 0.5]: Four seasons and four natures

You see the wintery season moistens the earth by its moistness and its rain. What is done about it (i.e., the earth) is sowing, seeding and others. That seed is moistened

ترى الفصل الشتوي بل برطوبته وأمطاره الأرض وما جعل فيها من بزر وبذر وغير ذلك

and sprouts feebly. The coldness holds the moistness on it (i.e., the sprout) and keeps the moistness for it.

When the season of winter goes away, spring comes and the heat of the sun increases a little, and then increases little by little until that plant grows, rises, and becomes powerful and strong. Even if the hotness attacked the crop despite its weakness, and caused burning, it (i.e., the hotness) would firm it (i.e., the crop), settle it down, make it strong and only expose it to a small danger.

Then, summer comes. The heat becomes strong, and for that, everything that comes out from the earth becomes strong, and becomes powerful according to the strong heat of the sun. That [heat] increases in its power and its warmth until the heat of summer completes all that the earth brought about.

Then, autumn comes. The heat moderates and the coldness increases like the increase of the heat which was in spring. According to that sequence, it (i.e., the temperature) is equal until winter comes back. Then the situation is as we started with its description.

فيتندى ذلك البزر وينبت نباتا ضعيفا والبرد يمسك عليه الرطوبة ويبقيها له

فإذا خرج فصل الشتاء دخل الربيع فزاد حر الشمس قليلا ثم يتزايد قليلا قليلا حتى ينشؤا ذلك النبات ويتموا ويقوى ويشتد فلو هجمت تلك الحرارة على الزرع مع ضعفه هجوما دفعة لاحترق لكنها صلبته ورتبته وقوته وغرّته شيئا قليلا

ثم يأتي الصيف وقد اشتد الحر واشتد منه كل شيء مما يخرج من الأرض وقوى على شدة حر الشمس فكان ذلك زايدا في قوته وصلايته حتى أكمل حر الصيف جميع ما كانت أخرجته الأرض

ثم يأتي الخريف فلين الحر وتزايد البرد كتزايد الحر الذي كان في الربيع وعلى ذلك الترتيب سوى حتى يعود الشتاء فيكون الأمر كما بدأنا بصفته

In winter, the earth is moistened. The seed on the earth is also moistened and sprouts feebly. The coldness of winter keeps moistness on the sprout. When spring comes, the heat of the sun gradually increases and helps the plant grow strong. If the hotness affects the weak crop of the plant and burns it, it will not be a serious danger to the crop but just it will make the crop strong. In summer, everything that came out from the earth becomes powerful owing to the strong heat of the sun. The hotness increases its power and completes everything that the earth produced. When autumn comes, the hotness becomes moderate and the coldness increases in the same way as the hotness increased in spring. And then, winter comes back. With this description of the four seasons, the change of the temperature, i.e., the hotness of the sun, is exemplified. Considering that the temperature is a modern device to quantify the hotness and the coldness, it is comprehensible that this text on the four seasons follows the explanation of the change of quantity in qualities.

Ǧābir returns to the discourse on the soul in [Copper 0.6] saying that natures and qualities were explained enough for the moment. He affirms that the soul does not have weight, definition and quality. However, he continues, the soul apparently has actions which represent its being (*wuǧūd*) and coming-to-be (*kawn*). It is obvious, Ǧābir says,

that animals, plants and even minerals have the soul. Ǧābir focus on minerals. Minerals are transformed from one condition to another when they are mixed and meet each other. This change, being an outcome of an action of the soul, shows that the soul is in minerals. The speed of the action seems to depend on the fineness (*laṭāfa*) of the mineral, but basically the action of the soul is in accordance with the quantity and the weight. It is exemplified with medicine. Physicians know that the effect of the medicament changes if something is added to a medicament no matter how small it is. After mentioning medicaments, Ǧābir repeats that the action of the soul follows the quantity and the weight.

[Copper 0.6] On the soul

Then, we go back to the description of the soul since we already talked about natures and qualities in terms of what is about it sufficiently in this place. We say that the soul has no weight, no definition, no quality. Despite that, it has apparent actions. By those actions, its being (*wuǧūd*) and its coming-to-be (*kawn*) are shown. It is apparent and clear in the animal, the plant and also the mineral. What we need here is to refer to the soul which is in mineral.	ثم لنرجع إلى صفة النفس إذ كنا قد تكلمنا في الطبائع والكيفيات بما فيه كفاية في هذا الموضع فنقول إن النفس لا وزن لها ولا حد ولا كيفية ولها مع ذلك أفعال ظاهرة يستدل بتلك الأفعال على وجودها وكونها وهي ظاهرة بينة في الحيوان وفي النبات وفي المعدنية أيضا والذي نحتاج إليه ههنا ذكر النفس التي في المعدنية
We say that it is shown that the soul is in mineral according to what we see in its change and its transformation from one condition to another when it is mixed and meets each other. The thing that occurs by invert and change is action of the soul.	فنقول إن الدليل على أن في المعدنية نفسا مما نراه في تغيرها وانتقالها من حال إلى حال عند امتزاجها ولقاء بعضها بعضا فذلك الحادث من الانقلاب والتغير هو فعل النفس
What was in the condition that we presented is the fineness. We knew that its action is fast according to its fineness. It is an action that it (i.e., the soul) produces on the ground that it works according to quantity and weight. In the same way, there are medicaments and purgative pastes. For, if you add one of them to the other, no matter how fewer the thing is, it changes the action into another. This is known among physicians, and even they talk about granulating a certain medicament with water from the bottom of a well or granulating it with tragacanth water, with gooseberry water, or with rose water.	وما كانت من اللطافة على الحال التي قدمناها علمنا أن فعلها في السرعة على حسب لطافتها وهو فعل تحدث لها على أن تفعل بحسب الكمية والوزن مثال ذلك الأدوية والمعجونات المسهلة فإنك إن زدت في أحدها على الآخر ولو أدنى شيء تغير الفعل إلى شيء آخر وهذا معلوم عند الأطباء حتى أنهم يقولون حبب الدواء الفلاني بماء المقل أو جببه بماء الكثيراء أو بماء عنب الثعلب أو بالجلاب
When it (i.e., the medicament) turned into the other for that [operation], the effect of that medicament, which they (i.e., the	فمتى عدلت عن ذلك إلى غيره إنما كان تغير فعل

physicians) defined and related to it (i.e., the medicament), changed in a certain way. It is right, [judging] from this, that these effects which the soul has are according to quantity and weight, and they (i.e., the effects) follow them (i.e., quantity and weight). Understand that.	ذلك الدواء الذي قد حدّوا فيه ونسبوه إليه تغيرا ما فصحّ من ذلك أن هذه الأفعال التي تكون للنفس إنما هي بحسب الكمية والوزن وتابعة لها فافهم ذلك

To sum up Ǧābir's statement, the soul itself has neither weight nor quality, but the action of the soul depends on the quantity, namely, on the weight of qualities in bodies. It is important to notice that the weight here is not physical but imaginative to express the balance among natures in each body. Now, it might be useful to recall a text from the *FN* that explains the balance of natures by metaphorically expressing it with the weight.[8] Attributes including qualities do not have weight because the weight in general means nothing but what the substance has. However, Ǧābir needed an indicator – nonphysical weight – for the degree of the power (*quwwa*) that each nature in bodies has, by analogy to the physical weight. Both weights – physical and metaphorical – are expressed with the same word *wazn* and widely used in the Corpus. In the *Seven Metals* as well, *wazn* is used on one hand as a physical weight to prescribe the quantity of ingredients in recipes, and used on the other hand to mean metaphorical weight mainly in the explanation of the theory of balance. The percentage of the former, i.e., physical weight, is larger than that of the latter.[9]

The origin of the concept of balance

Two kinds of the weight – physical and metaphorical – are found not only in the *Seven Metals* but throughout the Corpus. As for the physical weight and its balance, Ǧābir gives a more or less detailed description of hydrostatic balance on the authority of Menelaus and Archimedes in the Corpus.[10] Thus, the usage of physical weight seems inevitable and fundamental in Ǧābirian sciences. However, Kraus asserts that the notion of the specific weight –physically perceptible weight – does not play a main role but it is just an introduction to the balance of the inner structure of each material, which means that Ǧābir did not intend to analyse physical external structure of composites but chemical internal composition of things.[11] Nevertheless, Ǧābir applied physical concepts to chemical descriptions, and the chemical balance was expressed with a kind of metaphorical weight.

[8] See Chapter 1.3, T6.
[9] The physical weight is used in all of the seven books except the *Lead*, whereas the metaphorical weight appears in the *Copper*, in the *Iron* and only once in the *Tin*.
[10] The hydrostatic balance associated with Archimedes is described in the *Compendia*. See Kraus (1942), pp. 330-331.
[11] Kraus (1942), p. 307.

Physical weight
(Actual)

Balance
of gold and silver
in the crown

Chemical weight
(Metaphorical)

Balance
of elements
in gold or silver

The chemical analysis of bodies was already done in ancient philosophy. Empedocles is usually regarded as the first person who depicted things chemically by explaining coming-to-be and perishing as a result of mixture and dissolution of the four elements.[12] The way in which Empedocles described the chemical constitution of things is like the following as Simplicius witnessed:

T1.1: D190 (B98) Simplicius, *Commentary on Aristotle's Physics*, p. 32.6-10[13]

And earth, approximately equal to these [scil. in quantity], encountered them / — Hephaistos, rain, and all-illumining aether, / Anchored in the perfect harbours of Cypris— Or else a little bit more, or, rather, less; / Out of these were born blood and the other forms of flesh.	ἡ δὲ χθὼν τούτοισιν ἴση συνέκυρσε μάλιστα, / Ἡφαίστῳ τ' ὄμβρῳ τε καὶ αἰθέρι παμφανόωντι, / Κύπριδος ὁρμισθεῖσα τελείοις ἐν λιμένεσσιν, εἴτ' ὀλίγον μείζων εἴτε πλεόν ἐστὶν ἐλάσσων· / ἐκ τῶν αἷμά τε γέντο καὶ ἄλλης εἴδεα σαρκός.

T1.2: D192 (B96) Simplicius, *Commentary on Aristotle's Physics*, p. 300.21-24[14]

And kindly earth in her broad-breasted crucibles / Received two parts, out of eight, of the gleaming of Nestis / And four of Hephaestus. / And they became white bones / Fitted together marvellously by Harmony's adhesives.	ἡ δὲ χθὼν ἐπίηρος ἐν εὐστέρνοις χοάνοισι / τὼ δύο τῶν ὀκτὼ μερέων λάχε Νήστιδος αἴγλης, / τέσσαρα δ' Ἡφαίστοιο· / τὰ δ' ὀστέα λευκὰ γένοντο / Ἁρμονίης κόλλῃσιν ἀρηρότα θεσπεσίηθεν.

Empedocles explained the proportion of the four elements for blood, flesh and bone. The names of the four elements are not fixed and are indicated with other natural matters such as rain and also with names of deities.[15] The proportions are shown so roughly that they

[12] Kraus (1942), pp. 305-307.
[13] Ed. Laks & Most (2016), p. 524: Tr. ibid. p. 525.
[14] Ed. Laks & Most (2016), p. 526: Tr. ibid., p. 527.
[15] See D58: Simplicius, Commentary on Aristotle's Physics, tr. Laks & Most (2016), p. 401, (a) p. 32.3-4 (ad B98): "He also calls the fire 'Hephaestus' [cf. D192], 'sun,' and 'flame,' the water 'rain,' the air 'aether'"; (b) p. 159.10-12 (ad B21) "[. . .] he introduces the characterization of each of the things [scil. the four elements] that he has mentioned [scil. in D73.232-66], calling the fire 'sun,' the air 'gleam' and 'sky,' and the water 'rain' and 'sea.' He speaks as follows: [. . . = D77]"; ed. Laks & Most (2016), p. 400, (a): καλεῖ δὲ τὸ μὲν πῦρ καὶ Ἥφαιστον καὶ ἥλιον καὶ φλόγα, τὸ δὲ ὕδωρ ὄμβρον, τὸν δὲ ἀέρα αἰθέρα. (b): [. . .] ἐπάγει ἑκάστου τῶν εἰρημένων τὸν χαρακτῆρα, τὸ μὲν πῦρ ἥλιον καλῶν, τὸν δὲ ἀέρα αὐγὴν καὶ οὐρανόν, τὸ δὲ ὕδωρ ὄμβρον καὶ θάλασσαν. λέγει δὲ οὕτως· [. . . = D77].

are not always specified with numbers.[16] Since Simplicius (ca. 480-560 CE) lived about a thousand years after Empedocles formed his doctrine, Empedocles' words recorded by Simplicius might not so accurate. Nevertheless, it seems enough to know the difference between 'chemical' description by Empedocles and what is generally imagined with modern chemistry. As long as the word 'chemical' is used for Empedocles, it means nothing but 'concerning internal structure' in contrast with 'physical' that is 'concerning external structure'.

The insufficiency in Empedoclean theory of the four elements was already pointed out by Aristotle, not for lack of precision in quantitative description but for the roughness of classification. Aristotle questioned that bones of different species have the same proportion of the elements despite their variety in qualities.

T3: (Ps.-) Aristotle, *De spiritu*, 485b26-35[17]

Hence Empedocles <speaks> too simply about the formation of bone, since [in his view] all bones have the same proportion (λόγος) in their mixture. In that case there ought to be no difference between the bones of a horse and a lion or a man. But in reality they differ in hardness, softness, (5b30) density, and so on. Moreover, even parts of the same living creature differ in density and rarity, and so on. So they do not have the same proportion of mixture in their components. For the difference between thick and thin and large and small may be due to quantity, but hard and dense and their opposites (5b35) are due to the quality of the mixture.	Διὸ καὶ Ἐμπεδοκλῆς αἰτίαν ἁπλῶς τὴν τοῦ ὀστοῦ φύσιν, εἴπερ ἅπαντα τὸν αὐτὸν λόγον ἔχει τῆς μίξεως, ἀδιάφορα ἐχρῆν ἵππου καὶ λέοντος καὶ ἀνθρώπου εἶναι. Νῦν δὲ διαφέρει σκληρότητι, μαλακότητι, πυκνότητι, τοῖς ἄλλοις. Ὁμοίως καὶ σὰρξ καὶ τὰ ἄλλα μόρια. Ἔτι δὲ τὰ ἐν τῷ αὐτῷ ζῴῳ διαφέρουσι πυκνότητι καὶ μανότητι καὶ τοῖς ἄλλοις, ὥστ' οὐχ ἡ αὐτὴ κρᾶσις. Ταχὺ μὲν γὰρ καὶ λεπτὸν καὶ μέγα καὶ μικρὸν εἴη ἐν τῷ ποσῷ, σκληρὸν δὲ καὶ πυκνὸν καὶ τὰ ἐναντία τούτοις ἐν τῷ ποιῷ τῷ τῆς μίξεως.

According to (ps.-)Aristotle, it is not convincible that things can be explained only with quantity of the four elements. Aristotle added more fundamental principle to the four material elements, which are four qualities, i.e., hot, cold, moist and dry to modify

[16] Owing to vague expressions like 'approximately', 'a bit more' (in [T1.1]) and others, Minar suggests that the main concern of Empedocles was not quantity (how much the elements are) but quality (what kind of elements /natures are) [Minar (1963), p. 140.

[17] Tr. Bos & Ferwerda (2008), p. 46; ed. Bekker (1837). Cf. tr. Laks & Most (2016), p. 613 (R23 >DK, Empedocles A78): "That is why Empedocles <assigns (?)> the cause of the nature of bone in a general manner: if indeed all possess a mixture presenting the same proportion, then the horse's, the lion's, and the human being's would have to be indistinguishable"; ed. Laks & Most (2016), p. 612: διὸ καὶ Ἐμπεδοκλῆς αἰτίαν ἁπλῶς τὴν τοῦ ὀστοῦ φύσιν <. . .> εἴπερ ἅπαντα τὸν αὐτὸν λόγον ἔχει τῆς μίξεως, ἀδιάφορα ἐχρῆν ἵππου καὶ λέοντος καὶ ἀνθρώπου εἶναι. Cf. ed. DK31A78: Ἐ. αἰτίαν ἁπλῶς τὴν τοῦ ὀστοῦ φύσιν. <ἔτι δὲ> εἴπερ ἅπαντα τὸν αὐτὸν λόγον ἔχει τῆς μίξεως, ἀδιάφορα ἐχρῆν ἵππου καὶ λέοντος καὶ ἀνθρώπου εἶναι.

Empedoclean rough classification of things. The same example about coming-to-be of the bone is mentioned in another Aristotelian authentic work.[18]

T4: Aristotle, *De generatione et corruptione*, 333b8-18[19]

Then what is the cause determining that man comes-to-be from man, that wheat (instead of an olive) comes-to-be from wheat, either always or for the most part?	τί οὖν τὸ αἴτιον τοῦ ἐξ ἀνθρώπου ἄνθρωπον ἢ ἀεὶ ἢ ὡς ἐπὶ τὸ πολύ, καὶ ἐκ τοῦ πυροῦ πυρὸν ἀλλὰ μὴ ἐλαίαν;
Are we to say that bone comes-to-be if the elements be put together in such-and such a manner? For, according to his own statements, nothing comes-to-be from their coming together as chance has it, but only from their coming together in a certain proportion. What, then, is the cause of this?	ἢ καὶ ἐὰν ὠδὶ συντεθῇ ὀστοῦν; οὐ γὰρ ὅπως ἔτυχε συνελθόντων οὐδὲν γίγνεται, καθάπερ ἐκεῖνός φησιν, ἀλλὰ λόγῳ τινί. τί οὖν τούτων αἴτιον;
Presumably not Fire or Earth. But neither is it Love and Strife; for the former is a cause of association only, and the latter only of dissociation.	οὐ γὰρ δὴ πῦρ γε ἢ γῆ. ἀλλὰ μὴν οὐδ᾽ ἡ φιλία καὶ τὸ νεῖκος· συγκρίσεως γὰρ μόνον, τὸ δὲ διακρίσεως αἴτιον.
No: the cause in question is the substance of each thing – not merely (to quote his words) ‘a combining and a divorce of what has been combined’.	τοῦτο δ᾽ ἐστὶν ἡ οὐσία ἡ ἑκάστου, ἀλλ᾽ οὐ μόνον “μίξις τε διάλλαξίς τε μι γέντων”, ὥσπερ ἐκεῖνός φησιν.
And *chance*, not *proportion*, ‘is the name given to these occurrences;’ for things can be combined as chance has it.	τύχη δ᾽ ἐπὶ τούτων ὀνομάξεται, ἀλλ᾽ οὐ λόγος· ἔστι γὰρ μιχθῆναι ὡς ἔτυχεν.
The cause, therefore, of the things which exists by nature is that they are in such and such a condition; and it is *this* which constitutes the nature of each thing – a nature about which he says nothing. What he says, therefore, tells us nothing About Nature.	τῶν δὴ φύσει ὄντων αἴτιον τὸ οὕτως ἔχειν, καὶ ἡ ἑκάστου φύσις αὕτη, περὶ ἧς οὐδὲν λέγει. οὐδὲν ἄρα περὶ φύσεως λέγει.

While (Ps.-)Aristotle points out that a qualitative viewpoint is missing in Empedoclean theory in the *De spiritu*, Aristotle questions in the *De generatione et corruptione* what really causes the mixture of the four elements, i.e., what the nature of things is. Aristotle says that Empedocles did not speak of the nature. The view in the *De spiritu* might not have been Aristotle’s words since this book is usually regarded as non-authentic.

[18] It is said on the one hand that *De spiritu (Περὶ πνεύματος)* is indeed Peripatetic work but not written by Aristotle nor Theophrastus. See Allbutt (1921), p. 247, n. 1. Therefore, it might not be appropriate to take *De spiritu* that is generally regarded as pseudo-Aristotelian work as the source of Aristotelian view. However, Bos & Ferwerda (2008) on the other hand suggests that *De spiritu* should be reconsidered as Aristotle’s authentic work. See Tawara (2015), p. 12. Cf. Chapter 2.5, n. 21.

[19] Tr. Barnes (1985) based on Joachim (1922); ed. Rashed (2005).

However, as long as the *De spiritu* was transmitted with the name of Aristotle, it must have been simply Aristotle's text in the eyes of those who did read it – people in the late antiquity and medieval era – and it did probably not matter for them whether it was really written by Aristotle or not. By integrating Aristotle's opinion in [T3] from the *De spiritu* and [T4] from the *De generatione et corruptione*, the equation between quality and nature can appear because both are mentioned as crucial factors that are inevitable for the explanation on coming-to-be of things. The four qualities are called natures in the Corpus where the concept of nature represents what-it-is.[20] By connecting qualities with nature and examining things through their natures, Ǧābir seems to have tried – either intentionally or unconsciously – to modify Empedoclean notions as if he responds to Aristotle's criticism at Empedocles. In addition, there are other possible reasons that shows Ǧābir is in the same line with Empedocles. The similarity (*mumāṯila*) and the oppositeness (*muqābala*) – sympathy and antipathy – which are frequently used in the Corpus, can correspond to the love (φιλία) and the strife (νεῖκος) in Empedoclean theory of coming-to-be and perishing. Furthermore, to return to Ǧābirian balance, it might be a parallel concept to the proportion (λόγος) of the four elements in Empedoclean thoughts because the balance (*mīzān*) is a synonym of ratio (*nisba*) of natures as shown in [Copper 0.1].[21] Although what-it-is of things is called 'nature (φύσις)' by Aristotle in the *De generatione et corruptione* ([T4]), the essence that represents each thing is also regarded as λόγος that is one of the equivocal words in ancient Greek philosophy. The balance seems to cover both meanings of λόγος: ratio and what-it-is. While λόγος remains what is depicted by words, the balance is indicated with weight (*wazn*) that is a scale of the proportion. Thus, indeed it is not possible to say Ǧābirian concept of balance is exactly the same as Empedoclean λόγος, but both notions seem to share the core that is needed to explain things in the world of coming-to-be and perishing.

[20] See Chapter 2.3 where it is presented that the seven metals are defined by the four natures in the *Seven Metals*.

[21] Λόγος has various kinds of translation: It can be translated with *nisba* as in the Arabic text of the Euclid's *Elements* cited in Chapter 1.3. On the other hand, it is translated with *qawl* or *ḥadd* in Arabic version of Aristotle's *Categories*.

Summary and Conclusion

After having analysed the *Books of Seven Metals* with the purpose of seeking new clues to the notion of nature in the Corpus, it will be good to summarise the outcomes by briefly looking back over Part I and Part II and to highlight some issues that may deserve to be investigated further.

Chapter 1.1 presents basic information of the Corpus, starting with references to Ǧābir himself and the Latin *corpus geberianum*, i.e., a derivative aspect of the Corpus. The main part of Chapter 1.1 focuses on the structure of the Corpus. As for its composition date, the Corpus was probably composed in the ninth and the tenth centuries although Ǧābir is supposed to have lived around 721 to 830. This means that the Corpus could have had several authors. One of them was possibly Ǧābir, but it is more precise to say that the most parts of the Corpus were written by others who relied on the authority of Ǧābir. The late dating of the Corpus comes from the fact that the Corpus contains ancient Greek knowledge that should have been imported in the Arabic world after the ninth century. However, the translation activity from Greek into Arabic, mostly through Syriac, has not been elucidated enough. Thus, the composition date of the Corpus is an issue related to the research into when ancient Greek knowledge was recognised in Arabic and which Greek works were translated into Arabic.

The Corpus is constituted of several collections. The *Seven Metals* are regarded as one of the last collections that were written in the tenth century. The *FN* and the *Iḫrāǧ*, both of which are quoted in the *Seven Metals*,[1] are parts of the *Books of Balances* that were probably composed in the early tenth century. Some collections have references to the others, which enables us to determine the order of the collections in the Corpus to some degree. Moreover, not only the referential relation among the collections but also the recognition of the metals can give approximate information of which collection preceded the other ones: in the Corpus, the metals are first known as six and later as seven. The seventh metal, although occupied by various substances, was mainly mercury or *ḫārṣīnī*.[2] The later the books are, the more *ḫārṣīnī* is recognised as the seventh metals. In fact, an assertion of *ḫārṣīnī* as the seventh metal in the Corpus is accompanied by a negation of mercury that was already dominant as the seventh metal.[3] In this way, metals are mentioned throughout the Corpus which has many chrysopoetic descriptions. That is why Ǧābir is famous as an alchemist, i.e., a master of chrysopoeia. However, the contents of the Corpus range beyond alchemy and involve several sciences adjacent to alchemy.

Chapter 1.2 introduces, according to the *Iḫrāǧ*, the Ǧābirian seven sciences: The sciences of [1] medicine, [2] the art (i.e., alchemy), [3] properties, [4] talismans, [5] celestial bodies, [6] balance and [7] generation. As for the science of balance, the *Books*

[1] The *FN* is analysed in Chapter 2.5.1. The *Iḫrāǧ* is a main source of Ǧābirian seven sciences described in Chapter 1.2, and its citations in the *Ḫārṣīnī* are presented as T13-T16 in Chapter 2.3.
[2] *Ḫārṣīnī* is explored in Chapter 2.4.
[3] See T1 in Chapter 2.4.

of Definition was consulted as well to cover the scant explanation about the balance in the *Iḫrāǧ*. [1] The science of medicine weighs among the seven in the Corpus, and the *Iḫrāǧ* allocates the longest description to medicine among the seven sciences. Indeed, the importance of medicine is perceived also in the *Seven Metals* where medical effects of the metals are mentioned and not a few medical recipes even apart from metals are presented. The latter half of the *Silver* is especially dedicated to practical remedies for diseases caused by the four humours. Moreover, the medical theory of the four humours is found in the *Iron*. [2] The art, i.e., alchemy, is no doubt an inevitable aspect of the *Seven Metals*. Chrysopoetic recipes are particularly found in the *Gold*, the *Silver* and the *Copper*. the *Iḫrāǧ* introduces six spirits, seven metals and five stones as objects of the art. [3] The science of properties is focused on in particular at the last part of the *Iron* although properties of each metal are described in each of the seven books. The properties are also explained in the *Ḫārṣīnī* in relation with talismans. [4] The science of talismans might be even a summit of the *Seven Books* because it occupies more than half of the seventh book, i.e., the *Ḫārṣīnī*. Precisely, the latter part of the *Ḫārṣīnī* is a relatively long citation from a section named 'the science pf talismans' in the *Iḫrāǧ*. Most part of the cited text in the *Ḫārṣīnī* from the *Iḫrāǧ* concerns the knowledge of the celestial world, which can also be regarded as [5] the science of operation of planets. As a matter of fact, the distinction between the science of talismans and that of the celestial bodies is vague since the talismans are connected to the motion of the planets. Astrological knowledge is found in the *Lead* as well. These descriptions of astrology might belong to the science of operation of the upper world while those can be still thought as part of the science of talismans. [6] The science of balance is a pervasive theme of the *Seven Metals*. The theory of the balance is treated especially in the *Copper* and the *Iron*,[4] and the balance of letters is exemplified in the *Silver*. [7] The science of generation might be the only one that is not dealt with in the *Seven Metals*. This science is a synthesis of the other six sciences and is meant to artificially produce three species, i.e., animals, plants and stones, by imitating natural creation. In the *Copper*, the coming-to-be of the three species is described as the lowest and most concrete layer of the existence,[5] but none of the seven books refers to concrete methods for artificial creation of the three species. As the principle for these seven sciences, the similarity (*al-mumāṯala*) and the oppositeness (*al-muqābala*) are notable concepts which are often used in the *Seven Metals*. These contrast notions that lead the coming-to-be process were already seen in ancient Greek alchemy, i.e., sympathy and antipathy, and probably influenced by the Empedoclean dual principle: Love and Strife. Besides them, quite a few concepts in the Ǧābirian sciences have the roots in ancient notions or at least seem to have been inspired by the classical knowledge.

Chapter 1.3 focuses on Euclid, Galen and Alexander of Aphrodisias to confirm the presence of ancient Greek heritage in the Corpus. The evidence mainly comes from

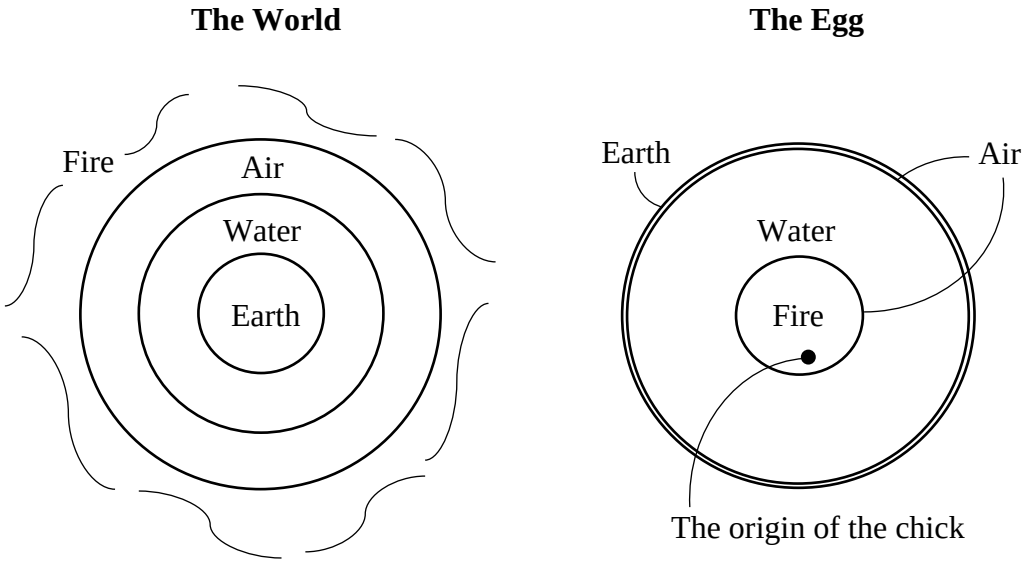
[4] The description of the balance in the *Copper* is analysed in Chapter 2.6.
[5] See Chapter 2.5.1, esp. [FN1] and [FN2].

the *Compendia* and some of the *Books of Balances* such as the *FN*.[6] Firstly, as for Euclid, it is interesting that Definition 4 of the Euclid's *Elements V* is cited and implied several times in the Corpus, because Def. 4 is usually regarded as a minor element compared with Def. 3 and Def. 5 in the *Elements V*. On the other hand, it is understandable that the *Elements V* was utilised by Ǧābir. For, the *Elements V* treats the ratio between magnitudes and can be an authority on the balance that is a key concept in the Corpus. However, the longest citation concerning Euclid, found in the *FN*, is not from the *Elements V* but Proposition 9 of the *Elements I* which is cited to demonstrate a thing that is not realised but exists. In addition, Definitions of the *Elements I* are mentioned in the *Compendia* for the explanation of the final cause. Based on these facts, it seems that Ǧābir mentioned Euclid not only to reinforce his theory of balance but to generally authorise his science from a philosophical viewpoint. Secondly, to investigate the influence of Galen on the Corpus, one of the important works is the *Book of Poison* which is the only extant work that is regarded as genuinely medical in the Corpus. According to the *Book of Poison* and one of the *Books of Balances*, i.e., the *Book of Result*, Galen's *On the Capacities of Simple Drugs* seems to have been the most influential Galenic work on the Corpus. Another pharmaceutical book of Galen, i.e., *On the Composition of Medicaments According to Kind* deserves to be mentioned for the purpose of our research because it preserves a suggestive idea for quantification of qualities which can be parallel to the metaphorical concept of weight described in the *FN*. Furthermore, apart from pharmaceutical writings, the *QAM*, i.e., *That the Capacities of the Soul Follow the Mixtures of the Body*, should be regarded as a source book for Ǧābir. The *QAM* is relatively philosophical although still medical enough. Therefore, not only the practical aspect of Galenic medicine but also its theoretical elements seem to have played a leading role in Ǧābirian sciences, especially for the science of balance. Lastly, it is certain that the Corpus imported hylomorphic idea from Alexander's *Quaestiones*, of which Arabic translation has a term *maḥmūl* as an equivalent to the phrase ἐν ὑποκειμένῳ. *Maḥmūl* is used in both the *Seven Metals* and the *FN* in relation with *mauḍūʿ*, i.e., an equivalent to ὑποκείμενον.[7] The citations from the *Quaestiones* are found in the *Compendia* which was supposedly written in the same period as the *Seven Metals* were composed. The usage of the terms derived from *ḥ-m-l* such as *maḥmūl* and *ḥāmil* in the *Seven Metals* is explored in Chapter 2.3.

Chapter 1.4 turns to the opposite direction in terms of time and enters into the late Byzantine alchemy to search for the traces of Arabic alchemy. The tenth century Byzantine manuscript Marcianus gr. 299 has a recipe where θουθία is used. This ingredient, θουθία, never appeared in ancient alchemical texts and probably came from an Arabic word, *tūtiyāʾ* that could have been any zinc-related substance.[8] As far as Ǧābir

[6] The texts mentioned in Chapter 1.3 (i.e., the *Book of Stones According to Balīnās*, the *Book of Concentration*, the *Book of the Field of Intelligence*, the *Book of Result*, and the *FN*) are all included in the *Books of Balances*.
[7] See Chapter 2.3 and 2.5.1.
[8] *Tūtiyāʾ* is also dealt with in Chapter 2.4.

concerns, a representative text that shows the influence of the Corpus on the Byzantine alchemy is a Greek anonymous text, the *Four Elements*, where an egg as a nomenclature is distilled and reduced to the four elements, i.e., water, air, fire and earth. The combination between parts of the egg and the four elements, which is explained by Pandolfus (i.e., Empedocles) in a Latin text *The Assembly of Philosophers*, presents the reverse of the common cosmology where the earth is the centre of the world and the fire is outermost. This reversal can be a key premise to understand a twofold meaning of the fifth nature.[9]



As Colinet pointed out, the *Four Elements* was written under the influence of Ǧābirian *Book of Thirty Words* probably through its Latin translation, *Liber de triginta uerbis*. The Arabic *Book of Thirty Words* is one of the *Books of Seventy* which were translated into Latin under the title, *Liber de septuaginta*. However, the *Liber de triginta uerbis* seems to have been known independently of the *Liber de septuaginta* and to have had a considerable influence on Latin alchemy. For, Roger Bacon's *Speculum secretorum* mentions the *Liber de triginta uerbis* with reference to separation of four elements by distillation. This text of Bacon's was reproduced in another Byzantine anonymous text, the *Chrysopoeia*, which preserves other evidence that Ǧābirian knowledge was absorbed into Byzantine alchemical texts. Besides several Bacon's writings, *De aluminibus et salibus* was the path through which Ǧābirian alchemy was conveyed to the *Chrysopoeia*.

Chapter 1.5 raises a question what the nature is in alchemy, which became a theme for Part II of our research. In general, nature means two different things: one is spontaneous existence as opposed to artificial productions. The other is essence, feature or tendency of things. The latter is incorporeal, whereas the former is material and

[9] See Chapter 2.5.1.

concrete. The nature in question this time is the former. The *Four Elements* is basically a practical text, but it also includes some theoretical and emblematic phrases that are classified into two types: (1) 'The nature prevails over (νικάω) [another] nature' and (2) 'The hidden nature is carried out to the outside'. Type (1) was repeatedly used in Greek alchemical writings with other variations such as 'Nature conquers (κρατέω) nature' and 'Nature charms (τέρπω) nature' since ancient times, at latest in Zosimos' texts. However, this tradition – inserting refrains between alchemical recipes – does not seem to have been inherited among Arabic alchemists. In fact, the *Book of Thirty Words*, a possible source of the *Four Elements*, does not have any similar texts like type (1). This point suggests that the *Four Elements* was directly influenced by ancient Greek alchemy although its thematical source is in Arabic.[10] Type (2) has its ancient origin as well. However, unlike type (1), it has relevant tradition in Arabic alchemy. When type (2) is said in ancient Greek or Byzantine alchemical texts, the nature is not specified and remains obscure. On the other hand, Ǧābirian *Book of Ten*, which belongs to the *Books of Seventy*, clearly describes the shift of the four qualities – called natures in the Corpus – from the inside of the elements to their outside. Thus, Ǧābir mingled natures with qualities in the theory, while Greek alchemy, both antique and Byzantine, seems to have kept the distinction between natures and qualities although Greek alchemy shared the idea that the four elements are made up of the four qualities with Arabic alchemy. As a matter of fact, there is a Greek text that explains the change of the four elements with the shift of four qualities, which is supposedly derived from Zosimos' authentic texts. Therefore, Greek alchemy cannot simply be separated from Arabic alchemy in terms of the concept of nature. Ǧābir extended the meaning of nature in a certain continuity with ancient Greek knowledge and applied it not only to alchemy but also to medicine and philosophy. This expansion of the nature is perceived by analysing the *Seven Metals*.

Chapter 2.1 provides information about three manuscripts that preserve the *Seven Metals*, i.e., [ب] MS Paris BnF Arabe 2606, [ق] MS Cairo Ṭalʿat, kīmiyāʾ wa ṭabīʿa 187, and [ط] MS Ṭehran Mağlis 729. The Arabic text in Appendix is principally based on [ب]. [ق] is in the same family as [ب] but seems to have been transcribed a little more carelessly than [ب] judging from the presence of some words that are irrelevant to the context. [ط] is probably a revised version of [ب] and [ق] by attaching significance to astrological knowledge. In fact, the order of the seven books in [ط], which differs from that of [ب] and [ق], is in accordance with a geocentric spherical order. Besides these three, another manuscript is mentioned in Chapter 2.1 as an indirect witness of part of the *Seven Metals*. It is MS Paris BnF Arabe 5099 [ب 5099] that has the *FN* which is partially copied in the *Copper*.

[10] The presence of direct influence of ancient Greek alchemical text on the *Four Elements* has already pointed out in Colinet (2000), esp. p. 171.

Chapter 2.2 is a table of contents of the *Seven Metals*, which visualises the difference of [ط] from [ب] and [ق] in structure by specifying which folio has the same contents among the three manuscripts.

Chapter 2.3 overviews the contents of the *Seven Metals*. However, this overview is not a mere epitome but along the selected themes starting from practical to theoretical one: alchemical recipes (e.g., sharp water and ink), medical recipes and theory of four humours, nature of the seven metals, dualistic theories (e.g., Father-Mother classification, Similarity-Oppositeness, Substrate-Essence, and Subject-Predicate), and the theory of properties and talismans. Around one-third of this chapter is allocated for presenting the texts from the *Ḫārṣīnī* in order to show the latter half of the *Ḫārṣīnī* is virtually a copy of the text on the science of talismans in the *Iḫrāǧ*. As for the primary question that motivated the analysis of the *Seven Metals*, i.e., what the nature is in the Corpus, the summary of the nature of each metal gives one of the possible answers: the nature in a narrow sense means the four qualities (i.e., hot, cold, moist and dry). On the other hand, the word 'nature' can surround broader range that includes other qualities (e.g., salty, sweet, bitter hard, soft, sharp, harsh, and colours) along with the effects to other metals or diseases. In this way, the nature has a certain width where its meaning can expand and be condensed.

Chapter 2.4 takes a new direction, which might look even a degression for the purpose of pursuing the definition of nature. Nevertheless, the question what *ḫārṣīnī* is should not be skipped since *ḫārṣīnī* is counted as one of the seven metals. *Ḫārṣīnī* could indicate any zinc ore – perhaps smithsonite (calamine), i.e., $ZnCO_3$ – originated in China together with another word for a zinc-related substance, i.e., *tūtiyāʾ* that probably has the roots in India. Both names seem to have come into Arabic through Persian. This proclaims a vast extent of background of the Corpus. Although the analysis of the *Seven Metals* is mainly conducted from the viewpoint of the Graeco-Arabic studies because the fifth nature, a key term to understand the concept of nature, is greatly influenced by the ancient Greek knowledge, yet the fact is that ancient Greek world is only part of the sources from which Ǧābir gained the knowledge. The Corpus transmits the knowledge grown in Persia, India and China as well as the region where Greek was used.

Chapter 2.5 is an introductory part to the analysis of the fifth nature. It was confirmed in Chapter 2.3 that the word 'nature' can cover a wide range of features and traits of things, but, in a narrow sense, means four qualities. In addition to those four natures (i.e., hot, cold, moist and dry), there is another concept of nature, i.e., the fifth nature. It is dealt with in the *FN* and part of the *Copper* which is virtually the same text as in the *FN*. Besides, the fifth nature is fragmentally referred to in other Ǧabirian writings, concretely, in the *Small Book of Balance*, the *Book of Genera*, and the *Book of Elite*.[11] In Chapter 2.5, the information about the fifth nature – scattered through the Corpus – was

[11] The *Small Book of Balance* and the *Book of Elite* belong to the *Books of Balances*, while the *Book of Genera* is one of the *Books of Seventy*.

overviewed in comparison with ancient Greek philosophical notions before scrutinising its description in the *FN* and the *Copper*, and it turned out that the sources of the fifth nature could be three: the Aristotelian fifth element (i.e., aether), Empedoclean particles (i.e., elements that exist before the four elements) and the Stoic pneuma. While aether was introduced as the matter for celestial bodies, the latter two, i.e., elements before the elements and pneuma, are principles for everything, not limited to the celestial world. As a result of mixture of these notions, the fifth nature has a twofold meaning. It is on the one hand a thing that concerns the celestial world and is on the other hand the first existence for everything in the changeable world. There should have been several routes through which Ǧābir got to know these ancient concepts. Among them, physicians Athenaeus and Archigenes, known as Pneumatists, deserve to be considered as possible direct sources of the Stoic pneuma for Ǧābir.

Chapter 2.5.1 is dedicated to the analysis of the fifth nature described in the *FN*. In the same way as it turned out in Chapter 2.5, the fifth nature is said to be the basis for both celestial bodies and everything including the sublunar existence. However, the fifth nature in the *FN* has another subdivision, i.e., either internal or apparent. The internal fifth nature is a physical basis of things while the apparent fifth nature is eventually regarded as logical essence that defines things. On the analogy of hylomorphism, the former is matter, especially the prime matter, and the latter is form.[12] Hence it follows that the fifth nature contains both elements of the dualism at the same time, but it escapes inconsistency owing to the distinction between physical and logical points of view. In the course of explaining the fifth nature, Ǧābir refers to the four kinds of the intellect along with the four ways for things to exist as shown in Aristotle's *Categories*. It seems that he combined the theory of intellect with the description of the existing things in the *Categories*. Based on a general understanding of the *Categories* and the theory of intellect that originated in Aristote's *De anima*, it is impossible to regard them as corresponding classifications. Thus, apart from the fifth nature, Ǧābirian interpretation of the theory of intellect seems worth reconsidering in the history of philosophy.

Chapter 2.5.2 is a comparison of the texts on the fifth nature between the *FN* and the *Copper*, which are almost the same texts but there are differences. The most noticeable divergence is that the *Copper* says, with reference to Galen, the life is the sixth nature while the life is the fifth nature in the *FN*. Chapter 2.5.2 also has analysis of the texts that are not directly related to the explanation of the fifth nature but fragmentally overlapping between the two books ([Copper 17-19] & [FN17-19]), where Ǧābir calls attention to the Arabic homonym. This probably concerns the balance of letters which is a main topic in the latter half of the *FN*.

Chapter 2.6 focuses on the balance because it is closely connected to the concept of nature in the Ǧābirian thought. According to the *Seven Metals*, the art – alchemy – is a way to manipulate properties that are determined by the quantity of the four natures.

[12] See the chart 'Several Meanings of Nature' in the following page.

The quantity is perceived as the balance of metaphorical weight among natures. The balance defines things and represents what-it-is, i.e., the essence that can be also called ‘nature’, based on the analysis in Chapter 2.5.1. The idea that things are defined by the balance of the elements, which are the four natures for Ǧābir, can be traced back to Empedocles. Aristotle adopted Empedoclean theory of four elements and added four qualities as further principles for the four elements, specifying that Empedocles did not say anything about nature – this nature means the essence of each thing – in Aristotle’s *De generatione et corruptione*. Ǧābir replaced the four elements or qualities with the four natures and formed the theory of balance. The equation of qualities with natures in the Corpus can be regarded as a response of Ǧābir to Aristotle’s criticism of Empedocles, whether it is what Ǧābir intended or not.

Now that all chapters of Part I and II have been surveyed, the answer to the question what nature is in the Corpus should be given, even in a tentative way. First, for comparison, it is useful to briefly mention the meanings of nature in ancient Greek and medieval Byzantine alchemy, where nature was used as (I) antonym of artificial products and also vaguely meant (II) features of things. The latter (=II) was used especially to indicate the process of transmutation, saying that hidden nature is brought to the outside.

Several meanings of Nature

I. nature ⟷ artificial products
II. nature ——— features
- II-1 general characteristics
- II-2 four qualities ——— four natures

III the fifth nature
- III-1 Substance of the celestial world ⟵ Aristotelian fifth element
- III-2 Basis for everything ⟵ Empedoclean elements before elements
  - The Stoic pneuma
    - III-2.1 Physical substance ——— matter (prime matter)
    - III-2.2 Logical essence ——— form

In Arabic alchemy as well, nature could mean the opposed existence to artifacts (=I), but it was not a main usage of nature as far as the Corpus concerns. Ǧābir used the nature mostly for its incorporeal meaning (=II), but it was a little more specified than that in Greek alchemy. Separating from (II-1) general characteristics, Ǧābir designated (II-2) four qualities by natures. In addition to the four natures, (III) the fifth nature has a great importance in the Corpus. The fifth nature is an ambiguous word that on the one hand means (III-1) the substance of the celestial world but on the other hand represents (III-2) the basis for every existence. (III-1) probably originated in Aristotelian fifth element, whereas (III-2) might have had its roots in Empedoclean particles as elements before the four elements and the Stoic pneuma. The latter is further subdivided into two kinds: (III-

2.1) the physical substrate that can be equal to the prime matter as the most deprived matter of any attributes, and (III-2.2) the logical essence that gives the definition of things, i.e., the form in hylomorphism.

In this way, through different viewpoints – physical and logical, Ǧābir ultimately expressed two orthodox principles, i.e., matter and form, with one word, i.e., the fifth nature which can freely come and go between corporeal and incorporeal worlds. Based on its meaning, (III-2.2) can correspond to the nature about which Empedocles did not say anything according to Aristotle although it is not certain whether Ǧābir knew Aristotle's criticism at Empedocles in the *De generatione et corruptione*.

As shown above, the fifth nature is grounded on several concepts in ancient Greek philosophy. Furthermore, as the Corpus influenced the posterity, the fifth nature might have been transmitted to the later world. The relation between the fifth nature in the Corpus and the quintessence in Latin alchemical and medical texts is worth examining. For, *quintessence* was sometimes treated as an equivalent to *arcana* (secret) by Paracelsus while Ǧābir said that what he was looking for in the *FN* was the secret (*sirr*) of this basis. The basis (*qāʾida*) here can be an equivalent to the matter in hylomorphism.[13]

Through the analysis of the fifth nature, the fundamental position of the concept of nature in the Corpus was confirmed. However, a certain degree of vagueness remains because sometimes it is quite difficult to keep consistency in interpretation of the Ǧābirian thoughts due to the flexibility of terminology such as indistinction between the substance and the matter. For, although Ǧābir was under the influence of Aristotle like others who played a significant role in the Arabic intellectual world, he never stayed inside Peripatetic thought. The identification of matter with substance by Ǧābir is counted as one of the largest deviations from the Peripatetic philosophy. The difference between matter and substance in Aristotle's philosophy can be briefly summarized, given that it is possible, as follows: substance is a thing which can be indicated as 'this'. On the other hand, matter can exist only through theoretical abstraction and is not characterized by any categories like quantity or quality. In other words, the matter is something unlimited and prior to the substance. Ǧābir surely knew that the matter functioned as a principle of the coming-to-be and perishing and had a different meaning from the substance in the ancient philosophy since he adopted hylomorphism for explaining the coming-to-be and perishing in the world. Nevertheless, both substance and matter were given the same title as the first principle in the Ǧābirian theory. The identification of substance with matter or ultimately with prime matter, is not an original idea of Ǧābir but is found also in the Stoa. That was pointed out by Kraus saying that it is not that Ǧābir misunderstood Aristotle's theory but he followed another tradition of ancient physics mainly of the Stoa.[14] However, Kraus

[13] See T2 in Chapter 2.5.1. As for *quintessence* and *arcana* in Paracelsus' texts, see Jevons (1964). Moreover, "Paracelsus compared a quintessence to the life-spirit of animals and man; it is spread throughout a body in minute amount" as in Jevons (1964), p. 143 and "quintessences are regarded as the most subtle kind of matter" as in Jevons (1964), p. 144. These features of quintessence remind us of the Stoic pneuma that perhaps influenced on the Ǧābirian fifth nature (III-2 and III-2.1).

[14] Kraus (1942), p. 168.

refrained from calling Ǧābir a Stoic on the ground that their connection was vague.

To achieve a better understanding of the nature in the Corpus, the balance, besides the nature itself, was worth examining as a closely related concept with the nature as described in Chapter 2.6. The science of balance has a purpose of reducing all the givens in the human knowledge to the system of quantity and measure, which endows our knowledge with a character of exact science.[15] Summarising the science of balance in this way, Kraus quoted Ǧābir's saying: "Everything falls under the balance (*mīzān*)".[16] This means that balance is a principle of quantification and that the Ǧābirian science is in general an operation of quantifying objects. In Kraus' explanation, however, there is another description: "Every science of Ǧābir resolves itself into the theory of elemental qualities, their place and their combinations", [17] which seems incompatible with the above description: "Everything falls under the balance", i.e., the quantity. If these two types of estimation of the Ǧābirian science by Kraus are combined, then the equation of quantities with qualities will appear. It is confusing since quantity is clearly distinguished from quality in various places of the Corpus according to Aristotle's ten categories. How can this equation of quantities and qualities in the Ǧābirian science be interpreted?

Before trying to answer this, it might be useful to describe the quantification of qualities in general: there are several kinds of quality such as big and small or hot and cold. It is empirically known that each of them has degrees in itself. For example, if a piece of iron is left under the sunlight for a while and another is put in the fire, both pieces will be said to be hot, but people can touch only the former without injury. Thus, there is a clear difference in degree concerning the state of being hot. Although the attempt to quantify such difference in the same quality is recognised to have appeared in medicine and pharmacology in the fourteenth century,[18] the similar thought is already found in Galen.[19] This degree in quality was called τάξις by Galen and eventually called *daraǧa* and *martaba* by Ǧābir. The quantity of this degree is expressed with weight (*wazn*) in the Corpus. The balance of this weight indicates what things are, i.e., their essence while the quality in things represents how they are. Accordingly, the science of balance can be considered as a system that reduces everything perceived in our knowledge to weight.[20]

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[15] It is Kraus who described the science of balance in relation with modern exact sciences. See Kraus (1942), esp. p.187.

[16] Kraus (1942), p.187, n. 3. "كل شيء تحت الميزان".

[17] Kraus (1942), p.151.

[18] Haq refers to the attempts to quantify qualities which appeared at Montpellier and Oxford in the fourteenth century. Arnald of Villanova (c.1235-c.1313) and Walter of Odington, both are known as alchemists, wrote important Latin works in the history of the mathematization of medicine. Their works, *Aphorismi de gradibus* and *Icocedron* respectively, depend on al-Kindī's *On the Knowledge of the Intensity of Compound Medicines*. Haq emphasises that while the alchemists in the fourteenth century and al-Kindī limited their attempt of quantification to the field of medicine, Ǧābirian quantification is an all-purpose intellectual tool, which can be applied to every existence.

[19] See T5 in Chapter 1.3.

[20] Kraus explains that the concept of specific weight merely plays an introductory role in the Ǧābirian science of balance. See Kraus (1942), 307. Indeed, the weight in the science of balance is not actual but theoretical, but Ǧābir gives qualities the corporeity that can be expressed by a physical weight. Considering

Now, it is possible to return to the previous question why there is an equation between qualities and quantities in the Ǧābirian science. The quantity that is discussed here is the quantity of the degree in quality. The quality has degrees which can be measured with a unit of weight. Therefore, "Everything is reduced to qualities" is transformed into "Everything is reduced to quantities" by means of the concept of weight. Thus, the Ǧabirian science based on the balance can be regarded as a system of reducing every object to quantities as well as to qualities. However, it is still questionable why Kraus emphasized qualities as a principle of the Ǧābirian science despite their being transformable into quantities.

If any answer is briefly given to this question, it will end up saying that qualities are natures for Ǧābir. The quality as the basis of the Ǧābirian science is not quality as one of the Aristotelian ten categories but the four primary qualities (i.e., hot, cold, moist and dry). Ǧābir calls them principles (*ʾuṣūl*), elements (*ʿanāṣir*) and so on, but most frequently they are called natures (*ṭabāʾiʿ*). For Ǧābir, the name of 'nature' implies corporeity. Qualities, being natures, can have weight due to their metaphorical corporeity.[21] Therefore, "Everything is reduced to qualities" can mean that the elements of things existing in this world are corporeal – not actually but analogically – and have weight. In this way, it is meaningful to keep indicating quality as a principle, even if quality can be reworded as quantity, because calling the principle 'quality' suggests, through the identification of qualities with natures, that the primary elements are corporeal. Moreover, the weight, i.e., the indication of quantity in the quality, is often described with the word *miqdār* and is replaced with numbers in the Corpus.[22] The doctrine that the principle is number seems Pythagorean. Indeed, the Corpus depends greatly on the works attributed to Apollonius of Tyana – regarded as Neo-Pythagorean –, but the Ǧābirian science goes beyond legendary Pythagoreanism that is usually connected to the faith in numbers as the principle of the world.

It was the four qualities that Ǧābir set as the elements of the beings. Ǧābir combined the four qualities that were never corporeal for Aristotle, with natures that can imply their corporeity. Moreover, Ǧābir went further away by defining those natures as interchangeable with letters. In the Ǧābirian science, qualities can be converted into numbers and letters. More precisely, qualities themselves remain being a principle but are subdivided into numbers or letters because the degrees in qualities correspond to numbers that are interchangeable with letters. As for the relation between numbers and letters, they are both discontinuous quantities.[23] Therefore, it can be said that the Ǧābirian science is

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that the corporeity of qualities is a crucial premise for the quantification of qualities, Kraus might underestimate the specific weight in the system of Ǧābirian sciences.

[21] Kraus (1942), p. 165. See also T6 in Chapter 1.3.

[22] *Wazn* and *miqdār* appear adjacently in the *FN*.

[23] This classification of discontinuous quantity was manifested by Aristotle and seems to have circulated throughout the Arabic world. For example, Ibn al-Hayṯam, the eleventh century mathematician says that discontinuous quantities are numbers and letters (والكمية المنفصلة تنقسم قسمين هما حروف الألفاظ والعدد in ed. Rashed (2002), p. 447) in his book *On the Known* which is definitely influenced by Euclid's *Data*.

a system based on discontinuous quantities, i.e., numbers and letters. As a matter of fact, after the fifth nature – a fundamental concept for Ǧābir – is dealt with in the *FN*, the latter half of the *FN* is dedicated to the balance of letters. In addition, most part of the next book to the *Seven Metals* is devoted to speculation on letters.[24] The way to reduce everything to letters is still enigmatic even after Kraus analyzed it in detail.[25] The science of letters, as a variation of the science of balance, is designed for answering fundamental questions such as what it is and how it is according to Ǧābirian *Book of Definition*.[26] In order to comprehend the Ǧābirian system of sciences, it is necessary to decode the profound science of letters concerning its role in the Ǧābirian thought by continuing to analyse unedited texts on the letters that are essential elements as well as numbers.

Unlike the idea that things are defined by the balance of the primary elements within them, Ǧābirian adhesion to letters shows discontinuity to Empedoclean-Aristotle's philosophy. Aristotle says, in the course of his critique to Empedocles due to the lack of explanation about the nature in the *De generatione et corruptione*, that the name is given by chance and is not proportion (*logos*) that defines things.[27] This saying implies Empedocles' words "but only mixture and exchange of things mixed exist, and nature is a name given by mortal humans".[28] Hence, both Empedocles and Aristotle believe that name is nothing but given by humans and only conventional apart from what-it-is. Ǧābir goes to the reverse and takes letters as an indication of the essence of things. The same contrast concerning names is described in Plato's *Cratylus* in which Hermogenes holds that "nothing but local or national convention determines which words are used to designate which objects", while Cratylus holds that "names belong naturally to their specific objects".[29] The influence of Plato on Arabic literature has not been observed well for lack of direct witness. In general, the Corpus was greatly influenced by Peripatetic thoughts, given that Galen can be regarded as Aristotelian. On the other hand, Euclid, irrelevant to Aristotle, was surely taken into account by Ǧābir.[30] Moreover, the influence of Empedoclean thoughts on the Corpus is considerable. Similarly, Plato might have been absorbed in the Corpus in some way. Exploration of Plato's influence on the Corpus requires another stage of research as well as investigation into the science of letters. Furthermore, in relation to the science of letters, another possible origin that should not be neglected is isopsephism which arose from contact between Greek philosophy and the

[24] The book following the *Seven Metals* is the *Book of Conciseness (Kitāb al-īǧāz)*. See Kraus (1943), p. 116.
[25] Kraus (1942), pp. 223-236.
[26] See Section [6] in Chapter 1.2.
[27] The *De generatione et corruptione* II, 6, 333b14.
[28] Lacks & Most (2016), p. 396, D53 (DK31B8) Aëtius 1.30.1: ἀλλὰ μόνον μῖξίς τε διάλλαξίς τε μιγέντων / ἐστί, φύσις δὲ βροτοῖς ὀνομάζεται ἀνθρώποισιν.
[29] These phrases that represent linguistic 'conventionalism' and 'naturalism' are quoted from the explanation about Plato's *Cratylus* in *Stanford Encyclopedia of philosophy* (https://plato.stanford.edu /entries/plato-cratylus/).
[30] See Chapter 1.3.

Hebrew Kabbalah.[31] Thus, not a few related fields remain to be examined for elucidating letters as devices defining what the thing is.

To return to the result of our studies, the main outcome was the elucidation of the concept of nature, especially, the fifth nature, focusing on its relation with ancient Greek philosophical notions; besides, the secondary outcome was the recognition of the Corpus as a strangely balanced entity: the faith in names as the essence of things and the flexible usage of terminology produce irrational polyphony in which the concept of nature with its several variations sustains the whole structure of the Ǧābirian science.

[31] According to Ast & Lougovaya (2015), pp. 82-83, "Because of the correspondence between the letters of the alphabet and numbers, a word or phrase could be represented as a sequence of numbers. On the basis of this simple principle one could encipher a word or phrase letter by letter or elaborate arithmetically on an entire verbal unit. People generally did the latter by equating the numerical value of one verbal unit with that of another, and this equation was referred to as ἰσόψηφον, the Greek word for "equal in numerical value," from which the modern term denoting the practice of isopsephism derives." As for isopsephic analysis, see Lougovaya (2018).

III. Appendix

This Appendix presents the Arabic texts of the *Seven Metals* and the *FN*, along with the Greek text of the *Four Elements*. As for the *Four Elements*, I based my study on the published Greek text in Berthelot & Ruelle, *CAAG* (1888), v. 2, pp. 337-342, and I put my translation and commentaries with the text. As for the Arabic texts, all of them are edited here for the first time, with the exception of some passages provided by Kraus (1942) & (1943). The aforementioned texts represent the corpus on which the thematical analysis in Part II (Texts and Contents) of this dissertation is based. Among the Ǧābir texts here taken into account, only the *Ḫārṣīnī*, the last work of the *Seven Metals*, is presented as a whole book to meet the needs of the thematical analysis in Chapter 2.3 and 2.4. For all the other Arabic books only excerpts are provided. Relevant information on their manuscript tradition can be found in Chapter 2.1.

Remarks on the Arabic edition

The English subtitles that are added to each part of the texts do not exist in the Arabic MSS, but they have been introduced just for convenience to show their link to Part II that provides thematical analyses of these sources.

In the variant footnotes, ‘ --- ’ means ‘omitted’ and ‘ + ’ means ‘added’. For example:

[1] بسم الله الرحمن الرحيم [ب، ط] : --- [ق].
[2] هذه [ب، ق] : + السبعة [ط].

When variants are written in the margin (حاشية), or above (فوق) and under (تحت) the line, they are indicated as [MSحا], [MSفا] or [MSتا] respectively:

[3] الموضوع [ب، ق، حاط] : الموضع [ط].

If a word or a passage in the MSS is too corrupted to be read, it is enclosed between two *cruces desperationis* † in the edited text:

[5]† ح † فإنه إذا نكح نفسه أحبلها بالتذكير والتأنيث

In some cases, conjectural word(s) can be proposed in the footnotes where parentheses enclose the surmised word(s) with an equal sign and a question mark:

[5] † ح † [ب، ق] (= جميعا؟) : المجتمعين فيه [ط].

When it is not sure where a paratextual note should be inserted, the correction is between {braces}.

[6] يحرقه [ب، ق] : يحرقها {أي القنه(؟) لم تحرقها [تاط]} لم يحركها بل يبينها(؟) بينا(؟) ضارا زجاجيا فاسدا ضائعا ولم يحرقها إحراق الذي هو القصور والمنبغى لعمل التراكيب فقف لهذا المعنى ونشد إن شاء الله تعالى [ط].

When the word(s) adopted in the edited text, i.e., the one(s) before the colon, in the footnotes does not have the indication of its MS, it is a modification by the editor:

[7] اكتساب : اكساب [ب، ق] : أرواحا فبذلك يكون اكتساء (؟) [ط].

As for minor orthographic phenomena – such as the *hamza* and a final *yāʾ* or *alif* – I have opted to adapt it to the modern standard spelling in order to facilitate the modern reader of the edition. As for the selection of variants in the apparatus, I decided to note them down only when these might show a significance that goes beyond the form and affects the interpretation of the text. *Tāʾ marbūṭa* is often written with no dots in the MSS, which is corrected in the edition without indicating it.

[ب] MS Paris BnF Arabe 2606, ff. 2b-4a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 1a-2b
[ط] MS Tehran Mağlis 729, ff. 41a-43a

كتاب الذهب[1]

بسم الله الرحمن الرحيم وبه نستعين[2] الحمد الله على إحسانه والشكر له على إنعامه الذي ابتدأ[3] بالنعم علينا تفضلا والفضل[4] الذي وهبه لنا تطوّلا[5] وصلى الله على النبي الرحم الهادي[6] إلى صراط[7] المستقيم[8] وآله الأخيار الطيبين الطاهرين[9]

Bibliographical information

قد[10] قدمنا هذا الكتاب من هذه الكتب السبعة قبل جميع الكتب وأتبعناه بكتاب الفضة وبه تتم هذه الكتب السبعة أعني كتاب الذهب[11] ونحن نذكر في هذا الكتاب من أمر[12] الذهب مثل ما نذكر في كل كتاب من السبعة ما تقدمه[13] وما تأخر عنه أمر كل جسد نسبنا ذلك الكتاب فيه[14]

Nature of gold

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[1] كتاب الذهب : كتاب الذهب [المنسوبة إلى الكواكب السبعة] وهو المنسوب إلى الشمس من الأجساد السبعة الذائبة المنسوبة إلى الكواكب السبعة في التراكيب وعلم الميزان [ط] : --- [ب، ق].

[2] وبه نستعين [ب] : --- [ق، ط].

[3] ابتدأ : ابتدَا [ق] : ابتدء [ط] : ابتداء [ب].

[4] والفضل [ب، ق] : وبالعقل [ط].

[5] تطولا [ط، ق] : نطوّلًا [ب].

[6] النبي الرحم الهادي [ب، ق] : محمد نبي الرحمة والهادي [ط].

[7] صراط [ب، ط] : الصراط [ق].

[8] المستقيم [ب، ق] : مستقيم [ط].

[9] الطاهرين [ب، ق] : --- [ط].

[10] قد [ب، ق] : أما بعد قد [ط].

[11] واتبعناه بكتاب الفضة وبه تتم هذه الكتب السبعة أعني كتاب الذهب [ب، ق] : السبعة [ط].

[12] أمر [ب، ق] : أمور [ط].

[13] تقدمه [ب] : تقدم [ق] : تقدم منه [ط].

[14] فيه [ب، ق] : إليه [ط].

فنبدأ من ذلك فنقول إن الذهب بالإجماع[15] حار رطب في ظاهرة بادر يابس في باطنة وهو سيد الأجساد[16] كما كانت الشمس أسمى وهو[17] منسوب إليها[18] سيد الكواكب ورئيس الكل فاعلم أيها الأخ أن الشمس نور العالم وحياته مادته [ط-41ب] الكبرى وعينه اليمنى وسبب الكون من الفساد[19] في هذا العالم السفل[20] وإنما[21] يفسده ما يفسده[22] ولتنقله من الفساد إلى الصلاح والحيلة من جوهره الأول آل الجوهر[23] الثاني فيصلحه[24] بذلك وبهذا[25] تمت الأشياء المرتبة على ما يشاهد منها[26] حار رطب كما قدّمنا معتدل في ذات[27] وإن تكوينه كان من تربته ورطوبته عليه[28] من الطعوم الكريهة مثل المرارة والملوحة والحموضة والزعارة بل هو من تربة رطوبةٌ معتدلة [ب-3أ] لا طعم لها إلا المتفاهّة[29] وإنه تام الصورة في اعتداله فإن الحرارة اللينة طبخته[30] بالدفق واللين في هذه كافية بالاعتدال في الطول والقصر والمبد[31] والانقطاع وإنه بذلك الطبخ اللين اختلطت رطوبته بيبوسته وامتزجت تربته برطوبته امتزاج الاعتدال وما انقطع الطبخ عنه حتى استوفى منه ما احتاج إليه فتداخلت أجزاءه بعضها في بعض تداخلا لا افتراق له[32] فهو تعمل بهما[33] جميعا ويعملان به جميعا بلا افتراق ولا تزايل[34] واجتمعت الفلاسفة

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15 بالإجاع [ب، ق] : + أنه [ط].

16 الأجساد [ب] : الأجساد رئيسها [ط] : السادات [ق].

17 أسمى وهو [ب] : اليّ [ق] : التي هي [ط].

18 إليها [ب، ط] : إليها [ق].

19 من الفساد [ب، ق] : والفساد [ط].

20 السفل [ب، ط] : السفلى [ق].

21 وإنما [ب، ق] : وأما [ط].

22 يفسده [ب، ق] : تفسده [ط].

23 آل الجوهر [ب] : إلى جوهر [ق، ط].

24 فيصلحه [ب، ق] : فتصلحه [ط].

25 وبهذا [ق، ط] : و*هذا [ب].

26 يشاهد منها [ب، ق] : نشاهد منها والذهب [ط].

27 ذات [ب] : ذلك [ق، ط].

28 ورطوبته عليه [ب، ق] : ورطوبة سليمة [ط].

29 المتفاهّة [ب، ق] : التفاهة [ط].

30 طبخته [ب، ق] : طبيخه [ط].

31 والمبد [ب] : والبدء [ق، ط].

32 له [ب، ق] : لها [ط].

33 بهما [ب، ق] : --- [ط].

34 افتراق ولا تزايل [ب، ق] : تزايل وا*فتراق [ط].

في أمره على أنه حار رطب معتدل رزين [ق-2أ] متداخل وذلك [ط-42أ] بغير شك ولا خلف[35] فيه بينهم[36] وأنه ينفع من الخلط السوداوي فيزيل[37] ومنفعته عجيبة وإبرآء بليغ وذلك يكون منه إذا دبّر بأن يبرده[38] بمبرد لينٍ وأديم[39] سحقه بمآء السلى[40] حتى يصير كالهباء[41] وخولط بالأدوية المخرجة لسودائة[42] النافعة منها فيكون حينئذ بادزهر[43] الخلط السوداوي وإن أخذه مخلطا بالأدوية أنفع من استعماله وحده بل لا يستعمل وحده البتة فاعلم ذلك وادر ما تحته تجد فيه[44] الفائدة في شفاء الأمراض السوداوية إن شاء الله تعالى.[45]

Gold ink

وقد يكون منه حبر تكتب[46] به ويكون منه كرسفة يكتب بها أيضا وكذلك نقول في الفضة فإنها نايئته[47] في كل شيء ولا يكون حبر ولا كرسفة [ب-3ب] حتى يتكلس أما[48] الكرسفة فإنها تكون بأن يؤخذ الذهب فيلقى في بوطقة[49] وثيقة وينفخ عليه[50] فإذا انسبك أطبق على البوطقة طبق من أسرب ساعة فإنه يكسره ويجعله ترابا ينسحق وإن شئت فاعمل به ما هو أسهل من هذا وهو بأن يطلى داخل البوطقة إما بالمرتك المسحوق أو بالأسرب المكلس أو بالكحل الجيد أو ما[51] يجري مجرى ذلك مثل

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35 خلف [ب، ق] : خلاف [ط].
36 بينهم [ب، ق] : منهم [ط].
37 فيزيل [ب] : فيزيله [ق، ط].
38 دبّر بأن يبرده [ب، ق] : أبرد [ط].
39 أديم [ب، ط] : يديم [ق].
40 السلى [ب، ق] : السلق [ط].
41 كالهباء [ق، ط] : كالهاء [ب].
42 لسوداءه [ب، ق] : لسوداء [ط].
43 بادزهر [ب، ق] : فادزهر [ط].
44 فيه [ب، ط] : --- [ق].
45 إن شاء الله تعال [ب، ق] : --- [ط].
46 يكتب [ق، ط] : تكتب [ب].
47 نائيته : نايبية [ب] : نايبته [ق] : ثابتة [ط].
48 أما [ب، ق] : فأما [ط].
49 بوطقة : بوتقة [ب، ق، ط].
50 عليه [ب، ق] : فيه [ط].
51 ما [ب، ق] : --- [ط].

الأسرنج وإخوانه [ط-42ب] من أولاد الأسرب ثم يسبك فيها فإنه يكلس[52] ويصير ترابا أصفر اللون رزينا حسنا وإذا صار كذلك عجن بماء الصمغ المحلول وطرح على صوفة لينة أو قطنة خشنة ويكتب منها[53] كما يكتب من الدواة[54] ثم صقل بعد جفافه فإنه يخرج الكتابة ذهبا أحسن من كل حسن[55] عجيب المنظر وأما حله ليكون حبرا يكتب به كما يكتب بالحبر فيخرج الكتاب[56] أصفر ذهبيا حسنا فإن[57] يحل النوشادر بأي حلول[58] كان ويسحق البرادة به حتى يصير ماءً وربما قرن بماء النوشادر ملح[59] القلى المكرم الموصوف في كتبنا الموازينية فإنه مما يحل الذهب والفضة[60] لو قلنا إنه[61] يحل الأجساد السبعة الذائبة مثل حله لكان ذلك[62] حقا فاعرفه فإذا انحل كتب به كما كتب بالحبر فإنه [ق-2ب] يخرج بعد صقاله ذهبا يلمع فاعرف هذه الأصول واعلم[63] أي شيء نومئ[64] بهذا الوصف [ب-4أ] فإن الفائدة في معرفة ما تريده وأنت تعرفه إن شاء الله تعالى.

Notification of gold

وقد يدخل الذهب في أشياء كثيرة من التراكيب ولسنا نعنى[65] الذهب الحق المعدني فإنه ليس هذا موضع ذكره بل يذكره[66] حيث يجب ذكره [ط-43أ] بالكتب المترجمة بالموازينية في المواضع التي يذكر[67] فيها الخواص إن شاء الله تعالى.

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[52] يكلس [ب، ق] : يتكلس [ط].
[53] منها [ب، ق] : بها [ط].
[54] من الدواة [ب، ق] : بالدواء [ط].
[55] من كل حسن [ب، ق] : كل شيء [ط].
[56] الكتاب [ب، ق] : --- [ط].
[57] فإن [ب، ق] : بأن [ط].
[58] حلول [ب، ق] : حلّ [ط].
[59] ملح [ب، ق] : وملح [ط].
[60] والفضة [ب، ق] : + لو [ط].
[61] إنه [ب، ق] : + ليس شيء [ط].
[62] ذلك [ب، ق] : --- [ط].
[63] واعلم [ب، ق] : + إلى [ط].
[64] نومئ [ب، ق] : + إليه [ط].
[65] نعني [ق، ط] : نعنا [ب].
[66] يذكره [ب، ق] : نذكره [ط].
[67] يذكر [ب، ق] : تذكر [ط].

Gold plate against fear

واعلم أن الذهب فيه خواص[68] وأفعال طريقة لا يصدق بها من يسمعها دون تجربتها فإن[69] التجربة شاهد عادل وذلك انه من سبك من الذهب الخالص خمس مثاقيل فطرقها حتى تصير صفيحة طولها وعرضها واحد يكون[70] نحو أربعة إصابع او ثلاثة في مثلها وربطها في خيط[71] إبريسم على مهدده يحيي قلبه وأزال[72] عنه التوحش فالخفقان[73] السوداوي والصفراوي[74] وطيب نفسه وإن كان ينفزع[75] زال عنه وأزال الأفكار المحزنة[76] والقلق الذي لا يعرف له[77] سبب فالمخاوف[78] الحاظرة[79] بالقلب

[ب] MS Paris BnF Arabe 2606, f. 5a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, f. 3a
[ط] MS Tehran Mağlis 729, f. 44a

Kohl as a medicament for eyes

ويجب أن تعلم الذهب والفضة والنحاس والرصاصين والحديد والخار كلها تدخل[80] في الأكحال[81] فيعمل كل واحد منها عملا لا يعمله غيره أما الذهب فيجلوا العين ويقويها ويدفع عنها النوازل كما ذكرنا في الميل[82]

[68] خواص [ب، ق] : + عجيبة [ط].
[69] فإن [ب، ق] : وإن [ط].
[70] يكون [ب، ق] : تكون [ط].
[71] في خيط [ب، ق] : بخيط [ط].
[72] يحيي قلبه وأزال : يحيا قلبه وأزال [ب، ق] : بحيال قلبه أزال [ط].
[73] فالخفقان [ب] : والخفقان [ق، ط].
[74] السوداوي والصفراوي [ب، ق] : السوداوية والصفراوية [ط].
[75] ينفزع [ب، ق] : يتفزّع [ط].
[76] المحزنة [ب، ق] : المحزونة [ط].
[77] له [ب، ق] : --- [ط].
[78] فالمخاوف [ب] : والمخاوف [ق] : والخاوف [ط].
[79] الحاظرة [ب، ق] : المحاظرة [ط].
[80] كلها تدخل [ب، ق] : تدخل كلها [ط].
[81] الأكحال [ب، ق] : + النافعة للعين [ط].
[82] عنها النوازل كما ذكرنا في الميل [ب، ق] : النوازل بخاصية عجيبة كما قدمنا قبل هذا الموضع في هذا الكتاب عند ذكرنا الميل [ط].

وأما الفضة فتنشف ما في العين من الرطوبات[83] وأما النحاس فينقى الداء الغليظ من الرطوبة[84] عنها ويأكل أرماصها[85] وأما الرصاصين فينفعان العيون القشفة ويقويان الناظر وأما الحديد والخار فينشفان الرطوبات ويبريان الجرب والسبل ويقلعان البياض بقوة عجيبة واعلم أن النحاس يقوم مقام الذهب في كثير من الأعمال الصنعوية على طريق التدبير وإن توباله يشفى دخوله[86] في الأعمال أمراضا عدة ويقلع أوصابا كثيرة من ههنا[87]

[ب] MS Paris BnF Arabe 2606, ff. 6b-7a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, f. 4b
[ط] MS Tehran Mağlis 729, f. 46b

Occult properties as part of talismans

واعلم أن أكثر الأبواب التي ذكرناها في كتب الموازين هي خواص ومعنى ذلك أن[88] تعمل[89] بخاصية لها[90] لا بالطبع وليس شيء أفضل من أفعال[91] الخواص لأنها تعمل أعمالا لا تبطؤ[92] ولا تتأخر[93] بل يظهر فعلها للوقت[94] كفعل[95] الطلسمات [ب-7أ] فإن الخواص من أجزاء الطلسمات[96] والطلسمات[97] كليات لها

[83] فتنشف ما في العين من الرطوبات [ب، ق] : فينشف الرطوبات من العين [ط].
[84] الداء الغليظ من الرطوبة [ب، ق] : الرطوبة الغليظة [ط].
[85] أرماصها [ب، ق] : أرمادها [ط].
[86] دخوله [ب، ق] : بدخوله [ط].
[87] من ههنا [ب، ق] : ونحن نذكر في كتاب منسوب إليه فإن ذلك المواضع أحق بذكرها [ط].
[88] أن أكثر الأبواب التي ذكرناها في كتب الموازين هي خواص ومعنى ذلك أن [ب، ق] : أنه [ط].
[89] تعمل : يعمل [ب، ق، ط].
[90] بخاصية لها [ب، ق] : بالخاصية [ط].
[91] أفضل من أفعال [ب، ق] : لظرف من أعمال [ط].
[92] تبطؤ : تبطى [ب، ق، ط].
[93] تتأخر [ب، ق] : يتأخر [ط].
[94] للوقت [ب، ط] : في الوقت [ق].
[95] كفعل [ب، ق] : كعمل [ط].
[96] فإن الخواص من أجزاء الطلسمات [ب، ق] : --- [ط].
[97] والطلسمات [ب، ق، هاط] : --- [ط].

[ب] MS Paris BnF Arabe 2606, f. 8a-b
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, f. 5a-b
[ط] MS Tehran Mağlis 729, ff. 48a-49b

Bibliographical information

فأما ما نحن فيه من سبيل الأمر[98] في هذه[99] الكتب السبعة فإنه لا يحتاج فيها[100] إلى مقادير سخونة مختلفة ولا ميزان متغايرة [ط-48ب] بل كانت[101] واحدة فقط وقد بينت[102] ذلك فيما تقدّم[103] فإذا جمع جامع [ق-5ب] فيما[104] بينها[105] كملت معرفته فاعرف[106] فضل هذه[107] الكتب[108] على سائر كتب الموازين خاصة فإنه زبدة كتبي في[109] الموازين بل زبدة كتبي[110] كلها الموازينية وغيرها[111]

Variations of lead

والدليل على[112] النار في هذه التدابير أن [113]العمل لها أعني في هذا القول نذكر[114] التدبير والتدابير[115]

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98 فيه من سبيل الأمر [ب، ق] : نسهله [ط].
99 هذه [ق، ط] : هذا [ب].
100 فيها [ب، ق] : فيه [ط].
101 كانت [ب، ق] : نار [ط].
102 بينت [ب، ق] : بينا [ط].
103 تقدم [ب، ق] : + تعريضا وإنما نتمه فيما بعد جيدا [ط].
104 فيما [ب، ق] : --- [ط].
105 بينها [ب، ق] : بينهما [ط].
106 فاعرف [ب، ق] : فاعرفه أيها الأخ [ط].
107 هذه [ب، ق] : هذا [ط].
108 الكتب [ب، ق] : + السبعة [ط].
109 كتب الموازين خاصة فإنه زبدة كتبي في [ب، ق] : الكتب [ط].
110 كتبي [ب، ق] : كتبنا [ط].
111 وغيرها [ب، ق] : + فاعرفه [ط].
112 على [ب، ق] : + أن [ط].
113 هذه التدابير أن [ب، ق] : هذا التدبير [ط].
114 لها أعني في هذا القول نذكر [ب، ق] : كله ونعني بذكرنا [ط].
115 والتدابير [ب، ق] : التدابير [ط].

والموازين والتراكيب[116] إنا نحرق [117]الأسرب ونصديه[118] فيخرج لنا منه ثلاثة الوان وأربع[119] فأما الثلاثة الخارجة منه بالاحتراق[120] فهي الأسرنج والمرتك والخارج بالتصدية[121] الإسفيداج ولا بد مع التصدية من النار فيكون قوة غير قوة الآخر[122] وأما الصبغ الرابع أولا والأسرب[123] فهو بالنار[124] وغيرها والثلاثة بالنار وحدها[125] فقط إن يدخل[126] عليه الكثير الحمراء ويحرق [ط-49أ] أجمعها[127] فيكون منه شيء ظريف له وفعل [128]عجيب وربما أدخل[129] عليه مع[130] النار الآجر الجديد مع الكثير [ب-8ب] أو الآجر وحده [131] وهذه الأعمال في إحراق الأسرب وإن كانت مختلفة فإنها ترجع إلى حالين ويكون على [132]تلك الحالين[133] أربعة أشياء فالحالين النار [134]وحدها والنار مع داخل معها[135] والأربعة أشياء[136] المختلفة ثلاثة منها بالنار وحدها وواحد بالنار مع داخل [137]معها عليه فهذه أدلّة واضحة على ما قال القوم من[138] أن

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[116] والتراكيب [ب، ق] : + كلها [ط].

[117] إنا نحرق [ب، ق] : حرق [ط].

[118] ونصديه [ب، ق] : وتصدية [ط].

[119] وأربع [ب، ق] : ولون رابع تصدية [ط].

[120] بالاحتراق [ب، ق] : بالإحراق [ط].

[121] والخارج بالتصدية [ب، ق] : والتوتياء وأما الرابع الخارج منه التصدية وهو [ط].

[122] قوة غير قوة الآخر [ب، ق] : كل واحد من هذه الأشياء لون غير لون الآخر وفعل غير فعل الآخر من النار فيكون لكل واحد منها لون وقوة غير لون وقوة الأسرب [ط].

[123] وأما الصبغ الرابع اولا والأسرب [ب، ق] : فأما الثلاثة من أولاد الأسرب [ط].

[124] بالنار [ب، ق] : + وحدها [ط].

[125] وغيرها والثلاثة بالنار وحدها [ب، ق] : فأما هذا الرابع هو بإدخال الملح والنوشادر والنار على الأسرب وضرب آخر يدخل عليه النورة [ط].

[126] إن يدخل [ب، ق] : ويدخل [ط].

[127] أجمعها [ب، ق] : جميعا [ط].

[128] له وفعل [ب، ق] : وله فعل [ط].

[129] وربما أدخل [ب، ق] : ويدخل [ط].

[130] مع [ب، ق] : --- [ط].

[131] الآجر الجديد مع الكثير أو الآجر وحده [ب، ق] : وأجزاء الحديد وحدها ويدخل عليه الكثيراء و الأجزاء جميعا [ط].

[132] ويكون على [ب، ق] : يكون [ط].

[133] الحالين [ب، ق] : الحالان [ط].

[134] فالحالين النار [ب، ق] : وأما أحد الحالين فبالنار [ط].

[135] والنار مع داخل معها [ب، ق] : وأما حل الأخرى فبالنار تداخل معها عليه [ط].

[136] والأربعة أشياء [ب، ق] : فالأربعة الأشياء [ط].

[137] مع داخل [ب، ق] : وتداخل [ط].

[138] من [ب، ق] : --- [ط].

العمل كله للنار في هذه التراكيب ولذلك[139] في غيرها والله اعلم بالصواب أن[140] هذا المعنى هو أحد ما[141] دعي[142] القوم الآن[143] قالوا إن أشبه الأشياء[144] بالذهب الأسرب وأقربها إلى الذهب الأسرب[145] وذلك أنه[146] بارد يابس فهو باطن الذهب لأن ظاهر الذهب حار رطب والباطن في كل الأشياء[147] الموجودات من الأشياء[148] المركبة ضد الماء في ظاهرة[149] من الطبائع وضد الحار الرطب البارد اليابس. وقد فرغنا من هذا في كتاب الأسرب المنسوب إليه وفي غيره من كتبنا[150] فاعلم ذلك وإنما [ط-49ب] يسهل ويتيسّر[151]

Resemblance of the metals to gold

والأسرب إلى الذهبية بسرعة[152] لأنه شبه[153] الفضة بالطبع فيكون هذان الجسمان[154] الفضة والأسرب أقرب إلى الذهب من غيرها ويتلوا[155] هذين في القرب والبعد الذهبية[156] النحاس [ق-6أ] والحديد

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[139] لذلك [ب] : كذلك [ق، ط].
[140] والله اعلم بالصواب أن [ب، ق] : من التدابير كلها فإن [ط].
[141] أحد ما [ب، ط] : ما أحدٌ [ق].
[142] دُعِيَ [ب، ق] : دعاء [ط].
[143] الآن [ب] : إلى أن [ق، ط].
[144] الأشياء [ب، ق] : الأجساد [ط].
[145] إلى الذهب الأسرب [ب، ق] : إليه [ط].
[146] أنه [ب، ق] : أن الأسرب [ط].
[147] في كل الأشياء [ب، ق] : لكل [ط].
[148] الأشياء [ب، ق] : الأجساد [ط].
[149] الماء في ظاهرة [ب، ق] : الظاهر [ط].
[150] المنسوب إليه وفي غيره من كتبنا [ب، ق] : ومن غيره في كتبنا هذه السبعة [ط].
[151] يسهل ويتيسر [ب، ق] : سهل يتسرد (؟) [ط].
[152] بسرعة [ب، ق] : بالسرعة [ط].
[153] شبه [ب، ق] : يشبه [ط].
[154] الجسمان [ب، ق] : الجسدان [ط].
[155] ويتلوا [ب، ق] : ويتلون [ط].
[156] في القرب والبعد الذهبية [ب، ق] : والقرب إلى الذهب [ط].

فهما[157] كذلك فأما القلعى فان بينه وبين الذهب مشاكلة في[158] أقل من ذلك وبعد كثير في أكثر [159]ذلك وقد يكون منه ذهب[160] لكن بتدبير طويل في زمان [161] طويل وتدابير مختلفة.

[ب] MS Paris BnF Arabe 2606, f. 10a-b
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 6b-7a
[ط] MS Tehran Mağlis 729, ff. 51b-52a

Sharp Water

واعلم أن الماء الحريف يبيض كل شيء أحمر ويحمّر كل[162] أبيض بطول[163] الطبخ وشدة النار ويخلط ماء الحريف[164] الأشياء بعضها ببعض ويدخل بعضها ببعض[165] ويمزج بعضها ببعض ويصل[166] إلى إقعار الأجساد[167] وداخلها وإنه[168] يحل الزجاج إذا حمى وغمس[169] فيه مرارا حتى يتكلس ثم يسحق سحقا جيدا ويغمر به ويدفن في بئر سرجين[170] أو نداوة بلا سرجين[171] فإنه ينحلّ[172] في أحد وعشرين يوما

[157] فهما [ب، ق] : فيما [ط].
[158] في [ب، ق] : --- [ط].
[159] كثير في أكثر [ب، ق] : أكثر من [ط].
[160] ذهب [ب، ق] : ذهبا [ط].
[161] بتدبير طويل في زمان [ب، ق] : بعمل كثير وزمان [ط].
[162] كل [ب، ق] : + شيء [ط].
[163] بطول [ق، ط] : بطلول [ب].
[164] ماء الحريف [ب، ق] : --- [ط].
[165] ببعض [ب، ق] : في بعض [ط].
[166] ويصل [ب، ق] : --- [ط].
[167] الأجساد [ب، ق] : الأجسام [ط].
[168] وإنه [ب، ق] : فإنه [ط].
[169] حمى وغمس [ب، ق] : يحمى ويغمس [ط].
[170] بئر سرجين [ب، ق] : السرفين [ط].
[171] سرجين [ب، ق] : السرفين [ط].
[172] ينحل [ب، ق] : يفعل [ط].

ماء يضرب[173] إلى الصفرة وإن هذا الماء إذا[174] دخل على التركيب أو[175] البرادات البيض حمّرها وعلى الحمر بيّضها والتجربة يا أخي أقضى[176] بالحق [ق-7أ] وتبلغ إلى صحة الدعوى أو بطلانها وأما من أراد أن يعرف الأشياء بالقياس قبل التجربة فهو[177] إما عجز[178] عن العمل وإما عدم[179] الإمكان للنفقة فليعلم أن الشبّة إذا سبك بالزجاج [ط-52أ] ثلاث دفعات أخرجه ذهبا لا يشك فيه أحدٌ في المحك والحمى إلا يسيرا من سواد[180] يظهر عليه وخفة في الوزن مخالف ثقل الذهب[181] وهذه الألوان[182] عن الشبّة بأن يحمى عليه بالنار[183] مطليا بالزرنيخ حماء[184] دائما فإنه يرزن[185] ويزول السواد عنه وإن طلى بالتوتياء والزرنيخ الأحمر المبلولين بالخل أيضا في نقي السواد عنه[186] لأن الزرنيخ يأكله[187] وينبغي لعامله أن يصير عليه فإنه إذا حمى والزرنيخ عليه[188] أسود سوادا لا يزول عنه بل[189] يزيد ثم يبتدئ وينسلخ[190] قليلا قليلا[191] حتى يحمّر حمرة صافية الآن[192] ذهبية[193] فاعلم ذلك [ب-10ب] إن شاء الله تعالى.[194]

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[173] ماء يضرب [ب، ق] : ويضرب [ط].

[174] إذا [ب، ق] : --- [ط].

[175] التركيب أو [ب، ق] : --- [ط].

[176] يا أخي أقضى [ب، ق] : أيها الأخ يقضي [ط].

[177] فهو [ب، ق] : --- [ط].

[178] عجز [ب، ق] : عجزا [ط].

[179] وإما عدم [ب، ق] : أو عزر [ط].

[180] سواد [ب، ق] : السواد [ط].

[181] مخالف ثقل الذهب [ب، ق] : مخالفة لصفاء الذهب وثقله [ط].

[182] وهذه الألوان [ب، ق] : وهذان يزالان [ط].

[183] عليه بالنار [ب، ق] : على النار [ط].

[184] بالزرنيخ حماء [ب، ق] : زرنيخ حما [ط].

[185] يرزن [ب، ق] : يذوب [ط].

[186] وإن طلى بالتوتياء والزرنيخ الأحمر المبلولين بالخل أيضا في نقي السواد عنه [ب، ق] : --- [ط].

[187] يأكله [ب، ق] : يأكل سواده [ط].

[188] والزرنيخ عليه [ب، ق] : على النار بالزرنيخ [ط].

[189] أسود سوادا لا يزول عنه بل [ب، ق] : شديدا و لا يزال أسود [ط].

[190] وينسلخ [ب، ق] : فينسلخ [ط].

[191] قليلا [ب، ق] : + كما كان يزيد [ط].

[192] الآن [ب، ق] : ناصعة [ط].

[193] ذهبية [ب، ق] : + فاعرفه وإن طلى النوشادر والزرنيخ المبلولين بالخل الخمر الصافي لا مبيضا وهو الأجود (؟) وإلا (؟) فليكن صافيا لا عكر فيه خرج جيدا [ط].

[194] إن شاء الله تعالى [ب، ق] : --- [ط].

[ب] MS Paris BnF Arabe 2606, ff. 10b-13a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 7a-9a
[ط] MS Tehran Mağlis 729, ff. 71a- (77b-78b) -73b

كتاب الفضة

لجابر عليه الرحمة[1]

بسم الله الرحمن الرحيم وبه نستعين[2] [ط-71أ9<]

Letters of Silver

قال في كتاب الفضة[3] [<ط-77ب8] إن الثلاثي[4] [ق-7ب] من الطبائع هي الناقصة[5] وذلك أنه ليس يخلوا من أن يكون على ثلاثة أحرف أو على حرفين[6] فهو على طبيعتين[7] وما كان على طبيعتين وثلاثة طبائع فالعالم[8] من الناس يعلم ضرورة أنه ناقص والناس كلهم يعلمون أن الناقص يريد التمام وهو كذلك إلا[9] قد أعلمناك[10] أيضا [ط-78أ] أنه ربما كان[11] تاما [ب-11أ] وهو على حرف واحد فإن[12] هذا في ظاهرة كأنه متناقض وليس كذلك وأنا[13] أبين[14] أنه غير متناقض ولا مختلف وذلك[15] قد أدريناك أيضا[16]

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[1] لجابر عليه الرحمة [ب، ق] : وهو منسوب إلى القمر من كتب الأجساد السبعة الذائبة المنسوبة إلى الكوكب السبعة في التراكيب والعلم الميزان [ط].

[2] وبه نستعين [ب، ق] : الحمد الله رب العالمين كثيرا وصلى الله على محمد خاتم النبيين وآله الطاهرين وسلم تسليما أبدا [ط].

[3] قال في كتاب الفضة [ب، ق] : --- [ط].

[4] إن الثلاثي [ب، ق] : وإن الثنائي والثلاثي [ط].

[5] هي الناقصة [ب، ق] : ناقص [ط].

[6] على ثلاثة أحرف أو على حرفين [ب، ق] : على حرفين أو ثلاثة أحرف [ط].

[7] طبيعتين [ب، ق] : ثلاثة طابع [ط].

[8] فالعالم [ب، ق] : والعالم [ط].

[9] إلا [ب، ق] : + أنا [ط].

[10] أعلمناك [ب، ق] : علمناك [ط].

[11] ربما كان [ب، ق] : كان ربما [ط].

[12] فإن [ب، ق] : وإن [ط].

[13] وأنا [ب، ق] : وإنما [ط].

[14] أبين [ب، ق] : تبين [حاط] : يتبين [ط].

[15] وذلك [ب، ق] : + أنه [ط].

[16] أيضا [ب، ق] : --- [ط].

في[17] الموازين إنما[18] كان على حرف واحد فإن تمامه بتكرير الحروف وزيادتها[19] وهذا وحق سيدي علم لاهوتي[20] عظيم إلا أن السقراط العظيم[21] في ذلك رأيا مفردا أعني أنه[22] انفرد به وذلك أنه قال إذا وزنت الفضة وجدتها من الثلاثي ووجدت الفاء للحرارة والضاد[23] للبرودة والهاء للحرارة فقد رجع الثلاثي إلى الثنائي أعني[24] هذا الثلاثي[25] خاصة وقد بقي فيه طبعان[26] أحدهما ظاهر وهو البرودة والآخر باطن وهو الرطوبة فإن الذي يوجب[27] البرودة وهو[28] **ب** والذي أوجب الرطوبة هو **د**[29] وطبع ثالث ظاهر أيضا وهي[30] اليبوسة تكاد[31] أن تكون **ج**[32] يريد بقوله ذلك معنى وعندي[33] أنه[34] في الفضة **ب ه**[35] برودة بين[36] حرارة ورطوبة بين[37] يبوسة فقد وجب على رأي سقراط أن يكون هجاء[38] الفضة وكتابها [ط-78ب] **القضهج**[39] ولو أراد مريد أن يشرح ذلك معنى ألفاظ سقراط لطال عليه إلا أن يريد الله

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17 في [ب، ق] : + كتب [ط].

18 إنما [ب، ق] : ما [ط].

19 وزيادتها [ب، ق] : + عليه [ط].

20 لاهوتي [ب، ق] : آلهي [ط].

21 عظيم إلا أن السقراط العظيم [ب، ق] : وعظيم لأن لسقراط الحكيم [ط].

22 أعني أنه [ب، ق] : وإنه [ط].

23 الضاد [ب، ق] : الفساد [حاط].

24 أعني [ب، ق] : يعني [حاط].

25 ووجدت الفاء للحرارة والضاد للبرودة والهاء للحرارة فقد رجع الثلاثي إلى الثنائي أعني هذا الثلاثي [ب، ق، حاط] : --- [ط].

26 وقد بقي فيه طبعان [ب، ق] : وإن [ط].

27 يوجب [ب، ق] : أوجب [ط].

28 وهو [ب، ق] : --- [ط].

29 هو **د** [ب، ق] : **ح** [ط].

30 وهي [ب، ق] : وهو [ط].

31 تكاد [ب] : فكاد [ق] : يكاد [ط].

32 تكون **ج** [ب، ق] : يكون **د** [ط].

33 معنى وعندي [ب، ق] : المعنى وعندنا [ط].

34 أنه [ب، ق] : + يقول [ط].

35 ه [ب، ق] : --- [ط].

36 بين [ب، ق] : **ح** [ط].

37 بين [ب، ق] : **ه** (؟) [ط].

38 هجاء [ب، ق] : هي [ط].

39 القضهج [ب] : الفضهج [ق] : قبحيح (؟) [ط].

هدايته ودلالته ليهديه ويدله[40] ويرى أن لا ينطق باللفظة[41] إلا كذلك والأصلان واحد إن فطنت أنه إن عملت في وزن جميع الأشياء هكذا فهو الصواب[42] قال[43] وكذلك نرى[44] جميع الأشياء الناقصة[45] فينبغي أن[46] تعرف ذلك وتفهّمه جيدا ثم[47] أنه قال[48] وهذه الموجودات التي سميناها نواقص وهي[49] الثواني[50] أسهل ميزانا[51] [ب-11ب] من العلويات الأوائل[52]

Bibliographical information

وقال[53] ثم إنه[54] خص الشمس والقمر وابتدائهما[55] فأما الشمس فقدّم [ق-8أ] لنا[56] الكلام عليها[57] وعلى موازينها[58] في كتاب[59] قبل هذا الكتاب من هذه[60] السبعة وسميناه كتاب الذهب والباقية[61] على كيفية

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[40] ولو أراد مريد أن يشرح ذلك معنى ألفاظ سقراط لطال عليه إلا أن يريد الله هدايته ودلالته ليهديه ويدله [ب، ق] : --- [ط].

[41] باللفظة [ب] : باللفظ [ق] : بالفضة [ط].

[42] إن فطنت أنه إن عملت في وزن جميع الأشياء هكذا فهو الصواب [ب، ق] : ولو أراد مريد أن يشرح ذلك من ألفاظ سقراط لطال عليه إلا أن يريد بدايته وهدايته ودلالته فيهديه إليه ويراه عليه [ط].

[43] قال [ب، ق] : --- [ط].

[44] نرى [ب] : ترى [ق] : يرى [ط].

[45] الأشياء الناقصة [ب، ق] : الناقصة من الأشياء [ط].

[46] فينبغي أن [ب، حاق، ط] : فتعرف [ق].

[47] ثم [ب، ق] : + قال [ط].

[48] أنه قال [ب، ق، فاط] : --- [ط].

[49] التي سميناها نواقص وهي [ب، ق] : --- [ط].

[50] الثواني [ب، ق] : + الناقصات [ط].

[51] ميزانا [ب، ق] : عندنا [ط].

[52] الأوائل [ب، ق] : + التمامات أراد بالموجودات الثاني الأجناس الثلاثة وأراد بالعلويات الأوائل الكواكب السبعة [ط].

[53] وقال [ب، ق] : --- [ط].

[54] إنه [ب، ق] : --- [ط].

[55] وابتدائهما [ب، ق] : وابتداء بهما [ط].

[56] فقدم لنا [ب، ق] : وتقدم لنا [ط].

[57] عليها [ب، ق] : عليه [ط].

[58] موازينها [ب، ق] : موازينه [ط].

[59] كتاب [ب، ق] : كتابنا [ط].

[60] هذه [ب، ق] : + الكتب [ط].

[61] والباقية [ب، ق] : والنافية [ط].

التراكيب المرتفعة [ط-78ب9>][<ط-71أ9][62] في عمر طويل وزمان[63] يريد أراد بالموجودات الأجناس الثلاثة وأراد بالعلويات الكواكب ثم أنه[64] في أقرب مدة وأتبعناه بهذا الكتاب وسميناه هذا الكتاب[65] كتاب الفضة ونحن نذكر ههنا من[66] موازين الفضة فتدابيرها[67] ما يوصل[68] به [ط-71ب] إلى مثل ما توصل به في ذلك الكتاب في[69] تدابير الذهب ثم يتبع هذا الكتاب إن شاء الله عز وجل[70] بسائر كتب الأجساد[71] السبعة على توالي الأفلاك والكواكب[72] التي هي[73] الأجساد منسوبة[74] إليها وحق سيدي[75] ليكونن في إتمامك لقراءتك[76] هذه الكتب[77] ما تريد إن شاء الله تعالى بحوله[78] وقوته وذلك إنما[79] لما فرغنا من موازين الشمس أتبعناه بموازين القمر والكلام عليه[80] بحسب ما تكلمنا على موازين الشمس لشرف[81] موازين النيرين وخواصها المسماة[82] إذ قدمناهما ثم أتبع[83] ذلك بما أحكيه[84] بعد.

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[62] المرتفعة [ب، ق] : هذه الكتب السبعة هو مماثلة كله ليس فيه مقابلة [ط-78ب9>] [<ط-71أ9] من كان حافظا لما علمناه في كتب الموازين والخاصية المرتفعة التي يكون [ط].

[63] طويل وزمان [ب، ق] : وزمان طويل [ط].

[64] يريد أراد بالموجودات الأجناس الثلاثة وأراد بالعلويات الكواكب ثم أنه [ب، ق] : --- [ط].

[65] وسميناه هذا الكتاب [ب، ق] : وسمينا كتابنا هذا [ط].

[66] ههنا من [ب، ق] : في هذا الكتاب [ط].

[67] فتدابيرها [ب، ق] : وتدابيرها [ط].

[68] يوصل [ب، ق] : توصل [ط].

[69] في [ب، ق] : إلى [ط].

[70] عز وجل [ب] : تعالى [ق] : --- [ط].

[71] كتب الأجساد [ب، ق] : الكتب [ط].

[72] والكواكب [ب، ق] : كواكبها [ط].

[73] هي [ب، ق] : هذه [ط].

[74] منسوبة [ب، ق] : + ومضافة [ط].

[75] سيدي [ب، ق] : سيدنا [ط].

[76] في إتمامك لقراءتك [ب، ق] : بتمامك قراءة [ط].

[77] الكتب [ب، ق] : + السبعة [ط].

[78] إن شاء الله تعالى بحوله [ب، ق] : بحول الله [ط].

[79] إنما [ب] : أنا [ق، ط].

[80] والكلام عليه [ب، ق] : وتكلمنا على موازين القمر [ط].

[81] لشرف [ب] : أشرف [ق] : --- [ط].

[82] موازين النيرين وخواصها المسماة [ب، ق] : --- [ط].

[83] أتبع [ب] : أتبع بعد [ق] : يتبع [ط].

[84] أحكيه [ب، ق] : نحكيه [ط].

وأقول[85] إن الفضة باردة رطبة مالحة يشوب ملوحتها حلاوة حتى إنك متى شربت[86] ذلك حسوا وجدت تلك الحلاوة[87] فيها يسيرة جدا في أقل مقدارا من الملوحة وخاصيتها ضبط الأرواح الطيّارة وضبط جميع ما خالطته[88] ومازجته من إنباء جنسها وإنها تضبط الأرواح الطيارة وتعقدها في ذواتها وتصبّر جميع ما خالطه على النار [ب-12أ] وهو من أخص خواصها وأعظم[89] نفعا لسائر الناس[90] وهو الذي سماه[91] سقراط الموضوع الأول وهذه والله يا أخي[92] قاعدة علم الصنعة على رأي [ط-72أ] سقراط في[93] هذا الطريق الذي نحن بسبيله[94] لا من طريق التدابير فافهم.

وقد خالف واليس الأول لسقراط في طبع الفضة فقال إنها باردة يابسة ووافقه في جميع[95] خواصها فقال إن السبب في ضبط ما تضبط مما يخالطها ويخالطه[96] وإنما[97] كان بشدة[98] يبسها[99] وملوحتها[100] واحتجّ بما يشاهد من لزوم الملح للأشياء [ق-8ب] بالأشياء ومن أجل[101] خلطه للأشياء[102] بعضها ببعض وقال واليس إن كيفية تكوّن اليبس فيها إنما هو من ملوحتها وملوحتها إنما

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85 وأقول [ب، ق] : فنقول [ط].

86 متى شربت [ب، ق، فاط] : يسرت [ط].

87 حسوا وجدت تلك الحلاوة [ب، ق، فاط] : حسنا وجميع ما خالطته [ط].

88 فيها يسيرة جدا في أقل مقدارا من الملوحة وخاصيتها ضبط الأرواح الطيّارة وضبط جميع ما خالطته [ب، ق] : يسرا [فاط] : --- [ط].

89 وأعظم [ب، ق] : وأعظمها [ط].

90 لسائر الناس [ب، ق] : للناس [ط].

91 سماه [ب، ق] : يسميه [ط].

92 والله يا أخي [ب، ق] : والله العظيم أيها الأخ [ط].

93 في [ب، ق] : من [ط].

94 بسبيله [ب، ق] : تسهله وهو من الموازين [ط].

95 جميع [ب، ق] : سائر [ط].

96 ضبط ما تضبط مما يخالطها ويخالطه [ب، ق] : ضبطها وعقدها جميع الأرواح وخلطها ومزاجها جميع الأجساد إذا خالطها ومازجتها [ط].

97 وإنما [ب، ق] : إنما [ط].

98 بشدة [ب، ق] : شدة [ط].

99 يبسها [ب، ق، حاط] : نقسها [ط].

100 وملوحتها [ب، ق] : وملوحتها [ط].

101 للأشياء بالأشياء ومن أجل [ب، ق] : --- [ط].

102 خلطه للأشياء [ب، ق] : وخلط الأشياء [ط].

كانت[103] من أجل يبسها وذلك أنه عرض لها في معدنها وأصل تكوّنها رطوبة[104] كثيرة مع برد فابيضّت[105] ثم طبختها الحرارة اللينة الرقيقة طبخا لينا رقيقا[106] فنشفت جميع[107] رطوباتها والحتّ[108] عليها[109] يبست يبسا شديدا مع البرد فحدث البياض أولا من البرد وحدثت اليبوسة من دوام نشف الحرارة لها وكانت الحرارة مع دوامها لينة جدا فعرضت[110] الملوحة حينئذ من شدة اليبس وحدثت الحلاوة اليسيرة من دوام طبخ اللين[111] [ط-72ب] الناشف الذي مثله تحدِثُ العذوبة والحلاوة معا فهذه حجة واليس على سقراط

وأما[112] حجة سقراط على واليس فإنه قال إن علة التصاقها بما تلتصق[113] به ولزومها[114] وخلطها الأجساد [ب-12ب] بعضها ببعض إذا مازجها[115] إنما يكون لشدة[116] رطوبتها لأن الرطوبة هي الممازجة للأجساد المختلفة لأنها هي المختلطة[117] لها واليبس في طبيعة التفريق بين المختلطين وتمييز[118] الممتزجات بعضها من بعض[119] ويكون[120] واسطة الأجساد موصلة لبعضها إلى بعض علمنا أنه[121] خالية من اليبس

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[103] وقال واليس إن كيفية تكوّن اليبس فيها إنما هو من ملوحتها وملوحتها إنما كانت [ب، ق] : وذكر أن يبسها إنما كان من أجل ملوحتها وملوحتها [ط].

[104] تكوّنها رطوبة [ب، ق] : تكوينها برد ورطوبة [ط].

[105] مع برد فابيضّت [ب، ق] : --- [ط].

[106] رقيقا [ب، ق] : فيها [ط].

[107] فنشفت جميع [ب، ق] : فنشف [ط].

[108] والحت [ب، ق] : والحف [ط].

[109] عليها [ب، ق] : + حتى [ط].

[110] وكانت الحرارة مع دوامها لينة جدا فعرضت [ب، ق] : وحدثت [ط].

[111] طبخ اللين [ب، ق] : الحر اللين الطابخ [ط].

[112] وأما [ب، ق] : فأما [ط].

[113] بما تلتصق [ب، ق] : لما يلتصق [ط].

[114] ولزومها [ب، ق] : + أم يلزمه [ط].

[115] مازجها [ب، ق] : مازجتها [ط].

[116] يكون لشدة [ب، ق] : هي شدة [ط].

[117] هي الممازجة للأجساد المختلفة لأنها هي المختلطة [ب، ق] : والمخلط الأشياء والممازجة [ط].

[118] المختلطين وتمييز [ب، ق] : المختلطات والتميز بين [ط].

[119] بعض [ب، ق] : + فلما رأينا الفضة تتعلق بجميع الأجساد الذائبة فلا يفارقها ويختلط بها فلا يراطبها ويمتزج بعضها ببعض [ط].

[120] ويكون [ب، ق] : فتكون [ط].

[121] أنه [ب، ق] : أنها [ط].

وإن الغالب عليها من البرد والرطوبة ووافقه في علة[122] حدوث الملوحة والعذوبة والحلاوة[123] إلا أنه[124] قال إن الحرارة اللينة الهادية قد كانت[125] نشفت بعض رطوبتها[126] وبقي فيها ما ينبغي أن يوصف بأنها رطبة كثيرة الرطوبة[127]

وكلا القولين وحق سيدي جائز[128] وله وجه صحيح وإن كان يرى في ظاهرة أنه متناقض فليس هو كذلك في الحقيقة وذلك أن سقراط اعترض[129] واليس [ط-73أ] أنه قد نشف الحرارة اللينة بعض رطوبتها فحدثت الحلاوة حينئذ من بقية الرطوبة فاتفقا ههنا[130] وكلا القولين قريب بعضه من بعض والخلف بينهما يسير[131] جدا وهما في العمل والسر[132] ياولان[133] إلى شيء [ق-9أ] واحد فتامّل ذلك تجده[134] كذلك إلا أن الذي اخترته[135] فيها أنها باردة يابسة وذلك بحسب ما أوجبه لنا القياس حتى يكون ظاهر[136] الذهب حارا رطبا[137] لأن الذهب باطن الفضة[138] بارد يابس[139] حتى يضاد[140] الكيفيات فيما هي فيه[141] قائمة فافهم ذلك حسنا [ب-13أ] واعلم أنه قد صار للفضة من أجل ذلك طبيعة مفردة

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[122] علة [ب، ق] : --- [ط].

[123] الملوحة والعذوبة والحلاوة [ب، ق] : الحلاوة والملوحة [ط].

[124] إلا أنه [ب، ق] : وإنه [ط].

[125] قد كانت [ب، ق] : --- [ط].

[126] رطوبتها [ب، ق] : رطوباتها [ط].

[127] وبقي فيها ما ينبغي أن يوصف بأنها رطبة كثيرة الرطوبة [ب، ق] : --- [ط].

[128] وكلا القولين وحق سيدي جائز [ب، ق] : فحدوث الحلاوة جائزة [ط].

[129] اعترض [ب، ق] : وافق [ط].

[130] فاتفقا ههنا [ب، ق] : فوافقه ههنا (؟) [ط].

[131] يسير [ب، ق] : يسيرا [ط].

[132] والسر [ب، ق] : والتدبير [ط].

[133] ياولان [ب، ق] : يولان [ط].

[134] تجده [ب، ق] : وتجده [ط].

[135] اخترته [ب، ق] : نختاره [ط].

[136] ظاهر [ب، ق] : باطن [ط] :باطنه وجه [حاط].

[137] حارا رطبا [ب، ق] : حار رطب [ط].

[138] الفضة [ب، ق] : + وهو حار رطب فينبغي أن يكون ظاهر الفضة باطن الذهب [ط].

[139] بارد يابس [ب، ق] : باردا يابسا [ط].

[140] يضاد [ب، ق] : تضاد [ط].

[141] فيه [ب، ق] : قيمته [ط].

وخاصية نافعة لشيء[142] ضارّة لشيء[143] آخر وأعمال[144] نافعة ضارة[145] وكذلك أيضا يفرح[146] القلب كما ذكرنا في الذهب وذلك أن[147] الذي رأيناه في[148] أنها باردة يابسة وباطنها[149] بغير شك حار رطب فلذلك صارت تفرح القلب لأن[150] الحار الرطب هو[151] الهواء وطبع[152] [ط-73ب] فإن أكثر من استعمالها زادت في السوداء وإهاجتها وحركتها واستعمالنا لها[153] ليفرح[154] القلب ويكون مع خلطها[155] بالأدوية كما نصف.[156]

[ب] MS Paris BnF Arabe 2606, ff. 13b-14a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 9b-10a
[ط] MS Tehran Mağlis 729, ff. 74a-75a

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وقد يكون من الفضة حبر يكتب به[157] كما يكتب بالحبر ويكون منه[158] كُرسَفة[159] يكتب بها كما تكون[160] كرسفة الدواة وذلك ينقسم فيها قسمين إما حلّها لأن يكتب بها فبماء النوشادر أو بماء البورق أو هما

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142 لشيء [ب، ق] : بشيء [ط].
143 لشيء [ب، ق] : بشيء [ط].
144 وأعمال [ب، ق] : ولها أعمال [ط].
145 ضارة [ب، ق] : فضارة [ط].
146 أيضا يفرح [ب، ق] : أبدا وهي تفرح [ط].
147 أن [ب، ق] : لأن [ط].
148 في [ب، ق] : فيها [ط].
149 وباطنها [ب، ق] : فباطنها [ط].
150 لأن [ب، ق] : لأنه [ط].
151 هو [ب، ق] : + طبع [ط].
152 وطبع [ب، ق] : + الدم [ط].
153 السوداء وإهاجتها وحركتها واستعمالنا لها [ب، ق] : السواد وحركتها وهيجتها واستعمالها [ط].
154 ليفرح [ب، ق] : لتفريح [ط].
155 ويكون مع خلطها [ب، ق] : يكون بخلطها [ط].
156 نصف [ب، ق] : + لكنا أردنا أن نخبر أولا بمعرفة خالصها من مغشوشها لنمتحنها من أين ذلك بالحنة الذي نصف [ط].
157 به [ب، ق] : + أبيض [ط].
158 منه [ب، ق] : منها [ط].
159 كرسفة [ب، ق] : كرسف أسود [ط].
160 كما تكون [ب، ق] : --- [ط].

جميعا[161] بأن تؤخذ[162] البرادة وتسقي[163] من هذين المائين بمقدار الكفاية وتسحق[164] حتى تكاد تجفُّ[165] ثم ترطب[166] أيضا[167] [ط-74ب] وتسحق يفعل بها ذلك دائما[168] أبدا بمقدار الكفاية[169] حتى ينحل البرادة وتصير ماء رائقا فإذا صارت كذلك كتب بها[170] وصُقِل المكتوب صقالا بليغا فإنه يبقى مكتوبها[171] يلمع[172] مصقولا بينا وأما الكرسفة فتكون بأن يكلس الفضة أولا ثم يعجن الكلس بماء الصمغ العربي المحلول المصفى بعد حله[173] بماء الكثيراء كذلك ويزاد في[174] ماء الصمغ[175] على[176] ترتيب[177] حتى ينحل ويصير ماء ويجعل في قارورة[178] [ب-14أ] وتعمد إلى صوفة ألين ما يقدر عليه أو قطنة خشنة من القطن فتجعلها[179] كما تجعل المداد وتصب[180] عليها ذلك الماء الخارج من الكلس حتى تستوي في[181] الصوفة ثم تستمد[182] منها بالقلم وكتب[183] به كما يكتب بالدواة والمداد فإذا جفّت[184] الكتاب[185] يصقل

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[161] أو هما جميعا [ب، ق] : وإنها إذا جميعا لهما كان أجود وذلك [ط].
[162] توخذ [ب، ق] : يوخذ [ط].
[163] وتسقى [ب، ق] : ولتسقى [ط].
[164] وتسحق [ب، ق] : ويسحق [ط].
[165] تكاد تجف [ب، ق] : تجمد وتجف [ط].
[166] ترطب [ط] : يرطب [ب، ق].
[167] أيضا [ب، ق] : + بالمائين جميعا بمقدار الكفاية [ط].
[168] دائما [ب، ط] : --- [ق].
[169] بمقدار الكفاية [ب، ق] : --- [ط].
[170] بها [ب، ق] : به [ط].
[171] مكتوبها [ب، ق] : كتبا [ط] : مكتبا [فاط].
[172] يلمع [ب، ق] : لميعا (؟) [ط].
[173] بعد حله [ب، ق] : أو [ط].
[174] في [ب، ق] : له [ط].
[175] الصمغ [ب، ق] : + العربي [ط].
[176] على [ب، ط] : حتى [ط].
[177] ترتيب [ب، ق] : + أبدا [ط].
[178] ويجعل في قارورة [ب، ق] : فيجعل له [ط].
[179] قارورة وتعمد إلى صوفة الين ما يقدر عليه أو قطنة خشنة من القطن فتجعلها [ب، ق] : --- [ط].
[180] وتصب [ب، ق] : يصب [ط].
[181] تستوي في [ب، ق] : تنقع [ط].
[182] تستمد [ب، ق] : يستمد [ط].
[183] وكتب [ب، ق] : ويكتب [ط].
[184] جفت [ب، ق] : جف [ط].
[185] الكتاب [ب، ط] : الكتابة [ق].

أيضا صقلا[186] خفيفا فإنه تبين كذلك صفة تكليس الفضة[187] فأما تكليس[188] الفضة لهذا[189] العمل فينبغي أن تسبك[190] بالبلور أو بالعقيق أو بالفيروزج[191] أو بواحد[192] من هذه الجواهر وليكن ذلك الحجر الذي تكلس به[193] بوزنها مرتين تفرشه فوقه وتحته[194] نصفا ونصفا[195] ويسبك[196] بنار صلبة فإنه يحترق[197] في البوطقة[198] ويصير الجميع ترابا منسحقا[199] [ط-75أ] وقال[200] وقد يدخل[201] الفضة في أشياء من التراكيب ذكرها [ق-10أ] أنفع من جميع ما قدمنا[202] إلا أن[203] ما نذكره من تركيبها فيه فوائد كبار وعجائب عجيب[204] فاعلم ذلك

[ب] MS Paris BnF Arabe 2606, ff. 15a-16a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 10b-11a
[ط] MS Tehran Mağlis 729, ff. 76b-79a (76b9-77b8 in B. *Ḫārṣīnī*; 77b8-78b9 in B. *Silver*)

Bibliographical information

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186 يصقل أيضا صقلا [ب، ق] : صقل صقالا [ط].
187 صفة تكليس الفضة [ب] : --- [ق، ط].
188 فأما تكليس [ب، ق] : وأما صفة التكليس [ط].
189 لهذا [ب، ق] : بهذا [ط].
190 تسبك [ب، ق] : يسبك [ط].
191 أو بالعقيق أو بالفيروزج [ب، ق] : والعقيق والفيرودج [ط].
192 بواحد [ب، ق، حاط] : يؤخذ [ط].
193 تكلس به [ب، ق] : يكلس [ط].
194 تفرشه فوقه وتحته [ب، ق] : تفرشها تحتها وفوقها [ط].
195 ونصفا [ب، ق] : --- [ط].
196 ويسبك [ب، ق] : وتسبك [ط].
197 فإنه يحترق [ب، ق] : فإنها تحرق [ط].
198 البوطقة [ط] : البوتقة [ب، ق].
199 منسحقا [ب، ق] : ونرى فيه خضرة وصفرة وزرقة وما يجري مجرى ذلك إن شاء الله تعالى : [ط].
200 وقال [ب، ق] : --- [ط].
201 يدخل [ب، ق] : تدخل [ط].
202 قدمنا [ب] : قدمناه [ق، ط].
203 إلا أن [ب، ق] : لأن [ط].
204 عجيب [ب] : عجيبة [ق] : معتجرة [ط].

فإذا أردت أن يقرب عليك صفتها[205] فانظر في هذه الكتب السبعة من[206] كتاب الخواص وذكرنا الخواص[207] في جميع منها[208] [ب-15ب] كل فصل[209] ذكرته فيه[210] خاصية لشيء يعمله منه[211] وتأثير يؤثره وأضف[212] إلى ذلك[213] الموازين وأنا أصف[214] لك[215] كيف يعمل[216] أجمع[217] الكتب الذي[218] ذكرنا في حواشي[219] كتب الموازين[220] التي وصفناها فإنك تبلغ به[221] مرادك بعون الله وحسن توفيقه[222] وأذكر مع ذلك[223] ما سمعنا[224] نصفه من أمر الحميات والصداع وأنواعها ومقابلاتنا[225] لما تجب[226] أن يقابل ومماثلاتنا لما تجب[227] أن يماثل فإن غرضنا[228] إنما كان لهذه[229] الوجوه في المقابلة والمماثلة وهذا المعنى[230]

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[205] صفتها [ب، ق] : فهمها [ط].
[206] من [ب، ق] : وهي [ط].
[207] وذكرنا الخواص [ب، ق] : وقد ذكرنا [ط].
[208] في جميع منها [ب، ق] : فيها [ط].
[209] كل فصل [ب، ق، ط] : وكل شيء [حاط].
[210] ذكرته فيه [ب، ق] : وفيه [ط].
[211] منه [ب، ق] : --- [ط].
[212] وأضف [ب، ق] : ويضيف [ط].
[213] ذلك [ب، ق] : + كتب [ط].
[214] أصف [ق، ط] : أضف [ب].
[215] لك [ب، ق] : --- [ط].
[216] يعمل [ب] : تعمل [ق، ط].
[217] أجمع [ب، ق] : جميع [ط].
[218] الذي [ب] : التي [ق، ط].
[219] ذكرنا في حواشي [ب، ق] : ذكرناه ووصفناها وحواشي [ط].
[220] الموازين [ب، ق] : + وهي هذه الكتب السبعة [ط].
[221] به [ب، ق] : بذلك [ط].
[222] وحسن توفيقه [ب، ق] : عز وجل فاعرفه [ط].
[223] مع ذلك [ب، ق] : --- [ط].
[224] سمعنا [ب، ق] : سمعتنا [ط].
[225] ومقابلاتنا [ب، ق] : ومقابلاتها [ط].
[226] تجب [ب] : يجب [ط] : تحب [ق].
[227] أن يقابل ومماثلاتنا لما تجب [ب] : أن تقابل ومماثلاتنا لما تحبّ [ق] : أن يقابل ومماثلاتها لما يجب [حاط] : --- [ط].
[228] فإن غرضنا [ب، ق] : كان عرضا في ذلك [ط].
[229] كان لهذه [ق] : كان انديك (؟) [ب] : ذلك أمرتك [ط].
[230] المعنى [ب، ط] : المغوَ [ق].

الذي يتكلم[231] به في هذه الكتب السبعة إنما هو مماثلة كله ليس فيه مقابلة[232] [ط-76ب9>]

Balances and the appetite of the soul

[<ط-78ب9] لكن لا بدّ من طرق التقصيص ليوصلك[233] إلى ما تريد في لطف منها وعلى[234] تدريج فمرةً يريك[235] من طريق الخواص ومرة من [ق-11أ] طريق الطب ومداواة الأمراض ومرة بعمل الفوائد[236] الظريفة [ط-79أ] ومرة بنظم الحروف وتأليفها على مثال انتظام الطبائع وتأليفها إلا أن أقرب ما أراه[237] إلى إفهام جميع الناس هو[238] كان على طريق الطب ومداواة الأمراض فإنه أقرب وجوه الميزان[239] إلى الأفهام[240] وقد ذكرنا في[241] طريق الميزان[242] طريقا خامسا وهو فيما[243] ذكرنا العلويات العوالم من عالم العقل إلى عالمنا الذي هو المركز[244] وهو آخر[245] الدوائر[246] وذلك أنا نحن أخير[247] العوالم ونحن المركز فتعسّفت[248] الشهوة فانتكست[249] فلولاها لكنا على حال لا نلذ ولا نألم فكان[250] ذلك أعفا

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231 يتكلم [ب] : نتكلم [ق، ط].

232 هذه الكتب السبعة إنما هو مماثلة كله ليس فيه مقابلة [ب، ق] : متفاعلين وذلك إنما عمل بذاته عملا [ط].

233 طرق التقصيص ليوصلك [ب، ق] : ذكر طرفي التنصيص لتصل بذلك [ط].

234 تريد في لطف منها وعلى [ب، ق] : تريده من طريق سهل على [ط].

235 يريك [ب] : نريك [ق] : نريك ما تريده [ط].

236 الفوائد [ب، ق] : الموازين [ط].

237 أراه [ب، ط] : أدّاه [ق].

238 هو [ب، ق] : + ما [ط].

239 الميزان [ب] : الموازين [ط] : النيران [ق].

240 الأفهام [ب، ق] : + فافهم ذلك [ط].

241 في [ب، ق] : من [ط].

242 الميزان [ب] : الموازين [ط] : النيران [ق].

243 فيما [ب، ق] : في [ط].

244 العوالم من عالم العقل إلى عالمنا الذي هو المركز [ب، ق] : الأوائل والموجودات الثواني فاعلم واعلم أن العوالم ثلاثة لا غير وهي عالم العقل والنفس والطبيعة وهو مركز العوالم [ط].

245 آخر [ب، ق] : أحد [ط].

246 الدوائر [ب، ق] : + الثلاثة [ط].

247 أخير [ب، ق] : أحد [ط].

248 فتعسّفت [ب، ق] : فبعثت [ط].

249 فانتكست [ب، ق] : وأسكنت [ط].

250 فكان [ب، ق] : وكان [ط].

لنا[251] وأظهر [ب-16أ] ولكن شهوة النفس هي التي أوقعتنا[252] في هذه[253] التخاليط التي نحن فيها[254] والله جل اسمه نسأله خلاصنا ونسأله[255] العافية من هذه[256] البلايا فإن خلاصنا بارتفاعنا وارتقاينا حتى تبلغ[257] إلى آخر الكبرات وآخر الكبرات[258] هي[259] أعلاها إن شاء الله تعالى.[260]

[251] أعفا لنا [ب] : أغفا لنا [ق] : أعصا لنا [ط].
[252] أوقعتنا [ب، ق] : أوفقنا [ط].
[253] هذه [ب، ق] : --- [ط].
[254] التي نحن فيها [ب، ق] : --- [ط].
[255] والله جل اسمه نسأله خلاصنا ونسأله [ب، ق] : فنال الله العظيم خلاصت إليه [ط].
[256] هذه [ب، ق] : --- [ط].
[257] حتى تبلغ [ب، ق] : --- [ط].
[258] وآخر الكبرات [ب، ق] : --- [ط].
[259] هي [ب، ق] : هو [ط].
[260] تعالى [ب، ق] : عز وجل [ط].

[ب] MS Paris BnF Arabe 2606, f. 21a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, f. 14b
[ط] MS Tehran Mağlis 729, f. 53a

كتاب النحاس

لجابر عليه الرحمة والرضوان[1]

بسم الله الرحمن الرحيم وبه نستعين[2]

الحمد لله المتفرّد بالوحدانية الباقي على السرمدية الذي ارتفع عن الكيفية واستعلاء عن الكلمية ليس له ضد ولا يتحد بحدّ ولا يقال له ند وبالجبروت انفرد[3]

وصلى الله على سيدنا محمد وأهل بيته الذين اختارهم الواحد الأحد وسلم[4] [ط-53أ6>]

[ب] MS Paris BnF Arabe 2606, f. 21a-b
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 14b-15a

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وكتابنا هذا أجل كتب السبعة التي سميناها **كتب الأجساد السبعة** تخبر عنه بخواص النحاس وطبيعته وتنقله من أعماله وتصرفه في تدبيره وتقلبه في مزاجه وانتقاله عن حاله بالعمل إلى حال غيره واستحالته عما هو عليه إلى حال غيره بالتقلب والمزاج وقد أخبرنا في كثير من كتبنا من أمره بعجائب خصصنا[5] هذه السبعة كتب من الكلام على كل جسد بما لم نذكره في شيء من كتبنا إلا في كتاب العلم المخزون فإنا قد ذكرنا فيه طرفا مما ذكرناه ههنا أعني في هذه السبعة الكتب[6] وأما[7] ذكرناه ههنا في هذه الكتب السبعة فهو أتم في الفائدة وأغزر في المنفعة وأكمل في العمل وليس تحتاج كتبنا هذه السبعة المنسوبة

[1] لجابر عليه الرحمة والرضوان [ب، ق] : وهو المنسوب إلى الزهرة من كتب الأجساد السبعة الذائبة المنسوب إلى الكواكب السبعة في التراكيب وعلم الميزان [ط].

[2] وبه نستعين [ب] : --- [ق، ط].

[3] المتفرّد بالوحدانية الباقي على السرمدية الذي ارتفع عن الكيفية واستعلاء عن الكلمية ليس له ضد ولا يتحد بحدّ ولا يقال له ند وبالجبروت انفرد [ب، ق] : حمدا يستوجب به المزيد به لا يبلغ بذاته البالغون ولا يبلغ كنه الواضعون وله إنه تبارك وتعالى ولنا على نفسه ما عرفناه وكيف نبلغ يحمدنا إياه شكر وكيف يحيط بما يستحق من منه علينا وطوله وجرده وإحسانه غمرتنا فهو الأول والآخر والظاهر والباطن المحسن المفضل المبتدئ بنعمه علينا بالاستحقاق منا [ط].

[4] سيدنا محمد وأهل بيته الذين اختارهم الواحد الأحد وسلم [ب، ق] : نبي الرحمة محمد وآله اجمعين [ط].

[5] خصصنا [ب] : صنعتنا [ق].

[6] الكتب [ب] : كتب [ق].

[7] وأما [ب] : وما [ق].

إلى الأجساد السبعة الذائبة إلى قراءة شيء من كتبنا في الموازين بل هي قائمة بانفسها ومنفردة في معناها لأنا تكلمنا فيها بما ثقفناه في غيرها وتمّمنا بها كتب الموازين كلها فهي متممة والمتمم لا يقال عليه شيء [ب-21ب] من النقصان فافهم ذلك واعلمه واتقنه

[ب] MS Paris BnF Arabe 2606, ff. 21b-23a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 14b-16a
[ط] MS Tehran Mağlis 729, ff. 54b-57a

Nature of Copper (1)

فأقول إن النحاس ذكر من الأجساد حار أيضا يابس شديد مرّ المذاقة فيه[8] احتراق في أصل تكوينه لإفراط الحرارة الشديدة عليه وفيه سواد مختلط به وهو قريب من الفضة في قوامها فمن أحسن أن يزيل سواده ويزيل مع سواده حرارته انقلب فضة بيضا وهو صابغ مع ذلك يجري مجرى الذهب في أعمال الأكاسير لا في عمل الميزان وفيه شكل الفضة وشكل الذهب وذلك أنه [ق-15أ] يخالط الكبريت ويعشقها كما يخالطه الذهب ويعشقها وينفر من الزرنيخ كما ينفر عنه الذهب ويكون أصلا للأبواب الذهبية كما يكون الذهب أصلها فاعلم ذلك والنحاس كما تعلم من الأجساد الذائبة وهو يجري مجراها ويعمل مثل أعمالها وله منافع كما لكل واحد منها منافع [<ط-54ب5] فمن ذلك أنه ينفع أولا البلغم ويخرجه[9] من البدن بقوة قوية وعمل شديد ويكون استعماله لذلك[10] على ما أصف[11] وهو أن يؤخذ[12] منه وزن درهم واحد فيبرد لينا[13] واسحق[14] دائما بماء الملح المقطّر[15] على صلاية سحقا بليغا حتى يلين[16] ثم يؤخذ منه[17] دانقٍ ونصف ومن السقمونيا مثل وزنه[18] ومن بزر الكرفس دانق ونصف ومن التربد[19]

[8] فيه [ب] : وفيه [ق].
[9] ينفع أولا البلغم ويخرجه [ب، ق] : أولا ينفع الناس من البلغم بإخراجه إياه [ط].
[10] قوية وعمل شديد ويكون استعماله لذلك [ب، ق] : شديدة [ط].
[11] أصف [ب، ق] : نصفه [ط].
[12] وهو أن يؤخذ [ب، ق] : وذلك بأن تؤخذ [ط].
[13] لينا [ب، ق] : --- [ط].
[14] أسحق [ب] : يسحق [ق، ط].
[15] المقطر [ب، ق] : النفطي المقطر أو يسحق بالملح نفسه [ط].
[16] يلين [ب، ق] : يلين ويصير كالزرور [ط].
[17] منه [ب، ق] : + وزن [ط].
[18] ومن السقمونيا مثل وزنه [ب، ق] : --- [ط].
[19] التربد [ب، ق] : + نصف [ط].

درهم ويسقى الإنسان منه هذا الدرهم[20] فقط أخرج[21] من جوفه رطوبات لا يخرجها أقل من عشرة دراهم[22] شحم الحنظل أو ما يقوم مقامها[23] في القوة من الأدوية الآخر التي سبيلها إخراج البلغم[24] ولا يكون أكثر من عشر مرار أي أكثره وفي موضع آخر من التربد في التضاعيف تكون زياداته عشر مرات بغير كسور أكثره[25] [ط-55أ] فاعلم ذلك [ب-22أ] وما[26] نقول وأبن أمورك[27] بحسبه ترى فيه عجائب[28] وفي النحاس خواص[29] من العلاجات[30] مثل أنه متى[31] سقى منه وزن قيراط من[32] في رأسه تزعزع فإنه[33] علّة خشنة إبراقه[34] فإذا[35] دبر بما أقول[36] وذلك أنه يجب أن[37] يؤخذ[38] النحاس الشامي[39] ويبرده[40] بردا لينا ويوضع[41] على صلاية ويسحق بماء الكمون المعتصر منه لا المطبوخ وليكن[42] أي كمون[43]

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[20] الدرهم [ب، ق] : المقدار وهو درهم [ط].

[21] أخرج [ب، ق] : فإنه يخرج [ط].

[22] دراهم [ب، ق] : + من [ط].

[23] يقوم مقامها [ب، ق] : قام مقام العشرة [ط].

[24] من الأدوية الآخر التي سبيلها إخراج البلغم [ب، ق] : على إخراج الرطوبات البلغم من الأدوية المخرجة لذلك [ط].

[25] ولا يكون أكثر من عشر مرار أي أكثره وفي موضع آخر من التربد في التضاعيف تكون زياداته عشر مرات بغير كسور أكثره [ب، ق] : --- [ط].

[26] فاعلم ذلك وما [ب، ق] : فاعمل ما [ط].

[27] أمورك [ب، ق] : أمرك [ط].

[28] فيه عجائب [ب، ق] : العجيب والسلم [ط].

[29] خواص [ب، ق] : + عجيبة [ط].

[30] العلاجات [ب، ق] : وأفعال نافعة على جهة وضارة على جهة [ط].

[31] متى [ب، ق] : إن [ط].

[32] من [ب، ق] : لمن (؟) [ط].

[33] فإنه [ب، ق] : إنها [ط].

[34] خشنة إبراقه [ب، ق] : خبيثة قليل من يقف على برئها من الأطباء على السبب المحدث لها أبرأه [ط].

[35] فإذا [ب، ق] : إذا [ط].

[36] بما أقول [ب، ق] : ما نقول [ط].

[37] أنه يجب أن [ب، ق] : بأن [ط].

[38] يؤخذ [ب] : + من [ق، ط].

[39] الشامي [ب، ق] : + وزن درهم [ط].

[40] ويبرده [ب، ق] : ويبرّد [ط].

[41] ويوضع [ب، ق] : ثم يلقى [ط].

[42] وليكن [ب، ق] : ولكن [ط].

[43] كمون [ب، ق] : مكوّن [ط].

كان وليكن[44] مقدار الماء[45] عشرة دراهم ويدام[46] السحق عليه[47] حتى يلين ويصير[48] مثل المخ[49] ويسقى العليل ذلك مع شيء من أفسنتين رومي فقط ويكون مقداره نصف درهم وقيراط من النحاس[50]

Kohl

ويجب[51] أن تعلم أن[52] الفضة والذهب والنحاس والرصاصين[53] والحديد والخار يدخله[54] كلها في الأكحال[55] فيعمل كل واحد منها[56] عملا[57] لا يعمل[58] إلا جزء مثله[59] أما الفضة فينشف ما[60] في العين من الرطوبات والذهب يجلوها [ط-55ب][61] [ق-15ب] والنحاس ينقى الداء[62] الغليظ والرصاصين ينفع[63] العيون القشفة وتقوى[64] الناظر والخار والحديد[65] ينشفان الرطوبات ويبريان الجرب والسبل

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[44] وليكن [ب، ق] : ويكون [ط].

[45] الماء [ب، ق] : --- [ط].

[46] ويدام [ب] : ويداوم [ق] : ثم يدام [ط].

[47] السحق عليه [ب، ق] : عليه السحق به [ط].

[48] يلين [ب، ق] : تلين [ط].

[49] المخ [ب، ق] : القمح [ط].

[50] ذلك مع شيء من أفسنتين رومي فقط ويكون مقداره نصف درهم وقيراط من النحاس [ب، ق] : مقدار قيراط من ذلك النحاس مع نصف درهم من الأفسنتين الرومي فقط بلا وقادة ليكون جيدا [ط].

[51] ويجب [ب، ق] : وتجب [ط].

[52] أن [ق، ط] : وأن [ب].

[53] الفضة والذهب والنحاس والرصاصين [ب، ق] : الذهب والفضة والرصاصين والنحاس [ط].

[54] يدخله [ب، ق] : يدخل [ط].

[55] الأكحال [ب، ق] : + النافعة بين للأعين [ط].

[56] منها [ب، ط] : منهما [ق].

[57] عملا [ب، ق] : أعمالا [ط].

[58] يعمل [ب، ط] : يعمله [ق].

[59] إلا جزء مثله [ب] : الآخر مثلها [ط] : إلا حماء (؟) [ق].

[60] ما [ب] : مما [ق].

[61] الفضة فينشف ما في العين من الرطوبات والذهب يجلوها [ب، ق] : الذهب [ط-55ب] فيجلو العين ويقويها بخاصية عجيبة والفضة تنشف ما في العين من الرطوبات وإنه نرآه [ط].

[62] الداء [ب، ق] : العين الماء [ط].

[63] ينفع [ب] : تنفع [ق] : ينفعان [ط].

[64] وتقوى [ب، ق] : ويقويان [ط].

[65] والخار والحديد [ب، ق] : والحديد والخار جميعا [ط].

والبياض فيها[66] بقوة قوية.

Tūbāl

والنحاس[67] يقوم مقام الذهب في[68] كثير من الأعمال ولكل واحد من هذه الأجساد[69] توبال فالذهب والفضة يسمى توبالهما الإقليميا وهما يدخلان في الأكحال وأعمال[70] الصنعة وتوبال النحاس أيضا يدخل[71] في الوجهين جميعا[72] فأما[73] خبث الرصاصين وتوبالها[74] فليس مما يجري هذا المجرى لكن فيه نشف وعلاج لإدمان[75] القروح وإذهاب الاطراح والأحزان من القلوب[76] والحديد[77] والخار [ب-22ب] فلهما[78] أخباث [ط-56أ] وتوبال[79] فأما خبثناهما[80] فيدخلان في الصنعة وفي حسب الدرجات وما جرى مجراها[81] وفيهما نشف وليس التوبال ببعيد من ذلك كان طبع التوبال لطبع جسده[82] إذا[83] استعملته مكان جسده فقد استغنيت عن الأجساد إلا أن نسبة كل توبال إلى أصله أقرب من الخبث في النسبة

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[66] فيها [ب، ق] : المضى لها [ط] : المعمر لها [فاط].

[67] والنحاس [ب، ق] : وفي النحاس فضل على ما ذكرناه فإنه يبرء الرطوبات الغليظة التي لا يبرئها غيره ومن فضل النحاس إنه [ط].

[68] في [ب، ق] : + أعمال الصنعة وفي [ط].

[69] من هذه الأجساد [ب] : منها [ط].

[70] وأعمال [ب، ق] : وفي أعمال [ط].

[71] أيضا يدخل [ب، ق] : يدخل أيضا [ط].

[72] جميعا [ب، ق] : + † وسيما**† الصيني والبصري فإن فعلهما في التحمير فعل لا يكاد يصدق سامعه فافهم هذا وتدبّره [ط].

[73] فأما [ب، ق] : وأما [ط].

[74] وتوبالها [ب] : توبالهما [ق، ط].

[75] فليس مما يجري هذا المجرى لكن فيه نشف وعلاج لإدمان [ب، ق] : † فليس(؟) ***ان † هذا المجرى لكنها ينشفان ويدخلان في علاج [ط].

[76] وإذهاب الاطراح والأحزان من القلوب [ب] : وإذهاب الاطراح والأحزان من القارب [ق] : والسلام [ط].

[77] والحديد [ب، ق] : وكذلك الحديد [ط].

[78] فلهما [ب] : فلما [ق] : وإن لها [ط].

[79] أخباث وتوبال [ب، ق] : أخباثا [ط-56أ] وتوبالا [ط].

[80] فأما خبثناهما [ب] : فلما خبثاهما [ق] : فأما اخباثهما وتوبالهما [ط].

[81] وفي حسب الدرجات وما جرى مجراها [ب، ق] : والطب وما يجري مجراها [ط].

[82] ذلك كان طبع التوبال لطبع جسده [ب] : ذلك فإن طبع التوبال كطبع جسده [ق] : الخبث إليه [ط].

[83] إذا [ب] : فإذا [ق] : --- [ط].

به فاعلم ذلك[84] فاعرف[85] واعمل به فقيه لك كفاية وبلاغ إن كنت تحب[86] البلوغ إلى آخر[87] هذه العلوم والصنائع تصل[88] منها[89] إلى ما تحب[90] وترى فيها[91] عجائب الأعمال[92] وغرائب التغيرات والتلوّن[93] والانتقالات فاعلم ذلك وأبن أمرك بحسبه تجد فيه المنافع الكبار إن شاء الله تعالى[94]

Bibliographical information

والنحاس إن كان يجري مجرى الذهب فإنه يكون أنقص أبدا من الذهب بالجزئية التي بينه وبينه في الميزان[95] وقد شرحت ذلك[96] في الكتب الموازينية ومن عرف مقدار النسبة بين الذهب وبين جميع الأجساد عرف مقدار الزيادة فيما بينها[97] من الأفعال وبين الذهب فاعلم ذلك فقد جودت ذلك وأوضحته وبينته في كتب الخواص المضافة إلى كتب الموازين إلا أن ما في كتبي هذه السبعة من أبين ما شرحت وأفلح وأقرب في الخواص وفي الموازين فاعلم[98] إذا نظرت فيه وفي هذه الكتب المنسوبة إلى الأجساد

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[84] استعملته مكان جسده فقد استغنيت عن الأجساد إلا أن نسبة كل توبال إلى أصله أقرب من الخبث في النسبة به فاعلم ذلك [ب، ق] : --- [ط].

[85] فاعرف [ب] : واعرف [ق] : واعلم ذلك [ط].

[86] به فقيه لك كفاية وبلاغ إن كنت تحب [ب، ق] : عليه فإن فيه منافعا وفلاحا كفاية لمن أحب [ط].

[87] آخر [ب، ق] : أواخر [ط].

[88] والصنائع تصل [ب، ق] : كلها ليصل [ط].

[89] منها [ب، ط] : منهما [ق].

[90] ما تحب [ب، ق] : باب الحجاب [ط].

[91] فيها [ب، ق] : فيها [ط].

[92] الأعمال [ب، ق] : لأعمال [ط].

[93] التغيرات والتلوّن [ب، ق] : التغييرات والتلوبات [ط].

[94] الكبار إن شاء الله تعالى [ب، ق] : الكثيرة بإذن الله [ط].

[95] إن كان يجري مجرى الذهب فإنه يكون أنقص أبدا من الذهب بالجزئية التي بينه وبينه في الميزان [ب، ق] : والذهب في علم الميزان مقدار النسبة التى بين النحاس والذهب وكذلك بين الذهب وجميع الأجساد وكذلك بين جميع الأجساد علم مقدار الزيادة والنقصان التى بينها من الأعمال والأفعال فاعلم وتنبّه [ط].

[96] شرحت ذلك [ب، ق] : جوّدنا ذلك وشرحناه [ط].

[97] بينها [ب] : بينهما [ق].

[98] ومن عرف مقدار النسبة بين الذهب وبين جميع الأجساد عرف مقدار الزيادة فيما بينها من الأفعال وبين الذهب فاعلم ذلك فقد جودت ذلك وأوضحته وبينته في كتب الخواص المضافة إلى كتب الموازين إلا أن ما في كتبي هذه السبعة من أبيّن ما شرحت وأفلح (= واضح؟) وأقرب في الخواص وفي الموازين فاعلم [ب، ق] : والخواصية إلا أن ما شرحناه في كتبنا هذه السبعة من أبين وأوضح وأقرب ما في الخواص وما في الموازين جميعا علما وعملا [ط].

السبعة فهمت ما قلنا وما[99] نصصنا عليه [ط-56ب][100] فاحرص[101] على جمع كتب الخواص الموازينية إلى بعض ما هو مضاف إلى هذه الخواص المنسوبة إليها[102] فإذا [ق-16أ] اجتمعت[103] هذه وتلك ظهر لك [ب-23أ] الأمر بعون الله تعالى ومشيته[104] وعرفت ما قلنا في ذلك ولن يبالغ مبالغة به[105] معرفة ذلك وإخراجه من هذه السبعة[106] وتلك التي أضفناها إليها وإلى جميع وإلى[107] كتب الموازين إلا من التهج[108] بها وأدام درسها بلا سأم[109] ولا ملل ولا[110] تشاغل بالذات[111] القاطعة المنهمك فيها عن فهم[112] هذا الأمر الذي نحن بسبيله[113] فسبحان الله من هذه العلل التي الآن بعدها ليس من كتب السبعة الأجساد وما بعد عندي في كتاب الإثبات من قوله[114] فسبحان الله[115] المسحن لنا لتاليف هذه الصناعة مبلغا فقد نال الفوز إلى قوله وأنالك ولا أعدمك بمنه وقدرته وأنا أبينه ههنا بكلام هو أبين وأشفى من ذلك الذي ذكرته في **كتب الخواص**[116] [ط-57أ8<]

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[99] وما [ب] : وفي [ق].

[100] فيه وفي هذه الكتب المنسوبة إلى الأجساد السبعة فهمت ما قلنا وما نصصنا عليه [ب، ق] : في تلك الكتب [ط-56ب] السبعة وجدت ما قلنا فيها ونصصنا [ط].

[101] فاحرص [ق] : فاعرص [ب] : فاحوز [ط].

[102] جمع كتب الخواص الموازينية إلى بعض ما هو مضاف إلى هذه الخواص المنسوبة إليها [ب، ق] : جميع الكتب الموازين والخواص المنسوبة إلى كتب الموازين وأجمع بينهما وبين هذه الكتب السبعة [ط].

[103] اجتمعت [ب، ق] : + عن [ط].

[104] تعالى ومشيته [ب، ق] : --- [ط].

[105] يبالغ مبالغة به [ب، ق] : يبلغ مبالغ [ط].

[106] هذه السبعة [ب، ق] : هذا الكتب [ط].

[107] وإلى [ب] : --- [ق].

[108] التي أضفناها إليها وإلى جميع وإلى كتب الموازين إلا من التهج [ب، ق] : الكتب جميعا آخر لهج [ط].

[109] سأم [ب، ق] : سائمة [ط].

[110] ملل ولا [ب، ق] : --- [ط].

[111] بالذات [ب، ق] : + المنهمك فيها [ط].

[112] المنهمك فيها عن فهم [ب، ق] : وفهم [ط].

[113] بسبيله [ب، ق] : نسهله [ط].

[114] فسبحان الله من هذه العلل التي الآن بعدها ليس من كتب السبعة الأجساد وما بعد عندي في كتاب الإثبات من قوله [ب، ق] : --- [ط].

[115] الله [ب، ق] : --- [ط].

[116] الصناعة مبلغا فقد نال الفوز إلى قوله وأنالك ولا أعدمك بمنه وقدرته وأنا أبينه ههنا بكلام هو أبين وأشفى من ذلك الذي ذكرته في كتب الخواص [ب، ق] : الكتب السبعة فإنه قد خرجنا بذلك عن وصايا الحكماء والفلاسفة والقدماء وما فعلنا ذلك إلا طلب الثواب ورجاء المكافات خبر الله تبارك وتعالى إذ أطلقنا أسرار النفوس أنبأ (؟) سورة وأحبرنا على مخالفة وصايا

[ب] MS Paris BnF Arabe 2606, ff. 23a-30b
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 16a-21a
(The underlined texts are found in the *Book of the Fifth Nature* as well.)
[ط] MS Tehran Mağlis 729, ff. 53a-b (in [Copper 20]), 67b-68a (in 'Mercury')

Balance

[Copper0.1] فأقول إن الميزان الذي ذكرنا عمله في كتاب التجميع وكتاب الأفاضل وغيرها من كتب الموازين هو الميزان الذي تخبر به تفاضل ما بين الأجساد الذائبة في الوزانة والخفة ويكون ذلك دليلا على طبائعها فإذا تحصل ذلك بالميزان الذي وصفنا ههنا فقد جعلت النسبة فيما بينها[117] على تحرر إذا عمل فيه كما وصفنا بهذا[118] الميزان يخرج أيضا تفاضل سائر الأجسام والأرواح وجملة جميع أجزاء الحيوان والنبات والحجر كله ومهما أردت من اختيار وزنه بهذا[119] الميزان فاخبره فاذا تحصل لك وزنه فاكتبه في مدرج يكون إلى جنبك فإذا فرغت من الأجساد الذائبة[120] فإنك غير محتاج وفي هذا الباب وهذا العمل خاصة إلى غيرها فهو يخرج كله ويقف العجائب [ب-23ب] وقد قلنا لك[121] إنه يخرج من كل جسدين من أي الأجساد كانا هذين الجسدين فإذا حصل لك بهذا[122] الميزان وأثبته[123] فقد حصل لك تفاضلها وفروقها[124] في طبائعها فاحفظ واعرف نسبها [Copper0.2] فإذا أردت مزاجها التقلب فيه بالخاصية

الحكماء قبلنا فإن علم الميزان لم يكن أحد منهم يرومه كتابا مكتسبا بل إنما كانوا تبدل (؟) رسومه (؟) بينهم لفظا في سر خفي ونحن كشفنا ذلك رحمة لك في هذه الكتب السبعة الفضلة عليك لما قدمنا ذكره ونرجو من البارئ [ط-57أ] عز وجل فاحجز ملالك وادمن الدرس فإنه سيظهر لك من ذلك في كل درسه ما لم يظهر لك في التى قبلها كما قال بلينوس الحكيم لمن يأتي بعده أديموا درسه لسنا لو ابرلك معرفة أفعال الطبيعة وأسرار الجليلة فتكونوا من المفلحين فأنا أقول ههنا إن من بلغ هذه الصناعة مبلغا حكمه نال العون وهو الذي قد علم علم الأولين والآخرين وملك ملك العالمين وبلغ مبلغ كرام اليدين فيقيم (؟) في الدنيا بالحلال الذي هو قوت لأشياء والذات المطبوعات (المطلوبات(؟) [فاط]) وفي الأخرة بالحسنات والدرجات العاليات أعطاك الله تعالى إن كنت مستحقا ولا حرمك وبلغك ولا منعك وفتح لك ولا أغلق عليك وأنالك ولا باعد منك بينه وفضله وقدرته [ط-57أ8] [ط].

[117] بينها [ب] : بينهما [ق].
[118] هذا : هذه [ب، ق]
[119] هذا : هذه [ب، ق]
[120] الذائبة [ب] ، الذاتية [ق].
[121] لك [ب] : --- [ق].
[122] هذا : هذه [ب، ق]
[123] فأثبته [ق] : وأثبته [ب].
[124] فروقها [ب] : فروعها [ق].

التي شيء في كل شيء من العالم من الأجساد المركبة ما طبيعته الخامسة فاعلم أن طبيعته[125] كل شيء من البسائط التي تسمى الخامسة [ق-16ب] هو الجوهر بفضله فانظر مقدار ما خرج لك بين الذهب والفضة والنحاس من الذهب إلى النحاس ومنه إلى الفضة ومن الفضة إلى النحاس فاجعل لفاضلها عند مزاجها في نقصان الحجر الشريف بمقدار زيادة الوضيع عليه لكل عشرة واحد فيكون ذلك العشر وهو مقدار الجوهر الذي ذكرنا لك في العلم المخزون وفي غيره أن مقدار الجوهر في كل جسم مركب بمقدار عشر قوته وهو الجوهر هو الذي تقوم فيه أعراض تسمى الكيفيات وهي الحرارة والبرودة واليبوسة والرطوبة[126] وهي تدعى إلى طبائع ويجب عليك أن تبحث بعد ذلك وإذ قد تحصل في كل شيء من العالم من الأجسام المركبة ما طبيعته[127] الخامسة فاعلم أن طبيعة كل شيء من البسائط التي تسمى الخامسة وهو الجوهر الذي قدمنا ذكره إذ حصل لك الذي قدمنا ذكره وقلنا إن مقداره في كل شيء العشر من وزنه وهو الذي تسمى القاعدة والموضوع فهو خامس الأربعة التي اثنان منها فاعلان واثنان منفعلان

The soul (Introduction)

[Copper0.3] واعلم أن هذا انما هو في العناصر [ب-24أ] وما هو فوقها مما هو أبسط منها فأما[128] كان مركبا من هذه العناصر الأربعة فإن مقدار الجوهر فيه فهي غير ما بيّنا وذلك أن غير[129] هذه المركبة شيء هو غير الجوهر وغير الجسم وغير الطبائع وهو الذي يسمى النفس وهو شيء بسيط لا حد له ولا عرض ولا صفة غير السلب وذلك أنه لا يعرف إلا بالسلب أي ليس هو كذى ولا هو كذى إلا شيء واحد هو لها أعنى النفس هو الشهوة وهو أيضا شيء غير موصوف بشيء من الطبائع [Copper0.4] فمقدار الجوهر في هذه المركبات الذي هو مركّب مركب مركب مركب تختلف فيكون فيما قريب منها من البسائط إلى ما كان أبسط قرب[130] من الغير وتختلف في هذا اختلافا كثيرا وينبغي أن تعلم أن الجسم الطويل العريض العميق لا لون له في العين التي فينا إنما يدرك اللون لا الجسم وحدود اللون إنما هو من حلول الأربع الطبائع في الجوهر بالسبق والتأخير [ق-17أ] بالمقدار الذي هو الكمية فالكمية تجعلها لها وهذا عجيب جدا فمن ههنا استدل الحكماء على هذه التراكيب وعلموا أن اختلاف مزاجها بالكمية تحدث

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[125] طبيعة : طبيعته [ب، ق].

[126] الرطوبة : اليبوبة [ب، ق].

[127] طبيعته : طبيعة [ب، ق].

[128] فإن [ق] : فأما [ب].

[129] غير [ق] : --- [ب].

[130] قرب [ب] : قريب [ق].

لها كيفية لم تكن إذا أُحدِّث لها كمية لم تكن فتامّل هذه المواضع[131] حسنا وقس واستدل بحلول الحرارة والبرودة وتغير الأزمنة على الأجسام في هذا العالم وكيفية تغير مراتبها تابع لتغير الأزمنة [ب-24ب] [على الأجسام في هذا العالم وكيفية تغير مراتبها تابع لتغير الأزمنة] فإنك تجد كل جسم مركب يتغير بتغير الزمان إلى حال غير حالة الأولي وكذلك تنتقل الألوان التي هي أعراض الأجسام بحسب الحرّ والبرد على قدر الرطوبة واليبس ألوانا من الانتقال

Four seasons and four natures

[Copper0.5] ترى الفصل[132] الشتوي بل برطوبته وأمطاره الأرض وما جعل فيها من بزر وبذر وغير ذلك فيتندى[133] ذلك البزر وينبت نباتا ضعيفا والبرد يمسك عليه الرطوبة ويبقيها له فإذا خرج فصل الشتاء دخل الربيع فزاد حر الشمس قليلا ثم يتزايد قليلا قليلا حتى ينشوا ذلك النبات وينموا ويقوى ويشتد فلو هجمت تلك الحرارة على الزرع مع ضعفه هجوما دفعة لاحترق لكنها صلبته ورتبته[134] وقوته وغرّته شيئا قليلا ثم ياتى الصيف وقد اشتد الحرّ واشتد منه كل شيء مما يخرج من الأرض وقوى على شدة حر الشمس فكان ذلك زايدا في قوته وصلايته حتى أكمل حر الصيف[135] جميع ما كانت[136] أخرجته الأرض ثم يأتى الخريف فلين[137] الحر وتزايد البرد كتزايد الحر الذي كان في الربيع وعلى ذلك الترتيب سوى حتى يعود الشتاء فيكون الأمر كما بدأنا بصفته

The soul

[Copper0.6] ثم لنرجع إلى صفة النفس[138] إذ كنا قد تكلمنا في الطبائع والكيفيات بما فيه كفاية في هذا الموضع [ب-25أ] فنقول إن النفس لا وزن لها ولا حد ولا كيفية ولها مع ذلك أفعال ظاهرة يستدل بتلك الأفعال على وجودها وكونها وهي ظاهرة بينة في الحيوان وفي النبات وفي المعدنية أيضا والذي [ق-

[131] المواضع [ق] : الموضع [ب].
[132] الفصل [ب] : الفضل [ق].
[133] فيتندى [ب] : فيبتدى [ق].
[134] ورتبته [ق] : وربّته [ب].
[135] الصيف [ق] : السيف [ب].
[136] كانت [ب] : كان [ق].
[137] فلين [ب] : فيلين [ق].
[138] النفس [ب] : الشمس [ق].

17ب] نحتاج[139] إليه ههنا ذكر النفس التي في[140] المعدنية فنقول إن الدليل على أن في المعدنية نفسا مما نراه في تغيرها وانتقالها من حال إلى حال عند امتزاجها ولقاء بعضها بعضا فذلك الحادث من الانقلاب والتغير هو فعل النفس وما كانت من اللطافة على الحال التي قدمناها علمنا أن فعلها في السرعة على حسب لطافتها وهو فعل تحدث لها على أن تفعل بحسب الكمية والوزن مثال ذلك الأدوية والمعجونات المسهلة فإنك إن زدت في أحدها على الآخر ولو أدنى شيء تغير الفعل إلى شيء آخر وهذا معلوم عند الأطباء حتى أنهم يقولون حبب الدواء الفلاني بماء المقل أو جببه بماء الكثيراء أو بماء عنب الثعلب أو بالجلاب فمتى عدلت عن ذلك إلى غيره إنما كان تغير فعل ذلك الدواء الذي قد حدّوا[141] فيه ونسبوه إليه تغيرا ما فصحّ من ذلك أن هذه الأفعال التي تكون للنفس إنما هي بحسب الكمية والوزن وتابعة[142] لها فافهم ذلك

Substance

واعلم أن الحيوان كله والنبات والمعدنية وإن كان كونه من الجسم فهو كون واحد [ب-25ب] [Copper1] ومثاله أن الجوهر كان موضوعا على الجسم ثم حمل على الجوهر الطول والعرض والعمق فصار جسما ثم حمل عليه لونا فصار طينة فهذا صفة الثلاثة الأجناس فسبحان الخالق البارئ المصوّر ثم أنه تكون من هذه الأجناس جميع ما رأيت [Copper2] وإذ قد بينت أن الجوهر هو القاعدة الأولى بغير شك أنه للحرارة وأخواتها الأربعة وإن الجسم قاعدة جميع الأفلاك إلى الحرارة والبرودة والرطوبة واليبوسة التي في عالمنا نحن، وهي العناصر التي هي النار والهواء والأرض والماء لا غير فاعلم وإن الجسم ذا[143] اللون المسمى طينة قاعدة ما بعد ذلك [Copper3] وتنازع قدماء الفلاسفة في ذلك عظيم جدا من جهة ما نقول إن الجوهر أصل الحرارة والبرودة واليبوسة والرطوبة والجسم أصل الفلك النير فقط والطينة أصل كل شيء هو دونه لأن جميعه من شيء واحد [Copper4] لكن إنما [ق-18أ] نرى ما هو لنا مجانس أي مجانس الطبيعة مقارب لها يعنون النار والهواء والماء الأرض وإن الذي نراه أيضا إنما هو غير النار والهواء والماء والأرض وذواتها بل إنما نرى ما انحل ما في الفساد والكون المتصل لكل واحدة من هذه العناصر فإن الطينة إذا انحلت منّا ماءً فاتصلت بحقيقها بالنار رأينا ذلك لأنا نرى النار

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[139] نحتاج [ق] : تختاج [ب].

[140] في [ب] : هي [ق].

[141] حدّوا : حدّو [ب] : حددوه [ق].

[142] تابعة [ق] : تابعه [ب].

[143] ذا : ذ [ب، ق]

الأول وكذلك نرى ما خرج بالزناد[144] وأمثال ذلك [ب-26أ] وكذلك القول في الهواء والماء والأرض وإن هذه الأربعة لا تصل إليها ولو وصلنا إليها عملنا بها ما نريد فاعلم ذلك [Copper5] فقد وضح[145] من قولنا لك الشيء الذي ينبغي أن يسمى خامسا للطبائع هو بالضرورة القاعدة لجميع ما يحمل عليه من الأعراض والفصول الملازمة منها والمفارقة والعامة والخاصة وخاصة الخاصة فاعلم ذلك [Copper6] فقد أوجبنا بهذا الكلام أن لنا قوة على اختراع الأشياء وبعضها كاختراع[146] الأول سواء فاعلم ذلك ولا تشك فيه فقد وجب لنا أن تقتدي[147] بالطبيعة وتقتضي[148] آثارها حتى نفعل في بعض الأشياء مثل فعلها أو قريبا من فعلها وذلك واجب متى أوجدنا شيئا من الألوان لم يكن إذا الجوهر لنا والكل أيضا فاعلم ذلك وهذا ممتنع عند بعض أصحاب النظر من قبل أن الألوان كلها محصورة لا يمكن أن تزيد أو تنقص فالجواب في ذلك أنها اذا في القوة كلها أو بعضها في الفعل[149] فما أخرجناه من القوة إلى الفعل مما قد كان في القوة ولم يخرج إلى الفعل فهو اختراع لنا ومع أنه يلزم أنه ما أخرجناه من القوة إلى الفعل بما لم يخرج من القوة إلى الفعل وقد خرج فهو أيضا اختراع لنا وأمثال ذلك. ([Copper7]) [Copper8] فنبين ما نقول [ب-26ب] لتقوى فطنتك[150] وترى الطريق إلى الميزان وينبغي أن نذكر ههنا قولنا في العلوم الأربعة التي هي الطريق والوصلة إلى ما نحن بسبيله وقد علمناك إياك في الجمل العشرين كتاب وفي الأمامة[151] وغيرها من كتبنا فانه[152] يسهل عليك ما ترومه [ق-18ب] وهو قولنا أعيان الأمور في ذواتها فإن الهندسة وجميع المقادير الحقيقة حق في ذواتها وإن[153] لم تعلم لا يقال بحسب[154] جهل[155] من قال لا أقول إن العسل حلو حتى أذوقه فإن هذا عناد الحق والصواب إذا إن يضاف كل شيء إلى العهود[156] منه المعلوم فيه [Copper9] ثم الثاني تصوّرها للعقل فإن العقل أيضا قد ينقسم أيضا أربعة أقسام قد علمناك أيضا

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[144] بالزناد [ب] : بالرماد [ق].
[145] زضح [ب] : + لنا [ق].
[146] كاختراع [ب] : كاختراعي [ق].
[147] تقتدي [ب] : نقتدي [ق].
[148] تقتضي [ب] : نقتضي [ق].
[149] أو بعضها في الفعل [ب] : --- [ق].
[150] فطنتك [ق] : فتنتك [ب].
[151] الأمامة [ب] : الأمانة [ق].
[152] فإنه [ق] : فإنها [ب].
[153] وإن [ب] : فإن [ق].
[154] بحسب [ب] : يحسب [ق].
[155] جهل [ب] : حميل [ق].
[156] العهود [ب] : المعهود [ق].

ما يقال في حدود الموضوع لا سيما فإن هذه كلها سهلة على المرتاض بالمنطق وهو قولنا في الموضوع قد يقال في موضع وهو في موضوع فلا يقال على موضوع ولا هو في موضوع فإن العقل قد يتصور شيئا ويكون له حقيقة وقد ينفى شيئا لا يتصوره ولا له حقيقة له في ذاته ولهذه العلل وحق سيدي علمناك المنطق فاعلم ذلك وكيف هو تصب الطريق واتعب ما يجيء[157] في أربعة أقسام العقل أن يتصور ما له حقيقة له فإنه من بلغ إلى هذه المنزلة فقد نال أقاصى الفلسفة واستحوذ عليها واستحق أن[158] تسمى فيلسوفا [Copper9.1] فالوجهين الباقيين من الأربعة للمنطق بها [ب-27أ] والكتب لها وهذا هو إخراجها إلى الفعل فإنه لا يمكن أحد في الدنيا أن يخرج إلى الفعل إلا ما هو موجود قبل ذلك في القوة فإن غير ذلك هو المحال الصرف ولولا أن الخاصية التي تحدثها[159] نحن بجمعنا[160] بين الأجساد وتسويتنا الكمية التي توجب تلك الخاصية[161] بقصدنا وإرادتنا واختيارنا وفكّر ما رويناها[162] موجودة في تلك الأجساد بالقوة قبل ذلك ما أمكنا إخراجها إلى الفعل إلا بذلك العمل الذي نعمله بالمهنة وبتلك الزيادة والنقصان[163] الذي يريده في بعضها وينقصه من بعضها ثم تذيبها[164] بالنار لنمزجها[165] فتمتزج[166] فإذا أمتزجت كان الحادث بالمزاج هو ذلك الذي طلبناه ورمناه فربما سميناه ذلك الحادث طبيعة سادسة فإنه كما بينت قبل أن الطبائع أربع وهي قائمة في جوهر والجوهر هو الخامس لها [ق-19أ] وهذا الانقلاب وهذا الكون الذي لم يكن سميته طبيعة سادسة لأنه شيء حدث بالخاصية فإن شيت أن تسمى تلك الغلبة والانتقالات الطبيعة السادسة فافعل لأن الغلبة والانقلاب عن الخاصية كان والخاصية عن الكمية فاعلم ذلك

Bibliographical information

[Copper9.2] ولا بد من[167] تبيين ما وعدت به في هذه الكتب السبعة فإنما هي التي نصصنا عليها

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[157] يجيء : يجى[ب] : يحى [ق].
[158] أن [ب] : لن [ق].
[159] تحدثها [ب] : نحدثها [ق].
[160] بجمعنا [ب] : يجمعنا [ق].
[161] الخاصية [ب] : الخاصة [ق].
[162] رويناها [ق] : راويتناها [ب].
[163] والنقصان [ب] : + أن [ق].
[164] تذيبها : تديبها [ب] : تريبها [ق].
[165] لنمزجها [ب] : فتمزجها [ق].
[166] فتمتزج [ق] : فيمتزج [ب].
[167] من [ق] : عن [ق].

في الاثنين وثلثين كتابا ودلّلنا عليها في آخر كتاب الأصول ومدحناها[168] وخصصنا على قراءتها في كتاب العلم المخزون [ب-27ب] وأكثر ذلك ذكرته في هذا الكتاب

Logic 'in relation'

[Copper9.3] وقد علمناك المنطق فاعلم ذلك وكيف هو تصب[169] الطريق واتعب ما يجيء[170] سيدي مزمنة ومضى متقدما كلام كافي[171] في الميزان فإن[172] الله القادر القائم[173] على كل شيء وإن لم يعلم مما مضى فانظر الآن إلى ما نقول في قولنا كبير بالإضافة الابن إلى الأب والأب إلى الابن والعبد الى المولى والمولى الى العبد إن قولنا كبير إنما هو كثير بالإضافة إلى القليل وقولنا صغير إنما هو بالإضافة إلى ما هو أكبر منه وكذلك قولنا فيما يقال المولى لم يكن مولى إلا عند وجود العبد وكذلك العبد فإن قال قائل إن هذا هو بطلان الحقائق لأنا نسمى كل شيء اسما من باب الإضافة مما يقال عليه من باب الإضافة فما حقيقته هو في نفسه أصغير أم كبير فإنا نقول له إن هذه أسماء اصطلحنا عليها فيما بيّنا[174] لتعريف الأشياء فقد صارت حقيقتها لذلك التعريف وذلك التصور إلى نفوسنا ولعمري إنما يقال عليه بالإضافة ليس له في ذاته حقيقة من باب ما لا يقال عليه لكن لا بد من أن يكون له حقيقة ما وهو الذي قلنا إن تلك العبارة عنه إنما هو المعرفة فيها بينا كذلك أيضا [Copper9.4] نقول كل كمية ميزان وكل ميزان كمية قول صحيح فقس على هذا في الخفة والثقل والصورة واللون وكذلك أيضا نقول كل صبغ كيفية وكل كيفية صبغ [ب-28أ] قول حق لا مرآء فيه ولا منازعة [ق-19ب] فقس على هذا في الخفة والثقل والصورة واللون فلذلك[175] كل صابغ إكسير وكل إكسير صابغ فكيف يقول القائل فيما يقال عليه من غير باب الإضافة أليس يصح حقائقه في نفسه فلا بد من نعم فيقال لهم فقد وجدنا حقائق الأشياء [Copper9.5]وصح ووجب أن كل رأسين أو دوائين أو عقابين خرجتهما فإنك واحد فيما طبع كل واحد من الممتزجين وطبع ثالث أحدثه فيهما ولهما المزاج وقولنا أحدثه المزاج أي لم يكن ثم كان وقد ذكرنا هذا المعنى بعينه في **كتاب سر المكنون وحق الحق** بما فيه كفاية وبلاغ على صحة ما ندعى لكن لما كان ضماننا

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[168] منحناها [ب] : شرحناها [ق].

[169] تصب : تصف(؟) [ب] : نقف [ق].

[170] يجيء : يحى [ب، ق].

[171] كافي [ب] : كما [ق].

[172] فإن : فإن فإني [ب] : فإني وحق [ق].

[173] القائم [ق] : القام [ب].

[174] بيّنا [ب] : بينا [ق].

[175] فلذلك [ب] : فكذلك [ق].

أن نبين في هذه **الكتب الميزان** على تحقيق ووضوح لم يكن بد من الوفآء بالضمان فنقول إن هذا الطبع الثالث الذي أحدثه المزاج هو فعل النفس [Copper10] فانظر فإن كان ما قاله جالينوس حقا أن الروح تابع المزاج البدن على تفسير الحمقى فإذن الحياة هي الطبيعة السادسة وهي بغير شك فوق فعل النفس وإن ما قال حقا[176] على تفسير المحققين وهو أنه إن كان المزاج فاسدا كانت الروح فاسدة وإن كانت معتدله كان معتدلا وأمثال ذلك فإن هذا الحادث الذي فعل الخاصية والحادث في المزاج هو فعل النفس لا محالة [Copper11] وإن كان الجسد الغالب لما مازجه فلا تكون [ب-28ب] أجزاءه صابغة ولا منتشرة ولا متفشية ثم يصير بعد الجميع بينه وبين غيره صابغة إذ ذلك الصبغ فعل له من الجسد الموصوف بان أجزاؤه غير صابغة بالمزاج وبطلت العبارة عنه والصفة الأولة[177] [Copper12] فافهم هذا وحق سيدي موضوع الدلالة على الميزان وفيه كفاية مع غيره وكل ذلك فقد أتينا به ههنا أعني في هذا الكتاب فالحق قد أوجب أن الأشياء في الأحمر غير ما في الأبيض وقد يخصّوها[178] كلهم اسم شيء إن علت ذلك فاعرفه وابحث عنه وما هو فهو شيء غير صعب تصب الطريق إليه سهلا إن شاء الله تعالى

Principle and basis

[Copper13] وقد بقي أن تكلم[179] في شيء هو الأصل والقاعدة وما غرضنا بذكره[180] [ق-20أ] في أحد هذه السبعة[181] إلا ههنا وهو أصل يجب أن يكون المزاج المطلوب بين جسدين فقط أم ثلاثة أجزاء بماد[182] أم أربعة أجساد أم خمسة أو[183] ستة أم السبعة كلها فإن الخصومة بين الفلاسفة في ذلك كثيرة طويلة وفيها دعاوٍ مختلفة فمنهم من قال إنه لا يجوز أن يكون إلا جسدين فقط وقال قوم ثلاثة وقال قوم لا أكثر من ذلك فأما حجة أصحاب الجسدين فإنهم قالوا إنما نروم قلب شيء إلى شيء فليكن الذين نريد قلب أحدهما إلى الآخر فقط والثالث لا معنى له بتة[184] وردوا على أصحاب الثلاثة ومن قال أكثر

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[176] قال حقا [ب] : قاله حق [ق].
[177] الأولة [ب] : الأولي [ق].
[178] يخصّوها [ب] : خصّوها [ق].
[179] تكلم [ب] : نتكلم [ق].
[180] بذكره : يذكره [ب] : نذكره [ق].
[181] السبعة : الصبعة [ب] : الصبغة [ق].
[182] بماد [ب] : بماء [ق].
[183] أو [ب] : أم [ق].
[184] بتة [ب] : البتة [ق].

من ذلك [Copper14] فإنهم قالوا إن الأشياء لا يساوى[185] في حد ولا طبع [ب-29أ] ولو تساوت في الحدود والطبع لكانت هي والصبغ الفاضل سواء والصبغ الفاضل[186] إنما يكون في شيء واحد ولا يجوز تساويه أن دخل ثم أشياء كثيرة فإن الثالث مثل السبعة كلها بلا فرق والدليل على ذلك إنها يتساوى[187] على القضية الأولى إذا لم يتساوى لم يجز أن يحدث فيها كلها فعل واحد من جهة واحدة وهي محتلفة في الحد والطبع [Copper15] وقال أيضا الجماعة في حول ذلك لعمري لقد صدقتم أن الأشياء لا يتساوى[188] في طبع واحد فما تنكرون أن تكون أسماء كثيرة من جنس واحد تعمل ذلك العمل فيها العامل وبقلبها[189] القالب إما باكثر وإما باقل من العمل في ذلك الواحد وأعنى بذلك العمل القلب والنقل إلى الفضية والذهبية فافهم وافقه ما نقول وانظر الآن يا أخي بعين العقل بسم الله العظيم[190] الرحمن الرحيم الطالب الغالب أين الحق فإنك تجده وحق سيدي في الوجهين جميعا إلا أنك تجده في باب الثلاثة أقرب وأقل وفي باب الاثنين أغزر وأكثر وأبعد من الحديث واتعب قليلا ويجب أن نقول واتعب كثيرا ولا تظنّ أن قولي كثيرا إنه شيء يطول فإنه لا يتأخر ولكن هذا الكثير إنما نقول عليه بالإضافة فافهم ما نريد وإلا فكل هذه الأعمال نهايتها أربعة[191] ساعات من النهار لا زيادة فمتى زاد الزمان على هذا المقدار [ب-29ب] فليس هذا هو الطريق بل هو طريق آخر فافهم[192] [ق-20ب] إن شاء الله تعالى. ([Copper16]) [Copper17] وهذا الذي نحن بسبيل ذكره نسميه[193] قوم التذكية مأخوذ من الذكاء وذلك أنهم يقولون إن الحادث من المزاج من الطبائع شيء يكون في أقل من لمح البصر وهذا فشيء[194] ليس في الدنيا أحدّ منه ولا أسرع ولا أذكى[195] ولا أدري لم تسمى[196] العرب ذبح ما يدبحونه تدكية وهو أحد أسباب الموت وهو خطاء من جهة المعانى وغير خطاء من جهة الاصطلاح على الأسماء المشار بها على المسميات فلهذا ما أوجبنا أن كلام العربى ضيق جدا [Copper18] واعلم أن

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[185] يساوى [ب] : تساوى [ق].
[186] والصبغ الفاضل [ب] : --- [ق].
[187] يتساوى [ب] : تتساوى [ق].
[188] يتساوى [ب] : تتساوى [ق].
[189] وبقلبها [ب] : يقلبها [ق].
[190] العظيم [ب] : --- [ق].
[191] أربعة [ب] : أربع [ق].
[192] فافهم [ب] : فافهمه [ق].
[193] نسميه [ب] : نسقيه [ق].
[194] فشيء [ب] : شيء [ق].
[195] أذكى [ب] : أذكي [ق].
[196] تسمى [ب] : تسم [ق].

النفس لا وزن لها وكذلك أفعالها لا وزن لها ولا أعراض كلها لا وزن لها فإذا حدث حادث عن اثنين كان أبسط وأكثر نقيشا[197] وانتشارا مما كان أولا من الطبع في ذلك الشيء مثال ذلك في هذه الصناعة إكسير يعمل[198] ثلاثة أعمال وهو عقد الزيبق فضة وصبغ النحاس فضة وصبغ الياقوت الأبيض أحمر وإن قوما ذكروا أن هذا كله محاله أن يكون أو يكون له حقيقة وقد وجدنا له حقيقة وكونا

Bibliographical information

[Copper19] وقد كنا[199] ذكرنا من الدلالة على هذا في بعض كتبنا الاثنين وثلاثين كتاب وفي غيرها من **الكتب الموازينية** مثل **إخراج ما في القوة إلى الفعل** ومثل **كتاب المهج** فإن نظرت فيها بان لك الدليل فيما يحتاج[200] على صحة ذلك [Copper20] وإنما نحتاج[201] إلى الوجه [ب-30أ] في العمل[202] وكيفية تمامه والدلالة عليه وقد جودنا لك في هذه الكتب منثورا مبددا[203] فيها وكذلك تحصل على جميع المتفرق وتفريق المجتمع فافهم هذا الكتاب خاصة فقد ذكرنا فيه ما لم نذكره في غيره بتة[204] في الكتب أعني هذه الكتب السبعة وقد ذكرنا في غيره ما لم نورده فيه إلا أن هذا الكتاب أفضلها وأنفعها وكلما قلنا في كتاب أنه أفضل فإنما يعني[205] أنه أنفع لأنا ما وضعنا كتبنا يشهد الله إلا لمنفعة الناس جميعا لا لنظلمهم ولا لنحيرهم ولم يكن بد من الرمز والتعمية وإلا كنت الكون ملعونا بين الفلاسفة [<ط-53أ6] وقد وحق سيدي فعلت ما الكون ملعونا عندهم وبخاصة في وضعي [ق-21أ] لهذه الكتب وغيرها من كتب

[197] نقيشا [ب] : نفتيشا [ق].
[198] يعمل [ب] : + على [ق].
[199] كنا [ب] : --- [ق].
[200] يحتاج [ب] : نحتاج [ق].
[201] نحتاج [ق] : نحنا [ب].
[202] العمل [ب] : + جميعا [ق].
[203] مبددا [ب] : متبدّدا [ق].
[204] بتة [ب] : البتة [ق].
[205] يعني [ب] : نعني [ق].

الموازين وهذه[206] التراكيب الموصوفة فيه[207] في الوقت بلا زمان[208] يتأخر[209] وكل[210] ذلك وحق سيدي[211] راحة من طول التدبير البعيدة المناول[212] والصعبة[213] التي لا يؤمن لطول مدتها[214] سلامتها وتقليبها في مدة طويلة تنقلها إلى حال أخرى[215] وذلك من غير شيء آخر يخالطها مانع لا خاليك[216] فيها فإنها لا يخلوا[217] إلا[218] لطول تقليبها[219] من حال إلى حال من[220] تدابيرها من مخالطة ما يمنع[221] المزاج وتأليف الأجزاء[222] فإذا لم تمتزج[223] امتزاجا ويتحد بحدّ واحد كلي لم يكن عنه[224] فائدة [ط-53ب] إذ لا[225] يتم عمله[226] إلا بذلك فأول ما نذكر ههنا أن نقول[227] إذا صارت هذه الكتب السبعة إليك أن تديم

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[206] وقد وحق سيدي فعلت ما الكون ملعونا عندهم وبخاصة في وضعي لهذه الكتب وغيرها من كتب الموازين وهذه [ب، ق] : [<ط-53أ6] هذا كتاب سميناه بكتاب النحاس من الكتب السبعة في الأجساد التراكيب التي ترتفع عمل الأكاسير بهذه [ط].

[207] فيه [ب، ق] : بهذا الكتب السبعة [ط].

[208] زمان [ب، ط] : زيادة [ق].

[209] يتأخر [ب، ط] : تتأخر [ق].

[210] وكل [ب، ق] : وفي كل [ط].

[211] سيدي [ب، ق] : سيدنا [ط].

[212] المناول [ب] : التناول [ق] : المتداول [ط].

[213] والصعبة [ب، ق] : والنحيفة [ط].

[214] لطول مدتها [ب، ق] : بطول مددها [ط].

[215] سلامتها وتقليبها في مدة طويلة تنقلها إلى حال أخرى [ب، ق] : --- [ط].

[216] وذلك من غير شيء آخر يخالطها مانع لا خاليك [ب، ق] : موافع إلا مخاليط [ط].

[217] يخلوا [ب، ط] : تخلوا [ق].

[218] إلا [ب] : --- [ق، ط].

[219] تقليبها [ب، ق] : تقلبها [ط].

[220] من تدابيرها [ب، ق] : وتدابيرها [ط].

[221] ما يمنع [ب، ق] : بالمنع [ط].

[222] وتأليف الأجزاء [ب، ق] : والتأليف [ط].

[223] تمتزج [ب، ق] : تمزج ويتخذ [ط].

[224] عنه [ب، ق] : عنها [ط].

[225] إذ لا [ب] : أولا [ق] : إذ [ط-53ب] إذا [ط].

[226] عمله [ب، ق] : عملها [ط].

[227] فأول ما نذكر ههنا أن نقول [ب، ق] : فينبغي لك أيها الأخ [ط].

درسها[228] وتتفقد حواشيها [ب-30ب] ويتدبر[229] قراءتها وتجتمع في[230] تضاعيف كلامنا فيها وبخاصة هذا الكتاب فإنه قد دللنا[231] على[232] ما يتم عمل إلا بمعرفة ذلك فأول ما[233] نقول إن النحاس متوسط بين الذهب والفضة لأنه يمازجهما[234] ويختلط بهما ويجري في جميع أعمالهما وتدابيرهما مجراهما ومنه[235] الزنجار الشريف الذي قد أكثر الناس جميعا فيه[236] مما[237] يعمل ويصبغ ويغوص ويجمع ويشمع ويختلط[238] فإنا إذا وجدناه ووجدنا النوشادر[239] فقد وجدنا الصبغ والتشميع والاختلاط الجزئي ثم الكلي ثم المزاج الكلي والجزئي فاعرفه[240]

Mercury

[<ط-67ب8] وقد قال بعض الفلاسفة مثل ذلك في الزيبق ولكنهم[241] قالوا ذلك رمزا[242] على هذين اللذين[243] قدمنا ذكرهما[244] وإن كان الزيبق[245] أعمال[246] شريقة عظيمة نسبوه[247] إليها[248] لأنه الروح

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[228] تديم درسها [ب، ق] : تدرسها [ط].

[229] ويتدبر [ب] : وتدبر [ق].

[230] ويتدبر قراءتها وتجتمع في [ب، ق] : وتجمع تدبيراتها من [ط].

[231] دللنا [ب، ق] : + فيه [ط].

[232] على [ب، ط] : + أنه [ق].

[233] ما [ب، ق] : + نذكر ههنا أنا [ط].

[234] يمازجهما [ب، ق] : بمزاجهما [ط].

[235] ومنه [ب، ق] : ومن النحاس أن يكون [ط].

[236] جميعا فيه [ب، ط] : فيه جميعا [ق].

[237] مما [ب، ق] : وفيها [ط].

[238] يختلط [ب، ق] : + ويمزج [ط].

[239] فإنا إذا وجدناه ووجدنا النوشادر [ب، ق] : وأما قد وجدنا النحاس والنوشادر [ط].

[240] الجزئي ثم الكلي ثم المزاج الكلي والجزئي فاعرفه [ب، ق] : والامتزاج على ما سنصف صح عندك تمام ذلك المشابهة التي هي بينهما [ط53ب8>] [ط].

[241] ولكنهم [ب، ق] : ولكن [ط].

[242] ومزا [ب، ق] : + ويغطيه [ط].

[243] هذين اللذين [ب، ق] : الزنجار الذي [ط].

[244] ذكرهما [ب، ق] : ذكره [ط].

[245] الزيبق [ب، ق] : للويبق [ط].

[246] أعمال [ب] : أعماله [ق] : أعمالا [ط].

[247] عظيمة نسبوه [ب، ق] : --- [ط].

[248] إليها [ب] : إليهما [ق] : --- [ط].

الصابغ[249] المبيض المحمر لأن ظاهره أبيض وباطنه أحمر وظاهره رطب لين وباطنه يابس[250] صلب شديد وهذا قول الحكماء فيه [ط-68أ] والكلام في الروح يطول ويتسع جدا ونحتاج[251] في[252] بعض[253] ذلك إلى الطراس الكثيرة[254] لأنه الروح المحلل[255] المجرى الصابغ الباسط لما خالطه الملين[256] لكل يابس والمبيض لكل أسود لأنه هو المنتقل من السواد إلى البياض والحمر في كل واحد من الأجساد[257] وهو في الأجساد السبعة منسوب إلى عطارد إنما[258] نسبوه إليه لأنه[259] موصوف [ق-21ب] بصفته [ط-68أ4>] ولذلك[260] الزيبق يشبه عطارد في الكواكب[261]

[ب] MS Paris BnF Arabe 2606, f. 30b-31b
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 21b-22a
[ط] MS Tehran Mağlis 729, ff. 54a8-54b4, 57a-58a

Nature of Copper (2)

وإذ[262] قد فرغنا من تقديم [ب-31أ] ما احتجنا أن تقدمه قبل صفحة[263] النحاس والنحاس له أعمال كثيرة وتداخلة في أشياء عزيزة كما لكل واحد من الذاتية منافع ومداخل فمن ذلك أولا نفع النحاس البلغم النحاس لا يشرب بل زنجارة وإنما شرح وبين أن النحاس قد نفع على زنجارة وقد عيّن وبيّن ذلك باشارته

[249] الصابغ [ب، ق] : + المجرى [ط].
[250] يابس [ب، ق] : --- [ط].
[251] ونحتاج [ب، ق] : ويحتاج [ط].
[252] في [ب، ط] : --- [ق].
[253] بعض [ب] : بعد [ق] : تفصول [ط].
[254] الطراس الكثيرة [ب، ق] : طوامير كثيرة [ط].
[255] الروح المحلل [ب، ق] : ركن العلل [ط].
[256] الملين [ب، ق] : اللين [ط].
[257] لأنه هو المنتقل من السواد إلى البياض والحمر في كل واحد من الأجساد [ب، ق] : --- [ط].
[258] إنما [ب، ق] : وإنما [ط].
[259] لأنه [ب، ق] : --- [ط].
[260] ولذلك [ب] : وكذلك [ق] : --- [ط].
[261] الزيبق يشبه عطارد في الكواكب [ب، ق] : --- [ط].
[262] وإذ [ب، ق] : وإذا [ط].
[263] صفحة [ب، ق] : صفة [ط].

إلى عمل زنجارة بإخراجه إياه من البدن بقوة شديدة وقد تقدم ذكره[264] [ط-54ب4>] وتوتياء النحاس يدخل في الأكحال وأعمال الصناعة ولا سيما البرافى والصيني فإن فعلهما في التحمير فعل لا يكاد يصدق به سامعة[265] [<ط-57أ8] أنا أرجع[266] إلى كلامي الأول فنقول في هذه إن[267] الزهرة وقد أكثرنا في تدابيرها[268] فإنها عسرة[269] عزيزة نافعة[270] فينبغي[271] أن تعرف إيها الناظر من[272] القول في ذلك في عدة من كتبنا[273] فنقول إن ظاهر هذا الجسد[274] حار شديد الحرارة يابس قليل [ط-57ب] اليبوسة على مذهبنا وعند[275] قوم أنه[276] كثير اليبوسة وباطنه على هذا[277] بارد ضعيف البرودة رطب شديد[278] الرطوبة وهو توجد[279] كذلك لأنه سريع الانثناء[280] والتشكل والمخالطة فاعلم ذلك لأن باطنه القلعى بلا

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[264] والنحاس له أعمال كثيرة وتداخلة في أشياء عزيزة كما لكل واحد من الذاتية منافع ومداخل فمن ذلك أولا نفع النحاس البلغم النحاس لا يشرب بل زنجارة وإنما شرح وبين أن النحاس قد نفع على زنجارة وقد عيّن وبيّن ذلك باشارته إلى عمل زنجارة بإخراجه إياه من البدن بقوة شديدة وقد تقدم ذكره [ب، ق] : فينبغى بذكره الآن فنقول إن النحاس أجلّ الأجساد الذائبة وهو حار يابس وهو في قوام الفضة فمن أحسن أن يزيل حرارته قلبه فضة بيضاء وهو أيضا يجري مجرى الذهب في الأعمال [ط-54ب] وقد ينبغى التدابير والتراكيب والموازين وذلك أن النحاس يخالط الكبريت ويعشقها كما أن الذهب يخالطها ويعشقها وينفر من الزرنيخ كما ينفرضه الذهب أصليا فاعلم ذلك وأبن أمرك بحسبه النحاس من الأجساد السبعة الذائبة وجار مجريها في أعمالها وسياقة تدبيره كسياقة تدبيرها لأنه عامل مثل أعمالها وله منافع كثيرة ومداخل [ط-54ب4] [ط].

[265] فإن فعلهما في التحمير فعل لا يكاد يصدق به سامعة [ب، ق] : --- [ط].

[266] أنا أرجع [ب، ق] : ولنرجع [ط].

[267] إن [ب، ق] : --- [ط].

[268] وقد أكثرنا في تدابيرها [ب، ق] : وتدابيرها [ط].

[269] عسرة [ب، ق] : كثيرة [ط].

[270] نافعة [ب، ق] : + جدا [ط].

[271] فينبغي [ب، ق] : + لك [ط].

[272] الناظر من [ب، ق] : الفطن كيف إبداء إذ قد أكثرنا [ط].

[273] عدة من كتبنا [ب، ق] : كتبنا هذه السبعة [ط].

[274] الجسد [ب، ق] : + على مذهبنا [ط].

[275] على مذهبنا وعند [ب، ق] : عند [ط].

[276] أنه [ب، ق] : + يابس [ط].

[277] وباطنه على هذا [ب، ق] : فعلى قولنا باطنه [ط].

[278] شديد [ب، ق] : كثير [ط].

[279] يوجد [ق، ط] : توجد [ب].

[280] الانثناء [ب، ق] : الانسباك [ط].

شك وكذلك قد بينا أيضا أن باطن[281] كل رصاص قلعى نحاس فإن أردت أن تبلغ به توتياء النحاس[282] وتقويه[283] نوره وأزالة ظلمته فرده إلى أصله وذلك بأن تقوى رطوبته التي[284] في باطنه لتظهر[285] وتختفي[286] اليبوسة[287] حينئذ والأصل [ب-31ب] قلع[288] توباله فيزول يبسه وتغلب[289] الرطوبة عليه فيصير باطنه باردا يابسا اسربا وظاهره[290] ذهبا وليس مخالفا[291] لما قدمنا وصفه إذ[292] قد[293] بينت ذلك حسنا وقوم قالوا[294] إن باطنه[295] فضة وليس هذا القول[296] ببعيد من الصواب ولكن الحق إن الكلام على الذهب[297] أولى به إذا تميز عنه وفيه من التدابير ما برده[298] إلى أصل وجوه منها ظريف وعجائب يظهر بالتدابير[299] إذا كان المدبر[300] عالما حادقا لأن النحاس في قوة الفضة في[301] الصلابة والذوب[302] غير أنه مخالفها[303] في اللون فقد تبين أن باطن النحاس هو القلعى والوجه ردّه إلى أصله لتقوى باطنه

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[281] لأن باطنه القلعى بلا شك وكذلك قد بينا أيضا أن باطن [ب، ق] : واعلم [ط].

[282] أن تبلغ به توتياء النحاس [ب، ق] : --- [ط].

[283] وتقويه [ب] : وتقوي [ق] : تقويته [ط].

[284] التي [ب، ق] : --- [ط].

[285] لتظهر [ق، ط] : ليظهر [ب].

[286] تختفي [ق] : ويختفي [ب، ط].

[287] اليبوسة [ب، ق] : يبوسة [ط].

[288] قلع [ب، ق] : كذلك وقلع [ط].

[289] وتغلب [ق] : ويغلب [ب] : فيغلب [ط].

[290] وظاهره [ب، ق] : + حارا رطبا [ط].

[291] مخالفا [ب، ق] : هذا بمخالف [ط].

[292] وصفه إذ [ب، ق] : من صفته إذا [ط].

[293] قد [ب] : --- [ق، ط].

[294] وقوم قالوا [ب، ق] : وقد قال قوم [ط].

[295] باطنه [ب، ق] : باطن النحاس [ط].

[296] القول [ب، ق] : + فيه [ط].

[297] الذهب [ب، ق] : + في النحاس [ط].

[298] إذا تميز عنه وفيه من التدابير ما برده [ب، ق] : من الفضة ولرده [ط].

[299] منها ظريف وعجائب يظهر بالتدابير [ب، ق] : فيها ظرائف وعجائب تظهر للفكر [ط].

[300] المدبر [ب، ق] : --- [ط].

[301] في [ب، ق] : من [ط].

[302] والذوب [ب، ق] : والذهب [ط].

[303] مخالفها [ب، ق] : يخالفه [ط].

فيظهر فيصير ذهبا[304] فهي بيضاء وهو أحمر فمن قلع حمرته صار[305] فضة ولك[306] في تدبيره ما هو أنفع من هذا وهو أن يقلع سواده الذي اكتسبه إياه الاحتراق[307] في المعدن [ط-58أ] في أصل[308] تكوينه وذلك أجري وأنفع[309] لأن سواده إذا زال حدث مكانه فيه صفرة ذهبية.

[ب] MS Paris BnF Arabe 2606, ff. 34a-36a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 23b-24b
[ط] MS Tehran Mağlis 729, ff. 60b-63a

Tūtiyāʾ

وإعلامك[310] أن التوتياء صديق النحاس وأفضل الأدوية[311] وأصبغها له فيه[312] تدبير يخرج[313][ط-61أ] النحاس ذهبا قائما على الخلاص كله لأن الذي وصفته لا يقوم[314] في الخلاص من[315] دخول الفضة عليه وذلك أن تأخذ[316] من القلقند الأخضر والزاج المصري الأصفر الذي[317] مثل مح البيض المسلوق ومن الزاج[318] الأبيض المسمى قلقنديس ومن الشب شب[319] الحمرة من كل واحد عشرة دراهم ومن النوشادر الأبيض الصافي وصفرة البيض المسلوق منهما أربعين درهما ومن العسل الذائب الأحمر نصف رطل

[304] فقد تبين أن باطن النحاس هو القلعى والوجه ردّه إلى أصله لتقوى باطنه فيظهر فيصير ذهبا [ب، ق] : --- [ط].
[305] صار [ب، ق] : عاد [ط].
[306] ولك [ب، ق] : لكن [ط].
[307] الاحتراق [ب، ق] : الإحراق [ط].
[308] المعدن في أصل [ب، ق] : معدنه [ط-58أ] وأصل [ط].
[309] وذلك أجري وأنفع [ب، ق] : فإن ذلك أنفع وأجري [ط].
[310] أعلامك [ب، ق] : ونعلمك [ط].
[311] الأدوية [ب، ق] : أدوية [ط].
[312] فيه [ب، ق] : وفيه [ط].
[313] يخرج [ب، ق] : يطرح به [ط].
[314] لأن الذي وصفته لا يقوم [ب، ق] : بل بعضه وتدبيره بالتوتيا على ما ينبغى يقيمه كلّه [ط].
[315] من [ب، ق] : + غير [ط].
[316] أن تأخذ [ب، ق] : بأن يؤخذ [ط].
[317] الذي [ب، ق] : --- [ط].
[318] المسلوق ومن الزاج [ب، ق] : والزاج [ط].
[319] ومن الشب شب [ب، ق] : أو من شب [ط].

فتسحق[320] الزاجات وحدها سحقا ناعما[321] ثم يلقى[322] عليها العسل وتسحق حتى تجتمع ثم يلقى ذلك على[323] صفرة البيض ويسحق أبدا حتى يختلط ويتداخل ثم اجعله في قنينة[324] وصبّ عليه[325] من خل الخمر النادر ما يغمرهما وزيادة[326] أربع أصابع [ب-34ب] ويشمس في شمس حارة واجعل[327] القنينة إن كان شتاء[328] في قدر فيها رماد ويكون مشدود الوصل بالصاروخ وليكن الرماد فيها[329] إلى حد الدواء[330] وأوقد تحت القدر التي فيها الرماد[331] مثل حرارة الشمس إذا[332] كانت في السرطان فإن زدت قليلا فلا بأس وشد رأس القارورة بالصاروخ وليكن الرماد فيها إلى حد الدواء وتوقد تلك النار[333] ثلاثة [ق-24أ] أيام وثلاث ليال حيث[334] الإمكان ثم اتركه يبرد وإن كان صيفا[335] فشمسها للقنينة عشرة أيام واتركه يبرد أيضا[336] ثم صف الخل عنه جميعه[337] واعزل[338] في قنينة[339] واجعل التفل[340] في آناء[341] صابر على

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[320] فتسحق [ب، ق] : فيسحق [ط].

[321] وحدها سحقا ناعما [ب، ق] : نعما وخدها يابسة [ط].

[322] يلقى [ب، ط] : تلقى [ق].

[323] ذلك على [ب، ق] : على ذلك [ط].

[324] قتيتة [ب، ط] : قنينية [ق].

[325] عليه [ب، ط] : عليها [ق].

[326] يغمرهما وزيادة [ب] : يغمرها وزيادة [ق] : يغمره بزيادة [ط].

[327] ويشمس في شمس حارة واجعل [ب، ق] : وشمّسه أو اطبخه فإن شمّسته فاجعل [ط].

[328] إن كان شتاء [ب، ق] : في الصيف في شمس حارة عشرة أيام وإن طبخته فاجعل القنينة [ط].

[329] ويكون مشدود الوصل بالصاروخ وليكن الرماد فيها [ب، ق] : --- [ط].

[330] الدواء [ب، ق] : + وجود زمامها بالصاروج [ط].

[331] تحت القدر التي فيها الرماد [ب، ق] : تحتها بنار [ط].

[332] إذا [ب، ط] : إن [ق].

[333] فإن زدت قليلا فلا بأس وشد رأس القارورة بالصاروخ وليكن الرماد فيها إلى حد الدواء وتوقد تلك النار [ب، ق] : --- [ط].

[334] وثلاث ليال حيث [ب، ق] : وليليها حب [ط].

[335] صيفا [ق] : سيفا [ب].

[336] وإن كان صيفا فشمسها للقنينة عشرة أيام واتركه يبرد أيضا [ب، ق] : إذا [ط-61ب] طبخته أو شمّسته [ط].

[337] عنه جميعه [ب، ق] : عن التفل [ط].

[338] واعزل [ب] : واعزله [ق] : واعزل الخل [ط].

[339] قنينة [ب، ط] : قنينية [ق].

[340] التفل [ب] : النقل [ق].

[341] واجعل التفل في آناء [ب، ق] : واخرج التفل واجعل [ط].

النار[342] وأشوه في نار التوسط[343] يوما وليلة فإنه يخرج أحمر كالشقائق[344] فاغرله ثم خد من التوتياء المرازبي الصافي الجيد فاسحقه[345] مع مثله من الروسختج الأحمر واسحقها بالفهر[346] ثم أعدها[347] إلى السحق حتى تطير من تكرار السحق ثم ازوج[348] على كل رطل من التوتياء والروسختج[349] وزن ثلاثين درهما ومن[350] التفل الأحمر الذي عزلت واسحقها[351] حتى يطير الجميع في قوة تكرار[352] السحق ثم اسقها[353] الخل الذي صفّيته[354] عن الأدوية الأولة ورتبته[355] في الشمس أو بسخونة[356] مثل حرارة الشمس فإذا صار كذلك[357] فاعزل[358] وخد من النحاس الذي يخرج من الجرم[359] فصفحه مثل رقة[360] الدرهم[361] واغمسه في ذلك الخل الذي شمسته[362] عشرين حميته وعشرين غمسته[363] ثم اسبكه والق [ب-35أ]

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[342] النار [ب، ق] : + صلبة إلى [ط].

[343] التوسط [ب، ق، هاط] : التنور [ط].

[344] كالشقائق [ب، ق] : كشقائق [ط].

[345] فاسحقه [ب، ق] : واسحق [ط].

[346] واسحقها بالفهر [ب، ق] : والخل ذلك بالحرق [ط].

[347] أعدها [ب] : أعده [ط] : أعدهما [ق].

[348] زوّج : ازوج [ب، ق] : الق [ط].

[349] التوتياء والروسختج [ب، ق] : ذلك [ط].

[350] ومن [ب] : من [ق، ط].

[351] واسحقها [ب، ق] : واسحق [ط].

[352] قوة تكرار [ب، ق] : --- [ط].

[353] اسقها [ب، ق] : اسقه [ط].

[354] صفيته [ب، ق] : صفيت [ط].

[355] الأدوية الأولة ورتبته [ب] : الأدوية الأولى ورتبته [ق] : ذلك وزنه [ط]، ورتبته [ب، ق] : ورددته [حاق].

[356] بسخونة [ب، ق] : سخونة [ط].

[357] صار كذلك [ب، ق] : كان لك فهو الدواء [ط].

[358] فاعزل [ب] : فاعزله [ق، ط].

[359] من الجرم [ب، ق] : بالجرم [ط].

[360] مثل رقة [ب، ق] : ورقة مثل [ط].

[361] الدرهم [ب، ق] : + وأحمه بالنار [ط].

[362] الذي شمسته [ب، ق] : المشمس [ط].

[363] حميته وعشرين غمسته [ب] : حميه وعشرين غمسه [ق] : مرة [ط].

على كل عشرين درهما[364] منه درهمين[365] من دوائك الذي دبرت[366] فانك ترى من قدرة الله[367] ما يترك ذهبة[368] لا شك فيه فاحمد الله عز وجل

Remarks of ancient Greek thinkers

وهذا معنى قول الحكماء دبر الحجر بالحجر منه وبه قالوا دبر الحجر بالحجر وذلك انما قالوا[369] على تدبير الأبق وهو وحق سيدي حق وقد سبق[370] إلى قلوب جميع[371] الناس إنه محال وكذب وهو صحيح حق[372] فإن عملت به رأيت صحته وكشفت[373] [ط-62أ] التجربة عن حقيقة وذلك بأن[374] يؤخذ الأبق فيجعل في إناء إما حديد مطيّن[375] وإما زجاج مطين الجميع ويصب[376] عليه ماء عذب ويعلق[377] على نار لينة حتى يذهب نصف الماء ويبرده أيضا ويقلب عليه ماء جديد ويفعل به كالاول[378] أبدا مرارا كثيرة حتى يصير[379] حجرا جامدا أبيضا كأنه البلور أحسن ما خلق الله تعالى عز وجل[380] فإنه أفلاطن[381]

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[364] عشرين درهما [ب، ق] : عشرة دراهم [ط].

[365] درهمين [ب، ق] : درهما [ط].

[366] دوائك الذي دبرت [ب، ق] : ذلك الدواء المدبر [ط].

[367] الله [ب، ق] : + عز وجل [ط].

[368] ذهبة [ب] : ذهبية [ق].

[369] ذهبة لا شك فيه فاحمد الله عز وجل وهذا معنى قول الحكماء دبر الحجر بالحجر منه وبه قالوا دبر الحجر بالحجر وذلك إنما قالوا [ب، ق] : والوجه [ط].

[370] سبق [ب، ق] : يسبق [ط].

[371] جميع [ب، ق] : --- [ط].

[372] حق [ب، ق] : وحق [ط].

[373] وكشفت [ب، ق] : + لك [ط].

[374] بأن [ب، ق] : أن [ط].

[375] مطيّن [ب، ق] : منطف [ط].

[376] مطين الجميع ويصب [ب، ق] : محكم ونصف [ط].

[377] ويعلق [ب، ق] : ويغلى [ط].

[378] ويبرده أيضا ويقلب عليه ماء جديد ويفعل به كالاول [ب، ق] : ويبرد ويصب الماء عنه يفعل به ذلك [ط].

[379] حتى يصير [ب، ق] : فإنه يبين ويصير [ط].

[380] تعالى عز وجل [ب] : عز وجل [ق] : --- [ط].

[381] فإنه أفلاطن [ب، ق] : أما أفلاطون فإنه [ط].

يقول إن سقراط كان لا[382] يرى غيره ولم ير ولنا[383] ذلك عن سقراط وأحسب فلاطن أخذ ذلك[384] عنه تلقينا في أوقات خلواته وأما فرفيريوس[385] فيقول في ذلك إن واليس الأول قال وأندرماخس[386] الأول الحبر[387] القديم العهد[388] [ق-24ب] ويقول ذلك إن[389] تدبير الطبيعة بالطبيعة[390] وهو معنى قول القديم[391] دبر الحجر بالحجر يعنون به[392] الزيبق بالماء تكون والماء[393] يصير زيبقا والزيبق يعون[394] ماء وهذا معنى عنده فيما قال به القوم في ذلك الرمز فاعرفه واعمله عليه تصب الطريق الحق واضحا للسلوك[395] وهو[396] تدبير النحاس بالروسختج[397] [ب-35ب] والزنجار التوتياء وذلك أن الزنجار قد يؤجد معدنيا ويستخرج عملا[398] بالملوحات والحموضات وكذلك القلقند يؤجد معدنيا ويستخرج عملا[399] واستخرج[400] القدماء كثير[401] من هذه الأجساد الذائبة [ط-62ب] بعضها من بعض وقالوا إن الذهب إذا أديم إسخانه بسخونة لينة[402] عاد زيبقا والزيبق إذا أديم اسخانه بسخونة[403] لينة عاد ذهبا جل الله

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[382] لا [ب، ق] : --- [ط].

[383] ير ولنا [ب، ق] : ير والنا (؟) [ط].

[384] عن سقراط وأحسب فلاطن أخذ ذلك [ب، ق] : عنه واجب أنه أخذه [ط].

[385] فرفيريوس [ب، ق] : فيثاخورس [ط].

[386] قال وأندرماخس [ب] : قال ماندرماخس [ق] : إن أندرماخس [ط].

[387] الحبر [ب، ق] : --- [ط].

[388] العهد [ب، ق] : دبر ذلك [ط].

[389] ذلك إن [ب، ق] : كذلك [ط].

[390] بالطبيعة [ب، ق] : --- [ط].

[391] القديم [ب، ق] : القوم [ط].

[392] يعنون به [ب، ق] : يعون [ط].

[393] بالماء تكون والماء [ب، ق] : بالزيبق لأن الزيبق من الماء يكوّن فالماء [ط].

[394] يعون [ب] : يعود [ق، ط].

[395] وهذا معنى عنده فيما قال به القوم في ذلك الرمز فاعرفه واعمله عليه تصب الطريق الحق واضحا للسلوك [ب، ق] : --- [ط].

[396] وهو [ب، ق] : + تفسير [ط].

[397] بالروسختج [ب، ق] : بالروستخت [ط].

[398] عملا [ب، ق] : --- [ط].

[399] يؤجد معدنيا ويستخرج عملا [ب، ق] : يكون معدنيا ويكون عمليا وقد [ط].

[400] واستخرج [ب] : واستخراج [ق] : استخرج [ط].

[401] كثير [ب، ق] : كثيرا [ط].

[402] أديم إسخانه بسخونة لينة [ب، ق] : أسخنه سخونة رقيقة [ط].

[403] بسخونة [ب، ق] : سخونة [ط].

تعالى[404] ما أعجب انقلاب[405] هذه الأشياء[406] وأظرفها قال لما كان الماء هو أول وكان بطبع الزيبق صار لهما الانتقال فادخل بعضها على بعض[407] بالزيادة بالطبع فحصل لهما ولا سيما السخونة اللينة المشاكلة فإنهما حينيذ ينقلبان إلى الضد[408] فإن أمكنك أن تدخل على كل شيء وتدبره[409] ما يزيله وينقله عن جوهره وصورته إلى جوهر وصورة[410] غير تلك الأولة[411] أمكنك أن تعمل الإكسير الأعظم في ساعة من نهار يوم[412] أو ليلة وهذا من طريق الكيفية وهو أسرع وأعجب وأنفع من العمل الطويل وهو ثمرة الميزان فاعلم ذلك أن[413] درهم التراكيب درهم واحد ودرهم الإكسير دراهم كثيرة

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قد بينا لك[414] ذلك في[415] غير كتاب من كتب الموازين واعلم أنا قد ألفنا هذه الكتب السبعة لتوصل بها إلى أمر[416] عظيم وجعلنا هذا الكتاب أميرها[417] فينبغي[418] أن تجمع هذه الكتب السبعة وتدرسها كما نأمرك وهو أن تبدأ[419] بكتاب الأسرب والقلعى ثم كتاب[420] الحديد والخار [ب-36أ] ثم كتاب الفضة

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[404] تعالى [ب، ق] : مبارك وتعالى [ط].

[405] انقلاب [ب، ق] : انتقال [ط].

[406] الأشياء [ب، ق] : + وأعجزه [ط].

[407] بعض [ب، ق] : + في [فاب].

[408] قال لما كان الماء هو أول وكان بطبع الزيبق صار لهما الانتقال فادخل بعضها على بعض بالزيادة بالطبع فحصل لهما ولا سيما السخونة اللينة المشاكلة فإنهما حينيذ ينقلبان إلى الضد [ب، ق] : --- [ط].

[409] وتدبره [ب، ق] : تدبيره [ط].

[410] إلى جوهر وصورة [ب، ق] : --- [ط].

[411] الأولة [ب، ق] : الأولى [ط].

[412] من نهار يوم [ب، ق] : واحدة بالنهار [ط].

[413] أن [ب، ق] : وإن [ط].

[414] لك [ب، ط] : --- [ق].

[415] ذلك في [ب، ق] : في ذلك [ط].

[416] أمر [ب، ق] : كنز [ط].

[417] وجعلنا هذا الكتاب أميرها [ب، ق] : وقربنا كل سر منها في موضع تقريبا وقربنا كتاب الذهب بكتاب الفضة وكتاب الأسرب بكتاب القلعى وكتاب الحديد بكتاب [ط-63أ] الخار وأفردنا هذا الكتاب بلا قرين له منها بل هو قرينها كلها وحاكم عليها وأمير فيها [ط].

[418] فينبغي [ب، ق] : + لك [ط].

[419] تبدأ [ب، ق] : تبتدئ [حاط] : ابتدأ [ط].

[420] كتاب [ب، ق] : بكتاب [ط].

والذهب[421] ثم بهذا الكتاب وتجمع[422] ما ذكرنا فيها[423] مبددا أو إقلاب أشياء في أشياء في سرعة[424] زمان.

[421] كتاب الفضة والذهب [ب، ق] : بكتاب الذهب والفضة [ط].

[422] وتجمع [ق، ط] : ونجمع [ب].

[423] فيها [ب، ط] : فيه [ق].

[424] مبددا أو إقلاب أشياء في أشياء في سرعة [ب، ق] : متبددا من الخواص وهو تقليب أشياء بأشياء في أسرع [ط].

[ب] MS Paris BnF Arabe 2606, ff. 38a-41b
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 26a-28b
[ط] MS Tehran Mağlis 729, ff. 32b-37a

كتاب الحديد[1]

بسم الله الرحمن الرحيم[2]

Bibliographical information

قال جابر عليه الرحمة بعد تحميد الله عز اسمه[3]إنا لما ألفنا كتب[4] الموازين أعني[5] المائة أربع وأربعين[6] كتابا جعلنا[7] زبدة[8] [ط-33أ] وقواعد[9] هي أفضلها وهي الاثنان وثلاثون كتابا وقلنا إن في قرأتها غناء[10] وكفاية وهي كذلك ولكن الرمز[11] لا بد منه[12] [ق-26ب] والتدهيش لا بد من فعله لئلا يأخذ هذا الأمر من لا يستحق أو يصير إلى من لا يستأهله[13] وهكذا جرت عادت الحكماء[14] [ب-38ب] في طريق[15]

[1] كتاب الحديد [ب، ق] : + وهو المنسوب إلى المريخ من كتب الأجساد السبعة الذائبة المنسوب إلى الكواكب السبعة في التراكيب وعلم الميزان [ط].

[2] بسم الله الرحمن الرحيم [ب، ط] : --- [ق].

[3] قال جابر عليه الرحمة بعد تحميد الله عز اسمه [ب] : قال جابر عليه الرحمة بعد تحميد الله عز وجل [ق] : الحمد الله الذي ليس كمثله بشيء وهو السميع البصير وصلى الله على محمد وآله الطاهر من وسلم [ط].

[4] كتب [ب، ط] : كتاب [ق].

[5] أعني [ب، ق] : --- [ط].

[6] أربع وأربعين [ب، ق] : والأربعة والأربعين [ط].

[7] جعلنا [ب، ق] : + بها [ط].

[8] زبدة [ق، ط] : زيدة [ب].

[9] وقواعد [ب، ق] : وفوائدا [ط].

[10] غناء [ب، ق] : غنى [ط].

[11] الرمز [ب، ق] : الرموز [ط].

[12] منه [ب، ق] : منها [ط].

[13] لا بد من فعله لئلا يأخذ هذا الأمر من لا يستحق أو يصير إلى من لا يستأهله [ب، ق] : --- [ط].

[14] الحكماء [ب، ق] : + القدماء [ط].

[15] طريق [ب، ق] : --- [ط].

كلامهم على[16] هذه الصناعة فلما كان ذلك كذلك وكنا نحن[17] ايضا[18] قد سلكنا طريق القدماء[19] في ذلك لم يكن بد في تلك[20] الاثنين وثلاثين[21] كتابا أيضا من كتب تكون فيها صفوة ما في تلك[22] الكتب فجعلت ذلك[23] في كتبي[24] هذه السبعة وجعلتها[25] تمّة[26] للكتب الموازين كلها الاثنين وثلثين[27] والمائة أربعة وأربعين[28] وحق سيدي[29] قد[30] كشفت فيها ما لم يذكره أحد[31] قط ظنّا به[32] وإشفاقا على الناس فخالفت الجميع في ذلك وعملت[33] ضد ما عملوا وأقرب فهما أعني[34] هذه[35] السبعة ما لم ينطق به أحد[36] فإذا قرأتها[37] واعرف مقدارها وفقنا الله وإياك فأول ما ألفنا[38] كتاب الذهب ثم يتلوه كتاب[39] الفضة ثم بكتاب

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[16] على [ب، ق] : + طريق [ط].
[17] نحن [ب] : --- [ق، ط].
[18] أيضا [ب، ق] : --- [ط].
[19] طريق القدماء [ب، ق] : طريقهم [ط].
[20] في ذلك [ب، ق] : لذلك [ط].
[21] الاثنين وثلاثين [ب، ق] : الاثنين والثلاثين [ط].
[22] تلك [ط] : ذلك [ب، ق].
[23] ذلك [ب، ق] : تلك الصفوة [ط].
[24] كتبي [ب، ق] : كتبنا [ط].
[25] وجعلتها [ب، ق] : وجعلناها [ط].
[26] تمّة [ب] : تتمة [ق] : فهمة [ط].
[27] وثلاثين [ب، ق] : والثلاثين [ط].
[28] أربعة وأربعين [ب، ق] : الأربعة والأربعين [ط].
[29] سيدي [ب، ق] : سيدنا [ط].
[30] قد [ب، ق] : --- [ط].
[31] أحد [ب، ق] : أحدا [ط].
[32] ظنّا به [ب، ق] : صيانة [ط].
[33] وعملت [ب، ق] : وعملنا [ط].
[34] وأقرب فهما أعني [ب، ق] : وقربنا ما يعدوا وتكلمنا في [ط].
[35] هذه [ب، ق] : + الكتب [ط].
[36] أحد [ب، ق] : + قطعا قط [ط].
[37] قرأتها [ب، ق] : + فاحسن بتفهمها وتدبيرها [ط].
[38] ألفنا [ب، ق] : + منها [ط].
[39] يتلوه كتاب [ب، ق] : تلوناه بكتاب [ط].

النحاس[40] ثم بكتاب الحديد وهو هذا[41] ثم كتاب الرصاص القلعي ثم كتاب[42] [ط-33ب] الأسرب ثم كتاب الخارصيني[43] وستعلم[44] عند استتمامك[45] قرأتها أنك ستجد من نفسك في المعرفة ما لم تكن واجده[46] فيما قبل سهّل الله لك أمورك بقدرته[47]

Nature of iron

وأنا أقرّر[48] الكلام في[49] طبع الحديد وأفعاله كما فعلت[50] في غيره من هذه الكتب[51] فأقول إن الحديد بارد[52] فهو أقرب الأقاويل فيه لأنه قد قيل فيه[53] حار يابس وذلك إنما الوجوه[54] فيه العلتين[55] أحدهما[56] أنه نسب[57] إلى كوكب[58] المريخ لمشاكلته[59] قالوا فالمريخ حار يابس والثانية[60] زعموا التوليد[61] الحمرة

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[40] ثم بكتاب النحاس [ب، ق] : --- [ط].
[41] هذا [ب، ق] : + الكتاب [ط].
[42] كتاب [ب، ق] : تلوناه بكتاب [ط].
[43] الخارصيني [ب، ق] : الخار [ط].
[44] وستعلم [ب، ق] : وستعلمه [ط].
[45] استتمامك [ب، ق] : استتمام [ط].
[46] واجده [ق، ط] : واحدة [ب].
[47] أمورك بقدرته [ب، ق] : --- [ط].
[48] أقرر [ب، ق] : نقرر [ط].
[49] في [ب، ق] : على [ط].
[50] فعلت [ب، ق] : فعلنا [ط].
[51] الكتب [ب، ق] : + السبعة [ط].
[52] بارد [ب، ق] : + يابس [ط].
[53] فيه [ب، ق] : + إنه [ط].
[54] وذلك إنما الوجوه فيه [ب] : وذلك إنما لوجود فيه [ق] : وإنما الرموز(؟) ذلك [ط].
[55] العلتين [ب، ق] : لعلتين [ط].
[56] أحدهما [ب، ق] : فالعلة الأولى [ط].
[57] نسب [ب، ق] : منسوب [ط].
[58] كوكب [ب، ق] : --- [ط].
[59] لمشاكلته [ب، ق] : + له [ط].
[60] والثانية [ب، ق] : فالعلة الثانية [ط].
[61] زعموا التوليد [ب، ق] : تولد (؟) [ط].

بتكونه[62] زعفرانا أحمرا[63]وذلك غير واجب لأنه قد[64] يمكن أن يقال في[65] جواب ذلك[66] العلتان[67] كلاهما[68] أما أولا [69]فإن الكواكب ليس فيها حار ولا يابس[70] ولا رطب ولا بارد[71] [ب-39أ] وإنما ينسب[72] إلى المريخ بصرامته[73] واستعمال الناس له كثير في المهن[74] والصناعات التي لا بد منها وفيها بالنار[75] فأما الحجة الثانية فإنه إنما[76] حال[77] الحديد إلى الزعفران لما خالط[78] طباعه[79] وأحاله إلى الحرارة والجواب [ق-27أ] في توليد الحمرة فلأن كل بارد الظاهر فإن باطنه حار[80] [ط-34أ] بغير شك بالعكس[81] مما أوجبت[82] إخراج باطنه ولد[83] الحمرة وإلا فليس إنما يولد الحمرة[84] في جميع[85] الأشياء لكن قد تولّد[86] أيضا البياض[87]

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[62] بتكونه [ب، ق] : ويستلوّن [ط].
[63] أحمرا [ب، ق] : أحمر [ط].
[64] لأنه قد [ب، ق] : --- [ط].
[65] في [ب، ق] : --- [ط].
[66] ذلك [ب، ق] : تلك [ط].
[67] العلتان [ب، ق] : العلتين [ط].
[68] كلاهما [ب، ق] : كليتهما [ط].
[69] أولا [ب، ق] : الجواب الحجة الأولى [ط].
[70] ولا يابس [ب، ق] : --- [ط].
[71] بارد [ب، ق] : + ولا يابس [ط].
[72] ينسب [ب، ق] : نسبت الحديد [ط].
[73] بصرامته [ب، ق] : لصرامته [ط].
[74] المهن [ب، ق، ط] : المجن [فاط].
[75] منها وفيها بالنار [ب، ق] : فيها من النار [ط].
[76] فإنه إنما [ب، ق] : فإنما [ط].
[77] حال [ب، ق] : أحال [ط].
[78] خالط [ب، ق] : مخالطه [ط].
[79] طباعه [ب، ق] : طبائعه الحار [ط].
[80] حار [ب، ق] : + وكل حار الظاهر [ط-34أ] فإن باطنه بارد [ط].
[81] بالعكس [ب، ق] : فوجب أنه لما مزج الحديد بغيره [ط].
[82] مما أوجبت [ب، ق] : ما أوجب [ط].
[83] ولد [ب، ق] : أن يولد [ط].
[84] وإلا فليس إنما يولد الحمرة [ب، ق] : وإلا فلقد يولد الحمرة [حاط] : --- [ط].
[85] في جميع [ب، ق] : لجميع [ط].
[86] تولّد [ب، ق] : يولد [ط].
[87] البياض [ب، ق] : للبياض [ط].

مثل أن[88] يستنزل ويلين ويمازج به الرصاص[89] وموزج بهما الفضة[90] كان واحد[91] وعمل في الرصاص القلعى[92] عملا حسنا وذلك أنه ليس يمكن أن يمازج[93] الرصاص القلعى[94] والفضة ويخلطان[95] ولا يتغيران إلا أن يكون الرصاص قد عمل فيه شيئا أوجب ذلك لما فيه[96] من[97] البعد من الفضة من[98] العلوم الأوائل في العقل[99] لأكثر الناس وهذا[100] غير شك وإنما عمل فيه بياضا[101] عجيبا أدناه به[102] من الفضة فاعلم ذلك وهو[103] غير داخل في الأكاسير الكبار لأنه يجري[104] في الذاتية[105] ولا يقارب لا[106] الذهب ولا الفضة لكنه إلى الذهب زعموا لإفراط[107] صبغه ولو كان الامر كما يظنون لبان له عمل وذلك معدوم فيه[108] لشدة[109] يبسه يبيّن فيه[110] أكل أوساخ العيون وإبراءه[111] لاقتدائها[112] وإنارة[113] [ط-34ب]

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[88] أن [ب، ق] : أنه [ط].

[89] الرصاص [ق، ط] : للرصاص [ب].

[90] وموزج بهما الفضة [ب، ق] : والفضة بهما [ط].

[91] كان واحد [ب، ق] : كانت واحدا [ط].

[92] الرصاص القلعى [ب، ق] : الرصاصين الأسرب والقلعى [ط].

[93] يمازج [ب، ق] : يخلط [ط].

[94] القلعى [ب، ق] : بالقلعى [ط].

[95] ويخلطان [ب، ق] : فيخلطان [ط].

[96] فيه [ب، ق] : في الرصاص [ط].

[97] من [ب، ق] : --- [ط].

[98] من [ب، ق] : وذلك هو [ط].

[99] العقل [ب، ط] : الفعل [ق].

[100] وهذا [ب، ق] : من [ط].

[101] فيه بياضا [ب، ق] : الحديد فيه الرصاص بياضا حسنا [ط].

[102] به [ب، ط] : --- [ق].

[103] وهو [ب، ق] : والحديد [ط].

[104] يجري [ب، ق] : + دونها [ط].

[105] الذاتية [ب، ق] : الرتبة [ط].

[106] لا [ب، ق] : --- [ط].

[107] لكنه إلى الذهب زعموا لإفراط [ب، ق] : وقد زعموا أنه من الذهب إفراط [ط].

[108] فيه [ب، ق] : منه [ط].

[109] لشدة [ب، ق] : ولشدة [ط].

[110] يبين فيه [ب، ق] : --- [ط].

[111] وإبراءه [ب، ق] : وإبراز [ط].

[112] لاقتدائها [ب، ق] : أقذارها [ط].

[113] وإنارة [ب، ق] : وإبراء [ط].

لأرماصها[114] ونافع[115] للجرب العارض فيها وللسبل[116] [ب-39ب] وثقل الأجفان وهو العارض فيها وهو في[117] الطعوم حامض يشوب حموضته شيء من مرارة[118] وسواده في جسده لا في روحه وروحه حمراء بيضآء فيها تبييض وفيها[119] تحمير وتبييض[120] من أرادها للتبييض[121] وجد ذلك فيها ومن أرادها للتحمير[122] وجد ذلك فيها ودواؤه[123] الأكبر في التليين[124] بالزرنيخ فإن جمعا له أعني[125] الزرنيخين كان أبلغ في تليينه وهو إكسير بليغ للرصاص القلعى[126] فإن كانا أبيضين قد نقيا خرج الرصاص[127] أبيض وإن كان أسودين كلاهما[128] خرج أسود لكن[129] فيه عمل وفائدة ومنفعة وإن كانت يسيرة فهي مما فيه بلغة وبلاغ إلى منتهى لا نهاية بعده مثل النار والحل فإنه منتهى الأشياء[130] والحديد يتولد في معدنه من كبريت وزيبق جامعتين[131] شديدي الحدة[132] والحرارة[133] مع حموضتهما[134] لأن الحموضة شيء[135] تحذّر[136]

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[114] لأرماصها [ب، ق] : مدارمانها (؟) [ط].
[115] ونافع [ب، ق] : هو ونافع [ط].
[116] للسبل [ب] : السبل [ق، ط].
[117] العارض فيها وهو في [ب، ق] : من [ط].
[118] مرارة [ب، ق] : الحرارة [ط] : المرارة [فاط].
[119] فيها تبييض وفيها [ب، ق] : --- [ط].
[120] تحمير وتبييض [ب، ق] : يحمر و يبيض [ط].
[121] للتبييض [ب] : للتبيض [ق] : للتحمير [ط].
[122] للتحمير [ب، ق] : للتبييض [ط].
[123] ودواؤه [ط] : وداؤه [ب، ق].
[124] التليين [ب، ق، هاط] : التبييض [ط].
[125] أعني [ب، ق] : --- [ط].
[126] القلعى [ب، ق] : --- [ط].
[127] فإن كانا أبيضين قد نقيا خرج الرصاص [ب، ق] : لا [ط].
[128] كلاهما [ب، ق] : كليهما [ط].
[129] لكن [ب، ق] : ذلك [ط].
[130] إلى منتهى لا نهاية بعده مثل النار والحل فإنه منتهى الأشياء [ب، ق] : --- [ط].
[131] جامعتين [ب، ق] : --- [ط].
[132] الحدة [ب، ق] : الحرارة [ط].
[133] والحرارة [ب، ق، ط] : والمرارة [تاط].
[134] مع حموضتهما [ب، ق] : الحموضة [ط].
[135] الحموضة شيء [ب، ق] : في الحموضة شيئا [ط].
[136] تحذّر [ب، ق] : يحدث منه [ط].

الجسد[137] من برد يناله[138] وهو[139] [ق-27ب] شديد صارم حادّ[140] نافع صار بخبثه نحسا[141] وربما[142] انتقل[143] الى طبع السعود

Occult properties of iron

فأعطى[144] العطايا الكبار وفيه خواص نافعة عجيبة وأعجب خواصه أنه[145] متى خالطها[146] أي جسم[147] كان من الذاتية[148] زاد في قوته وإقامته[149] على الروباص[150] [ط-35أ] إلا الذهب فإنه عدّوه متى[151] خالطه أفسده وأخرج[152] رطوبته السائلة[153] الماسكة له عنه[154] حتى [ب-40أ] ينحاز[155] عنه فيزول ذلك التفتّت منه وهو في قسم المريخ بكذا جعلته الحكماء لصرامته ولخشونته[156] والمريخ[157] جميع الأشياء الحمراء لناصعة الحمرة والحارة الرائحة[158] والذبائح[159] وسفك الدم[160] والذبح والسلخ والسيف

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[137] الجسد [ب، ق] : جسد [ط].
[138] برد يناله [ب، ق] : بين كد توبال [ط] :بين كتوبال [تاط].
[139] وهو [ب، ق] : + حديد [ط].
[140] حادّ [ب، ق] : حارّ [ط].
[141] صار بخبثه نحسا [ب، ق] : ضار سعد نحس [ط].
[142] وربما [ب، ق] : فإذا [ط].
[143] انتقل [ب، ق، فاط] : انقلب [ط].
[144] فأعطى [ب، ق] : وأعطى [ط].
[145] أنه [ب، ق] : --- [ط].
[146] خالطها [ب، ق] : خالط [ط].
[147] جسم [ب، ق] : جسد [ط].
[148] الذاتية [ب، ق] : الذائبة [ط].
[149] وإقامته [ب، ق] : وأقامه [ط].
[150] الروباص [ق، ط] : الروباس [ب].
[151] متى [ب، ق] : ومتى [ط].
[152] وأخرج [ب، ق] : + عنه [ط].
[153] السائلة [ب، ق] : الساكنة في [ط].
[154] عنه [ب، ق] : --- [ط].
[155] ينحاز [ب، ق] : --- (there is a blank for a word) [ط].
[156] ولخشونته [ب، ق] : ونحوسته (؟) [ط].
[157] والمريخ [ب، ق] : + له [ط].
[158] الرائحة [ب، ق] : + وله [ط].
[159] والذبائح [ب، ق] : + والقرابين [ط].
[160] الدم [ب، ق] : الدماء [ط].

والسكاكين[161] ومن[162] الحجارة كل حار محرق[163] مثل الكباريت المرقشيثا[164] والياقوت الأحمر وفي[165] الأشجار كل شجرة حارة حريفة[166] والحيات والعقارب والسياع ويوم الثلاثاء[167] وقيادة الجيوش والقصابة والوقادون[168] وجميع[169] الأعمال[170] بالنار والجنازون[171] وجميع[172] العقاقير مما يكون له[173] على النار[174] ثبات أو بقاء[175] فهو يصلح للحديد[176] ويوافقه[177] وينفعه وينفع فيه فافهم ذلك فإنك[178] ستقف على معنى قالنا[179] كوكب[180] المريخ وما[181] هو وما له من الأشياء[182] ومن خواص الحديد أنه أن يبيض[183]

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[161] والذبح والسلخ والسيف والسكاكين [ب، ق] : --- [ط].
[162] ومن [ب، ق] : وله من [ط].
[163] الحجارة كل حار محرق [ب، ق] : الأحجار كل حجر محرق حار [ط].
[164] المرقشيثا [ق، ط] : المرقشيثاء [ب].
[165] وفي [ب، ق] : وله من [ط].
[166] شجرة حارة حريفة [ب، ق] : شجر حريف حار وله من والحيوان [ط].
[167] ويوم الثلاثاء [ب، ق] : وله من الأيام الثلاثاء [ط].
[168] وقيادة الجيوش والقصابة والوقادون [ب، ق] : --- [ط] : + والجنازون [ق].
[169] وجميع [ب، ق] : وله جميع [ط].
[170] الأعمال [ب، ق] : + التي تعمل [ط].
[171] والجنازون [ب] : --- [ق، ط].
[172] وجميع [ب، ق] : وله جميع [ط].
[173] مما يكون له [ب، ق] : التي [ط].
[174] النار [ب، ط] : + له [ق].
[175] بقاء [ب، ق] : عمل [ط].
[176] للحديد [ب، ق] : الحديد [ط].
[177] ويوافقه [ب، ط] : --- [ق].
[178] فإنك [ب] : فإنه [ق] : وإنك [ط].
[179] قلنا [ب، ق] : ذكرنا [ط].
[180] كوكب [ب، ق] : --- [ط].
[181] وما [ب، ق] : ما [ط].
[182] الأشياء [ب، ق] : + إن شاء الله تعالى [ط].
[183] أن يبيض [ب، ق] : مبيض [ط].

قبل[184] التحمير بيض الرصاص وشده[185] وقواه واذهب[186] بصريره ورائحته فلا نرى[187] أن الحديد[188] مفرط اليبس وكان الرصاص مفرط الرخاوة اتفق أن يقابله[189] على استواء ومعنى الاستواء[190] [ط-35ب] هو المقابلة بالكيفيتين بحسب درجاتهما ومراتبهما[191]

The opposite to iron

هكذا[192] مقابلة[193] الحديد القلعى يوافقه[194] نهاية الموافقة وإبراء[195] سفمه ونهاية[196] البرء وذلك أن القلعى جسد أبيض رطب رخو صرّاد متخشخش متخلخل[197] وهذه[198] كلها علامات الرطوبة وفي الحديد شدة وصرامة ويبس وأكل لما يلقاه[199] فكانا متقابلين [ب-40ب] وليس من المقابلة الواحد والتسعة فإنه يحدث من نصف مجموعها الخمسة التي هي الوسط[200] وليس كل مقابلين يفعل في احدهما فعل[201] في الآخر مثل هذا الفعل حتى يكون[202] مقابلتهما[203] متجانسين[204] ومعنى ذلك أن يكون في أحدهما أجزاء

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[184] قبل [ب، ق] : بعد [ط].
[185] وشده [ب، ق] : وشدّده [ط].
[186] واذهب [ب، ق] : وذهب [ط].
[187] فلا نرى [ب، ق] : أولا ترى [ط].
[188] الحديد [ب، ق] : + لما كان [ط].
[189] يقابله [ب، ق] : يقابلا [ط].
[190] ومعنى الاستواء [ب، ق] : --- [ط].
[191] درجاتهما ومراتبهما [ب، ق] : ومراتبهما ودرجاتها [ط].
[192] هكذا [ب، ق] : فهكذا اتفقت [ط].
[193] مقابلة [ب، ق، ط] : مماثلة [فاط].
[194] يوافقه [ب، ق] : فوافقه [ط].
[195] وإبراء [ب، ق] : وإبرائه من [ط].
[196] ونهاية [ب، ق] : نهاية [ط].
[197] متخشخش متخلخل [ب، ق] : متحس(؟) [ط].
[198] وهذه [ب، ق] : هذه [ط].
[199] وفي الحديد شدة وصرامة ويبس وأكل لما يلقاه [ب، ق] : والحديد جسد أسود شديد يابس صارم يأكل كل ما يلقاه وهذه كلها علامات اليبوسة [ط].
[200] وليس من المقابلة الواحد والتسعة فإنه يحدث من نصف مجموعها الخمسة التي هي الوسط [ب، ق] : --- [ط].
[201] فعل [ب، ق] : --- [ط].
[202] يكون [ب، ط] : تكون [ق].
[203] مقابلتهما [ب] : متقابلتهما [ق] : تقابلهما [ط].
[204] متجانسين [ب، ق] : متجانسا [ط].

معلومة من الحرارة وأجزاء مقلومة من[205] [ق-28أ] اليبس[206] ويكون في الأجزاء[207] اجزاء معلومة من البرد[208] مثل تلك الاجزاء الحارة[209] سواء فيقع التقابل على حقيقة المقابلة فتبين الفعل بلا تاخّر ولا ابطاء بل[210] في وقت واحد في[211] طرفة عين فافهم ما نريد بذلك

Four humours

واعلم إنما نريد تقابل أخلاط بدن الإنسان وتقابل الأمراض والأدوية وتقابل الطبائع والمطبوعات لا يزيد بذلك شيئا سوى دلالتك على الميزان وهدايتك إليه[212] لأن مقابل[213] كل شيء وهو[214] ضده[215] [ط-36أ] ومماثلة هو[216] شكله أو مقاربه[217] وفصول المقابلة مختلفة[218] وفصول المماثلة واحدة فمقابل كل حار بارد ومقابل كل رطب يابس لأن مقابل[219] كل شيء هو ضده ومقابل[220] المركب منها أن يكون[221] مقابل كل حار يابس بارد رطب[222] وبالعكس[223] فإن[224] مقابل الصفراء البلغم ومقابل السوداء دم[225] فإن

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[205] وأجزاء مقلومة من [ب، ق] : --- [ط].
[206] اليبس [ب، ق] : واليبس [ط].
[207] الأجزاء [ب، ق] : الآخر [ط].
[208] البرد [ب، ق] : البرودة والرطوبة [ط].
[209] الحارة [ب، ق] : + اليابسة [ط].
[210] بل [ب، ق] : --- [ط].
[211] في [ب، ق] : وفي [ط].
[212] وهدايتك إليه [ب، ط] : ودلالتك عليه [ق].
[213] مقابل [ب، ق] : المقابل [ط].
[214] وهو [ب، ق] : هو [ط].
[215] ضده [ب، ق] : + ومقارنه [ط].
[216] هو [ب، ق] : وهو [ط].
[217] شكله أو مقاربه [ب] : شكل أو مقارب [ق] : مشاكله [ط].
[218] وفصول المقابلة مختلفة [ب، ق] : --- [ط].
[219] لأن مقابل [ب، ق] : ومقابل [ط].
[220] كل شيء هو ضده ومقابل [ب، ق] : --- [ط].
[221] يكون [ب، ق] : تكون [ط].
[222] بارد رطب [ب، ق] : باردا رطبا [ط].
[223] وبالعكس [ب، ق] : ومقابل كل حار رطب باردا يابسا [ط].
[224] فإن [ب، ق] : ومثال ذلك أن [ط].
[225] دم [ب، ق] : الدم [ط].

أدوية[226] العلل الصفراوية ماء الخيار والقرع [ب-41أ] والبقلة وماء الشعير وماء الرايب ولعاب بزر قطونا[227] ومقابل[228] العلل الدموية والأشياء[229] الباردة اليابسة السوداية[230] ليكون كل جزء من الدواء مقابل الجزئية من العلة[231] وكل[232] جزء من العلة مقابل جزئه[233] من الدواء ومن الدواء للدم[234] الطباشير والخل والرمان والجلنار والورد والكافور والحماض وما أشبه ذلك ومقابل كل علل السوداء[235] الأشياء الحارة الرطبة[236] الدموية مثل البصل والجرجير[237] والماء الحار وماء العسل وشرابه وما أشبه ذلك ومقابل الأشياء[238] البلغمية والأشياء الباردة الصفراوية الحارة اليابسة كالجندبيدستر[239] والجاوشير[240] والعسل والحلتيت والجوز والبندق وحبة الخضراء وما أشبه ذلك فهذا[241] في البسائط[242]

Transmutation of metals

فأما أجساد[243] الذائبة فهذا التقابل فيها موجود ولولا أن ذلك فيها[244] ما[245] أمكن أن ينتقل بعضها الى

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[226] أدوية [ب، ق] : مقابل [ط].

[227] ماء الخيار والقرع والبقلة وماء الشعير وماء الرايب ولعاب بزر قطونا [ب، ق] : الأشياء المائعة البلغمة [ط].

[228] ومقابل [ب، ق] : وإن مقابل [ط].

[229] الدموية والأشياء [ب] : الدمومية [ق] : السوداوية [ط].

[230] السوداوية [ب، ق] : الأشياء الهوائية الحارة الرطبة [ط].

[231] الجزئية من العلة [ب، ق] : --- [ط].

[232] وكل [ب، ق] : كل [ط].

[233] من العلة مقابل جزئه [ب، ق] : --- [ط].

[234] ومن الدواء للدم [ب، ق] : الأدوية المقابلة للصفراوي ماء الخيار والقرح والبقلة وماء شعير وماء الرايب ولعاب البزر القطونا وماء أشبه ذلك وإن مقابل العلل الدموية الأشياء الأرضية السوداوية الباردة اليابسة مثل [ط].

[235] كل علل السوداء [ب، ق] : العلل السوداوية [ط].

[236] الحارة الرطبة [ب، ق] : الهوائية [ط].

[237] والجرجير [ب، ق] : والحرف [ط].

[238] الأشياء [ب، ق] : العمل [ط].

[239] كالجندبيدستر [ب، ق] : مثل الجندبيدستر [ط].

[240] والجاوشير [ب، ق] : + والسكمنبع [ط].

[241] فهذا [ب، ق] : + ما [ط].

[242] البسائط [ب، ق] : + فاعرف ذلك [ط].

[243] أجساد [ب، ق] : الأجساد السبعة [ط].

[244] فيها [ب، ق] : --- [ط].

[245] ما [ب، ط] : لما [ق].

بعض إلا لو أن[246] باطن كل واحد منها في طبع جسد غيره لم ينقلب إليه[247] لا بالكيفية ولا بالكمية[248]لما كان لها وفيها هذا التقابل انتقل بعضها إلى بعض[249] أو انقلب[250] [ق-28ب] بعضها إلى بعض كما تتقلب الحنطة دماء واللبن لحما[251] وعصبا وعروقا لكن انتقالها وانقلابها إلى ما ينتقل وينقلب إليه وهو[252] على[253] معنى[254] انتقال [ب-41ب] تلك الأشياء وانقلابها ذلك[255] إذن الانتقال والانقلاب[256] يكون[257] إما باستحاله[258] وهو الحق فيما ينقلب وإما[259] بالظهور بعد الكمون وهو كذلك في بعض الأشياء لا في كلها وبدار[260] الانقلاب في الأجساد الذائبة إنها تنقلب فتنتقل[261] بفعل فاعل قاهر لها ينقلها في طرفة عين وهو فعل نفس الحادث [ط-37أ] الظاهر بالخاصية الحادية الظاهرة عن الطبع الذي أوجبته الكمية والذي أوجب الكمية من المقدار الذي[262] هو في[263] الوزن فافهم ذلك[264]

[ب] MS Paris BnF Arabe 2606, ff. 42a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 28b-29a
[ط] MS Tehran Mağlis 729, ff. 37b

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[246] إلا لو أن [ب] : الألوَان [ق] : --- [ط].
[247] باطن كل واحد منها في طبع جسد غيره لم ينقلب إليه [ب، ق] : --- [ط].
[248] بالكمية [ب، ق] : + ولكن [ط].
[249] بعض [ب، ق] : + بالكيفية وبالكمية [ط].
[250] أو انقلب [ب، ق] : وانقلب [ط].
[251] واللبن لحما [ب، ق] : ولحما [ط].
[252] وهو [ب، ق] : هو [ط].
[253] على [ب، ق] : + ما [ط].
[254] معنى [ب، ق] : + عنه [ط].
[255] ذلك [ب، ق] : وذلك [ط].
[256] الانتقال والانقلاب [ب، ق] : الانتقالات والانقلابات [ط].
[257] يكون [ب، ق] : تكون [ط].
[258] باستحالة [ب، ق] : بالاستحالة [ط].
[259] وإما [ب، ق] : إما [ط].
[260] وبدار [ب، ق] : وهذا [ط].
[261] إنها تنقلب فتنتقل [ب، ق] : بما ينتقل وينقلب [ط].
[262] الظاهر بالخاصية الحادية الظاهرة عن الطبع الذي أوجبته الكمية والذي أوجب الكمية من المقدار الذي [ب، ق] : --- [ط].
[263] في [ب، ق] : --- [ط].
[264] فافهم ذلك [ب] : فافهم [ق] : فاعلم واعمل به [ط].

وهذه[265] السبعة انقسمت [ق-29أ] على الكواكب حسب ما عملنا هذه الكتب عليها وبأسمائها كل كتاب منها[266] باسم[267] جسد من[268] الذائبة وهي الذهب والفضة والرصاص الأسرب[269] والرصاص القلعى[270] والحديد والنحاس والخارصيني[271] فأما الأسرب منها فطبع[272] زحل من الكواكب والرصاص القلعى بطبع المشترى والحديد بطبع المريخ والذهب بطبع الشمس والنحاس بطبع الزهرة والفضة بطبع القمر ويبقى من الكواكب واحد وهو[273] عطارد وهو[274] الخارصيني[275] فهو بطبع عطارد. وأكثر الصنعويين يدخلون الزيبق مكان الخارصيني وذلك غلط لأن الزيبق داخل في عدد الأرواح لا في[276] الأجسام ولا في[277] الأجساد.[278]

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[265] وهذه [ب، ق] : + الأجساد [ط].

[266] انقسمت على الكواكب حسب ما عملنا هذه الكتب عليها وبأسمائها كل كتاب منها [ب، ق] : <انقسم>ت على الكواكب السبعة كانت والكواكب السبعة <حس>ب ما عملناه هذه الكتب السبعة [حاط] : --- [ط].

[267] باسم [ب، ق] : + كل [ط].

[268] من [ب، ق] : + السبعة [ط].

[269] والرصاص الأسرب [ب، ق] : والأسرب [ط].

[270] القلعى [ب، ق] : --- [ط].

[271] الخارصيني [ب، ق] : الخار [ط].

[272] منها فطبع [ب، ق] : فبطبع [ط].

[273] من الكواكب واحد وهو [ب، ق] : واحد من الكواكب هو [ط].

[274] وهو [ب، ق] : فبقى له [ط].

[275] الخارصيني [ب، ق] : خارصيني [ط].

[276] في [ب، ق] : + عدد [ط].

[277] في [ب، ق] : + عدد [ط].

[278] الأجساد [ب، ق] : + فاعرفه [ط].

[ب] MS Paris BnF Arabe 2606, ff. 44b-46a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, f. 31a-b
[ط] MS Tehran Mağlis 729, ff. 25b-27a

كتاب الرصاص القلعى[1] [ب- 45أ]

بسم الله الرحمن الرحيم[2] وبه نستعين[3]

Nature of tin

قال جابر عليه الرحمة يذكر فيه[4] أمر القلعى كما ذكرنا في غيره من أمر تلك الأجساد [ط-26أ] السبعة[5] ليكون كلاما[6] تاما إذا استحوذ على جميعها لأنها أمهات الأحجار وسيدة الأجساد من هذه الأجساد السبعة والذهب سيد الجميع[7] كما كانت[8] الشمس سيد جميع[9] الكواكب وهذا القلعى[10] منسوب إلى المشترى الذي يسميه أهل الروم واليونانيون زاوش وتسميه الفرس برجيس وهو سعد الفلك ويعطى السعادات والرياسات والأحوال التي لا تنال إلا بالحول على سرعة ذوبه وصلاحه[11] وهو في طبيعته[12] حار رطب ولا خلاف فيه[13] وهو يجري[14] مجرى الذهب لو لا زيادة[15] رطوبة فيه[16] ونقصان حرارة من[17]

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[1] الرصاص القلعى [ب، ق] : القلعى وهو منسوب إلى المشتري من كتب الأجساد السبعة الذائبة المنسوبة إلى الكواكب السبعة في التراكيب وعلم الميزان ألفه جابر بن حيان [ط].

[2] بسم الله الرحمن الرحيم [ب، ط] : --- [ق].

[3] وبه نستعين [ب] : --- [ق] : الحمد الله الذي اغفار محمد بن عبد الله واصطفاه للنبوة وانتخبه للرسائلة ولا حول ولا قوة إلا بالله العلى العظيم [ط].

[4] قال جابر عليه الرحمة يذكر فيه [ب، ق] : هذا نذكر من [ط].

[5] السبعة [ب، ق] : --- [ط].

[6] ليكون كلاما [ب، ق] : يكون الكلام

[7] وسيدة الأجساد من هذه الأجساد السبعة والذهب سيد الجميع [ب، ق] : وساداتها وسيد جميع الأحجار [ط].

[8] كانت [ب، ق] : كان [ط].

[9] جميع [ب، ق] : --- [ط].

[10] وهذا القلعى [ب، ق] : والقلعى [ط].

[11] والأحوال التي لا تنال إلا بالحول على سرعة ذوبه وصلاحه [ب، ق] : والأموال لا بناء البشر [ط].

[12] في طبيعته [ب، ق] : --- [ط].

[13] ولا خلاف فيه [ب، ق] : --- [ط].

[14] وهو يجري [ب، ق] : ويجري [ط].

[15] زيادة [ب، ط] : --- [ق].

[16] فيه [ب، ق] : --- [ط].

[17] من [ب، ق] : فيه من مقدار [ط].

حرارة الذهب [والفضة][18] والقول فيه قريب إلا أنه قد أكثر[19] في معرفة طبيعته[20] وأنا أرى[21] أنه حار رطب لا غير فاعمل على ذلك

Occult properties of tin

ومن خواصه[22] من عمل منه[23] صفيحة عريضه وربطها على ظهره وكان الفاعل لذلك صفراويا زاد [ط-26ب] في جماعه بعد ثلاثين يوما وكل[24] يوم زايد على الثلاثين زيادة يعلّمها ويحس بها من نفسه[25] ويراها عيانا ومن سحق[26] منه شيئا بماء الحصرم وبماء[27] الحماض[28] المعتصر أو بخل[29] الخمر المصعد[30] إبراء الأورام[31] الباردة [ب-45ب] الخنزيرية والسرطانية وأمثال ذلك واجمد[32] الزيبق تجميدا حسنا وإذا[33] أفرغ على[34] الكتان وهو ذائب حار على حرق النار[35] لم يحرقه[36] وإذا خالط[37] شيء يسير من الأسرب

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[18] الذهب [ب، ق] : + ورطوبة فيه كبريت حار محرق وهو متشكل في طبيعة وليس التشاكل فيه وحده بل بين الأجساد كلها ولكن في الأجساد وكلها شاكل عظيم وذلك أنه إن أدخل عليه أدوية المبيضة ابيضّ وإن أدخل عليه الحمرة أحمر كن الحمرة إبطاء من البياض وذلك لأنه كاد معتدلا بين الفضة والذهب [ط].

[19] أكثر [ب، ق] : + الناس [ط].

[20] طبيعته [ب، ق] : طبعه [ط].

[21] أرى [ب، ق] : نرى [ط].

[22] خواصه [ب، ق] : + أنه [ط].

[23] منه [ب، ط] : --- [ق].

[24] وكل [ب، ق] : وفي كل [ط].

[25] من نفسه [ب، ق] : --- [ط].

[26] سحق [ب، ق] : ينحل [ط].

[27] وبماء [ب، ق] : أو بماء [ط].

[28] الحماض [ب، ق] : + الأترج [ط].

[29] بخل [ب، ق] : خل [ط].

[30] المصعد [ب، ق] : + الجيد [ط].

[31] الأورام [ب، ق] : الرياح [ط].

[32] واجمد [ب، ق] : وهو يجمد [ط].

[33] وإذا [ب، ق] : فإذا [ط].

[34] على [ب، ق] : ذائبا على خرق [ط].

[35] وهو ذائب حار على حرق النار [ب، ق] : قطعتين [ط].

[36] يحرقه [ب، ق] : يحرقها {أي القنه(؟) لم تحرقها [تاط]} لم يحركها بل يبينها(؟) بينا(؟) ضارا زجاجيا فاسدا ضائعا ولم يحرقها إحراق الذي هو القصور والمنبغى لعمل التراكيب فقف لهذا المعنى ونشد إن شاء الله تعالى [ط].

[37] خالط [ب، ق] : خلطه [ط].

احرق الكتان وإذا وضع وأفرغ وهو[38] مسبوك[39] على غير الكتان احرقه من أي النبات[40] كان وهو من أقوى محبته[41] والدلائل على خلوصه وجودته وبرأته من مخالطة غيره له فإذا عمل الاندراني به[42] خرج إما أزرق أو أبيض وذلك في[43] جفافه فمن أحسن أن يجوّد تجفيفه باعتدال أخرجه أبيض الداخل فاعلم [ط-27أ] ذلك[44] فإذا[45] فرغ في الشربة الرطبة[46] من فوق حاجز يحجز بينهما [ق-31ب] جفف الآبق[47] على وجهها[48] فاعلم ذلك وجرّبه ترى عجبا وفيه حرز[49] من تفزع[50] النفس عجيب جدا يشاكل به الذهب وذلك أنه دموي وهو[51] محرك للدم[52] فافهم[53]

Tin as a substitute for silver

والقلعى هو مقام الفضة في الأبواب التي تعمل من الصنعة على طريق التدبير والأكاسير إلا في المزاجات الجسدية التراكيبية فاعلم ذلك وأبّن أمرك بحسبه إلا أن الأكاسير التي ترتفع من ذلك يكون[54] ناقصة بمقدار ما بينه وبين الفضة وهو مقدار[55] نقصانه[56] عن الفضة وهو الكمية التي بينهما في تركيب[57] الطبائع

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[38] وضع وأفرغ وهو [ب، ق] : أفرغ [ط].
[39] مسبوك [ب، ق] : مسبوكا [ط].
[40] النبات [ب، ق] : أنواع الشباب [ط].
[41] محبته [ب، ق] : محينه(؟) [ط].
[42] الاندراني به [ب، ق] : بالاندراني [ط].
[43] في [ب، ق] : من [ط].
[44] فاعلم ذلك [ب، ق] : فمن زاد في تجفيفه أو نقص أخرجه أزرق الداخل فاعلم [ط-27أ] [ط].
[45] فإذا [ب، ق] : وإن [ط].
[46] في الشربة الرطبة [ب، ق] : على مشربة رطبة [ط].
[47] الآبق [ب، ق] : الزيبق [ط].
[48] وجهها [ب] : وجهها [ق، ط].
[49] حرز [ب، ق] : جزء [ط].
[50] تفزع [ب، ق] : تفرح [ط].
[51] وهو [ب، ق] : أو [ط].
[52] للدم [ب، ق] : الدم [ط].
[53] فافهم [ب، ق] : + ذلك [ط].
[54] يكون [ب، ق] : تكون [ط].
[55] ما بينه وبين الفضة وهو مقدار [ب، ق] : --- [ط].
[56] نقصانه [ب، ق] : نقصان القلعى [ط].
[57] تركيب [ب، ق] : ترتيب [ط].

واعلم ذلك واعرف[58] واعمل به[59] عليه فوحق سيدي[60] ما في هذا الكلام من أول[61] الكتاب إلى ههنا رمز بتة وانه [ب-46أ] كالقاعدة لعلم التراكيب المرتفعة في الوقت وتدبّره[62] وتدبّر كلامنا في هذا الكتاب في الكتب[63] السبعة فهي فائدة كتبنا كلها وهي كالأمير[64] بين الأجساد فاعلم ذلك واعمل عليه ترى فيه الرشد[65] إن شاء الله تعالى[66]

[ب] MS Paris BnF Arabe 2606, ff. 46a-47b
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, f. 32b
[ط] MS Tehran Mağlis 729, ff. 27b-29a

Father and Mother classification

واعلم ذلك[67] أن الصنعويين[68] [ق-32أ] يسمون الأجساد[69] السبعة الذائبة[70] الأب والأم هذا[71] تسمية الصنعويين لها وأما المنطقيون فيقولون[72] القاعدة والموضوع والحامل[73] فاعرف ذلك وافهمه [ب-46ب] يتضح[74] لك ما تقدم [ط-28أ] منه وما تأخّر من هذه الأشياء المرموزة فاعرف ذلك[75] وتبينه تصب

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58 واعرف [ب، ق] : --- [ط].
59 به [ب، ق] : --- [ط].
60 سيدي [ب، ق] : سيدنا [ط].
61 أول [ب، ق] : + هذا [ط].
62 وتدبره [ب، ق] : فتدبر [ط].
63 في الكتب [ب، ق] : --- [ط].
64 كالأمير [ب، ق] : كالأمراء [ط].
65 الرشد [ب، ق] : + فيه [ط].
66 إن شاء الله تعالى [ب، ق] : بإذن الله [ط].
67 ذلك [ب، ق] : --- [ط].
68 والصنعويين [ط] : + والمنطقيين [ب، ق].
69 الأجساد [ب، ق] : هذه [ط].
70 الذائبة [ب، ق] : + التي هي الذهب والفضة والنحاس والرصاصان والخار والحديد [ط].
71 هذا [ب، ق] : فهذه [ط].
72 الصنعويين لها وأما المنطقيون فيقولون [ب، ق] : الصنعويون وإن المنطقيين يسمونها [ط].
73 والحامل [ب، ق] : + والمحمول فهذه نسبته المنطقيون [ط].
74 يتضح [ب، ق] : يصح [ط].
75 فاعرف ذلك [ب، ق] : --- [ط].

الطريق إليه واضحا بينا سهلا[76] فأما الأب فما كان من ذلك ذكر[77] وهو النحاس والخار والأسرب والأم[78] والفضة والقلعى فأما الذهب فهو عندهم خنثى لا ذكر ولا أنثى لأنه معتدل ولهذه[79] العلة قيل إنه خنثى ويصير ذكرا بزوال رطوبته[80] فاعلم ذلك فأما[81] الحديد فيقال[82] الغلام والعبد والجارية والخادم والوسخ وكل شيء مضاف لأنه عندهم متولد[83] والخنثى كما قدمنا الذهب[84] فهو يفعل[85] مرة فعل الذكور ومرة فعل الإناث فإنه إذا نكح نفسه أحبلها بالتذكير والتأنيث † ح †[86] وذلك دليل على أن †لامام † ليس به حاجة إلى † مه † وهما الذهب والفضة والتأنيث والتذكير المجتمعان ثم أولدها مثله سواء[87] في هذا العمل وهذا تعب[88] إلّا أنه يجب أن يبحث عن معنى هذين الاسمين أعني الأب والأم

وما ينبغي أن يؤخذ[89] فنقول إن الذي ينبغي أن تعمله[90] عليه في ذلك هو الطبائع فيما يجب أن يسمى بالذكر والأنثى والأب والأم وهو أن الأشياء الباردة كلها هي الأم والأشياء[91] الحارة كلها[92] الأب [ط-28ب] والأشياء الرطبة أيضا يضاف إلى قسم[93] الأم والأشياء اليابسة كلها[94] يضاف إلى قسم الأب[95] فاعرف هذه الأصول فإنها تقوى عملك في استخراج التراكيب وتدلك على الوجه والطريق إلى

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[76] واضحا بينا سهلا [ب، ق] : سهلا بينا [ط].

[77] فما كان من ذلك ذكر [ب، ق] : منها الذكور [ط].

[78] والأم [ب، ق] : وأما الأم منها فالإناث [ط].

[79] ولهذه [ب، ق] : فلهذه [ط].

[80] ويصير ذكرا بزوال رطوبته [ب، ق] : --- [ط].

[81] فأما [ب، ق] : أما [ط].

[82] فيقول [ب، ق] : + له [ط].

[83] متولد [ب، ق] : مولد متولد فإن الذهب هو [ط].

[84] قدمنا الذهب [ب، ق] : قدمناه [ط].

[85] يفعل [ب، ق] : يعمل [ط].

[86] †ح† [ب، ق] (= جميعا؟) : المجتمعين فيه [ط].

[87] وذلك دليل على أن †لامام † (= لإمام؟ / الإمام؟) ليس به حاجة إلى † مه † (= من غيره؟) وهما الذهب والفضة والتأنيث والتذكير المجتمعان ثم أولدها مثله سواء [ب، ق] : ثم ولدها مثله سواء فسمى هذا الحادث الولد وكذلك الفضة سواء ومثلها [ط].

[88] وهذا تعب [ب، ق] : والنعت [ط].

[89] يؤخذ [ب، ق] : + فنقول إنه ينبغي أن يوجد إما من الطبائعها وإما من خواصها نبينه أبين من هذا [ط].

[90] تعلمه [ب، ق] : يعلم [ط].

[91] الباردة كلها هي الأم والأشياء [ب، ق] : --- [ط].

[92] كلها [ب، ق] : + هي [ط].

[93] والأشياء الرطبة أيضا يضاف إلى قسم [ب، ق] : وإن الأشياء الباردة كلها هي [ط].

[94] كلها [ب، ق] : --- [ط].

[95] الأب [ب، ق] : + والأشياء الرطبة تضاف إلى قسم الأم [ط].

الموازين [ب-47أ] وقد يجوز[96] أن يتعين لك كم في المنفعلين[97] فيكون بعكس ذلك وهو أن الأكثر مع الحرارة والرطوبة والأقل من اليبوسة مع البرد وهو[98] على حكمها وبعضهم قال[99] إن الرطوبة أين[100] كانت فهي من القسم[101] الإناث كالمخنث [ق-32ب] من الرجال والمترجلة من النساء وهو الذهب[102] الذي اعتقده أنّا هذه الأسماء والأحوال متعافية[103] على هذه المنفعة تارة تذكر وتارة يؤنث وذلك ليس فيها يراد من توليد فيهما[104] وعليه مبنيّ[105] هذه الكتب كالحديد فإنه يجعل الأب ويجعل النحاس أيضا كذلك[106] فإذا حكم فيه أنه لازم حار[107] وقد قيل فيهما إنهما جميعا حارين يابسين فالوجه في ذلك[108] عافاك الله أن تطلب الحكومة أولا كما تطلب المقدمة بطلب الحرارة اليبوسة فقط في الكلام[109] لتعلم علمها فإذا كان الحديد والنحاس وهما ذكران قد قيل فيهما إنهما جميعا[110] أم فاعلم أنهما يسميان بذلك إذا قلبا من طبيعتهما أو يليان[111] فيزول أحد طبعهما الذي من أجله سمى أبا [ط-29أ][112] عليه طويله فإنا[113] قد صرفنا[114]

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[96] وقد يجوز [ب، ط] : ويجوز [ق].

[97] كم في المنفعلين [ب، ق] : من المنفعلين إلى الفاعلين [ط].

[98] الأكثر مع الحرارة والرطوبة والأقل من اليبوسة مع البرد وهو [ب، ق] : أكثر الرطوبة وأقل اليبوسة مع الحرارة وأكثر اليبوسة وأقل الرطوبة مع البرودة وهي [ط].

[99] وبعضهم قال [ب، ق] : وقال بعضهم [ط].

[100] أين [ب، ق] : إن [ط].

[101] القسم [ب، ق] : قسم [ط].

[102] الذهب [ب، ق] : --- [ط].

[103] متعافية [ب] : متعاقبة [ق].

[104] اعتقده أنّا هذه الأسماء والأحوال متعافية على هذه المنفعة تارة تذكر وتارة يؤنث وذلك ليس فيها يراد من توليد فيهما [ب، ق] : لا نعتقده [ط].

[105] مبنيّ [ب، ق] : بنى [ط].

[106] فإنه يجعل الأب ويجعل النحاس أيضا كذلك [ب، ق] : والنحاس فإنهما يجعلان أبا [ط].

[107] فإذا حكم فيه أنه لازم حار [ب، ق] : وإذا حكم فيهما أنهما أم جاز ذلك [ط].

[108] إنهما جميعا حارين يابسين فالوجه في ذلك [ب، ق] : جميعا إنهما حاران يابسان والوجه [ط].

[109] بطلب الحرارة اليبوسة فقط في الكلام [ب، ق] : بالكلام [ط].

[110] إنهما جميعا [ب، ق] : جميعا إنهما [ط].

[111] قلبا من طبيعتهما أو يليان [ب، ق] : كان من طبعهما أنهما يلينان [ط].

[112] أبا [ب، ق] : + وقد يكون ذلك [ط-29أ] في الألوان ولسنا نعتقده ولا ننوية لأن الحكومة فيه كثيرة والشروط [ط].

[113] فإنا [ب، ق] : فإذ [ط].

[114] صرفنا [ب، ق] : اجرينا [ط].

كلامنا فيه إلى الكلام[115] في الواجب الضرورى القريب الغير بعيد[116] الممتنع من الكون[117] فإذ قد أتينا على معرفة الأب والأم من قبل الأجساد الذائبة فإن الأب والأم وإن لهما في الصنعة وجوه فإن ذلك ينسب[118] في التراكيب إذ[119] كان مبنى[120] هذه الكتب إنما جعلناه[121] على التراكيب من الأجساد[122] الذائبة [ب-47ب] وغيرها من الأجساد الذائبة[123] فلنقل بعد ذلك على التزويج والنساء وشرح حال[124] الأم وأمثال ذلك مثل سرى[125] الخدم وأحوال الحوادث[126] والإخوة ومن قرأ شيئا من كلامنا[127] سهل عليه أمر هذه المواضع جدا

[ب] MS Paris BnF Arabe 2606, ff. 49a-50a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 34a-34b
[ط] MS Tehran Mağlis 729, ff. 31a-32b

Softness and hardness in metals

واعلم أن الأجساد الرخوة الرصاصان[128] والفضة والأجساد الصلبة[129] الحديد والنحاس والخار[130] فأما الذهب فهو صلب مع الصلاب[131] رخو مع الرخوة[132] فافهم

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[115] إلى الكلام [ب، ط] : --- [ق].
[116] الغير بعيد [ب، ق] : عن البعيد [ط].
[117] الكون [ب] : أن يكون [ق] : الكذب [ط].
[118] ينسب [ب، ق] : يسبب [ط].
[119] إذ [ب، ق] : إذا [ط].
[120] مبنى [ب، ق] : بناء [ط].
[121] جعلناه [ب، ط] : جعلنا [ق].
[122] الأجساد [ب، ط] : الأجسام [ق].
[123] الأجساد الذائبة [ب، ق] : الأجسام [ط].
[124] وشرح حال [ب، ق] : وتسريح [ط].
[125] سرى [ب، ق] : شرى [ط].
[126] الحوادث [ب، ق] : الأخوات [ط].
[127] كلامنا [ب، ق] : + في هذا الكتب السبعة [ط].
[128] الرصاصان [ب، ق] : هو الرصاص [ط].
[129] والأجساد الصلبة [ب] : والصلبة [ق، ط].
[130] الحديد والنحاس والخار [ب، ق] : هو الحديد والخار والنحاس [ط].
[131] الصلابة [ق، ط] : الصلاب [ب].
[132] الرخوة [ب، ق] : الرخاوة [ط].

Substrate of the metals

واعلم أن الموضوع يكون منقولا[133] على الأشياء المختلفة[134] في ذاتها[135] لا يشك فيه أحد فيجعل الأرواح مع الأجساد والأجساد مع الأرواح[136] والأرواح مكان الأجسام وهذه[137] الأرواح التي يذكرها[138] ههنا هي أرواح[139] الأجساد المتكونة معها[140] في المعدن المختلطة بأجسادها[141] فافهم ومثال ذلك المحمول الموضوع[142] وهو [ط-31ب] أن يكون[143] هذا الموضوع أجساد والمحمول[144] عليها بعد المزاج اكتساب[145] اللون الواحد هذه الأرواح هو لكل واحد من الأجساد وهو كفاية له لا يحتاج منه إلى روح غيره واحد هذه الأشياء لكل واحد مما قلنا فيه في هذا الباب وما جرى مجراه كفاية[146]

Bibliographical information

فأما إن كنت تريد المثالات التي تنطرق بها إلى المعرفة بالشيء نفسه[147] فقد ذكرنا[148] في الاثنين والثلثين[149] كتابا وبيناها بيانا شافيا [ب-49ب] إلا أنها مرموزة برمز قريب مدفونة في ذكرنا كتب الحرف

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133 منقولا [ب، ق] : مقولا [ط].

134 المختلفة [ب، ق، ط] : المختلطة [فاط].

135 ذاتها [ب، ق] : + حتى [ط].

136 الأرواح [ب، ق] : الأجسام [ط].

137 وهذه : وهذا [ب، ق] : فهذا [ط].

138 يذكرها [ب، ق] : نذكرها [ط].

139 أرواح [ب، ق] : الأرواح [ط].

140 المتكونة معها [ب، ق] : المختلطة بها [ط].

141 المختلطة بأجسادها [ب] : المختلط بأجسادها [ق] : المكونة لها بالألوان [ط].

142 المحمول الموضوع [ب، ق] : الموضوع والمحمول [ط].

143 يكون [ب، ق] : تكون [ط].

144 والمحمول [ب، ق] : أو المحمول [ط].

145 اكتساب : اكساب [ب، ق] : أرواحا فبذلك يكون اكتساب [ط].

146 هذه الأرواح هو لكل واحد من الأجساد وهو كفاية له لا يحتاج منه إلى روح غيره واحد هذه الأشياء لكل واحد مما قلنا فيه في هذا الباب وما جرى مجراه كفاية [ب، ق] : وأصل هذه الأشياء وما جرى مجريها قلناه في هذا الباب لكل واحد منهما فاعرف ذلك [ط].

147 نفسه [ب، ق] : لقلنا [ط].

148 ذكرنا [ب، ق] : ذكرناها لك [ط].

149 والثلاثين [ب، ق] : وثلاثين [ط].

يزيد بها أمثالها وتركيبها[150] فإن فطنت[151] الميزان من كتبنا هذه[152] وأنت[153] مستغن عن تلك[154] المقالات وتلك لا ستغنى[155] عن هذه الكتب وكيف يستغنى[156] عنها وهذه الكتب السبعة[157] أصول لتلك المقالات[158] وتلك فروع من هذه[159] فأما[160] قولنا على[161] الاثنين وثلثين[162] كتابا على الخواص[163] فهي أصل الميزان وقاعدته [ق-34ب] فأما[164] الطلسمات فهي العمل[165] الوحي السريع التام في مقدار[166] يسير لا يتأخر ولا يتأنّى فافهم وأما النجوم فهي[167] الأصل للأمرين جميعا[168] ومفتاح العلمين كلاهما[169] [ط-32أ] وذلك من جهة الأوقات أعني الأزمان[170] التي ينبغي ان يكون تمام ذلك فيه[171] وقد أكثرنا من ذكر الزمان في المائة وأربعة وأربعين[172] وأفردنا فيه وقد أفردنا[173] مثل كتاب طبيعتنا[174] وكتاب

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[150] في ذكرنا كتب الحرف يزيد بها أمثالها وتركيبها [ب، ق] : يذكرنا تركيب الحروف ونزيد بها مثال تركيبها حقا [ط].

[151] فطنت [ب، ق] : نقلت [ط].

[152] هذه [ب، ق] : + السبعة [ط].

[153] وأنت [ب، ق] : فأنت [ط].

[154] تلك [ط] : ذلك [ب، ق].

[155] المقالات وتلك لا ستغنى [ب، ق] : الكتب وتلك الكتب تستغني [ط].

[156] يستغني [ب، ق] : تستغني [ط].

[157] الكتب السبعة [ب، ق] : --- [ط].

[158] المقالات [ب، ق] : --- [ط].

[159] هذه [ب، ق] : + فاعرفه [ط].

[160] فأما [ب، ق] : وأما [ط].

[161] على [ب، ق] : في [ط].

[162] وثلاثين [ب، ق] : والثلاثين [ط].

[163] الخواص [ب، ق] : + والطلسمات والنجوم فإنا نبين لك ههنا أما الخواص [ط].

[164] فأما [ب، ق] : وأما [ط].

[165] فهي العمل [ب، ق] : فهو عمل [ط].

[166] مقدار [ب، ق] : + من الزمان [ط].

[167] فهي [ب، ط] : فهو [ق].

[168] الأصل للأمرين جميعا [ب، ق] : أصل الأمرين [ط].

[169] كلاهما [ب، ق] : + جميعا فاعلم [ط].

[170] أعني الأزمان [ب، ق] : يعني أزمان [ط].

[171] فيه [ب، ق] : --- [ط].

[172] وأربعة وأربعين [ب] : والأربعة والأربعين [ق] : والأربعين كتابا [ط].

[173] فيه وقد أفردنا [ب، ق] : لها كتابا [ط].

[174] طبيعتنا [ب، ق] : طبيعتها [ط].

ساساحاووس[175] وفصول من[176] كل شيء يتكون ويفسد في عالم[177] الكون والفساد فأصله من النجوم وحركتها[178] ينفعل بتقدير الله عز وجل فلا[179] تظن وتقدر أن هذا شيء بعيد[180] ولا متعذّر[181] فيستهوله[182] بل هو أسهل[183] وأيسر من كل سهل[184] وذلك أنه يمكن الأستاذ أن يفيده لتلميذه[185] في ساعة من نهار أعني أمر الميزان[186] بل يحتاج[187] إلى طرق يسير من علم النجوم وقد تقدم فيه [ب-50أ] فإنه إذا سمع[188] من أستاذه وعاه من[189] هذا المقدار من الوقت[190] وليس يحتاج كتبي[191] خاصة إلى أستاذ ولا معلم[192] فإني قد شرحت[193] الشرح التام وزدت[194] في الأفهام والدليل على ذلك كتاب[195] الأغراض الذي[196] لنا الذي فسرنا فيه المائة اثني عشر[197] كتابا وكتاب [ط-32ب] الطهارة والأغراض

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[175] ساساحاوُوُس [ب] : ساساحاووُس [ق] : سياجاروس [ط].
[176] وفصول من [ب، ق] : وكتاب العلم المخزون فإن [ط].
[177] عالم [ب، ق] : العالم [ط].
[178] وحركتها [ب، ق] : ومن حركتها [ط].
[179] بتقدير الله عز وجل فلا [ب، ق] : فاعرفه ولا [ط].
[180] شيء بعيد [ب، ق] : شيئا بعيدا [ط].
[181] ولا متعذّر [ب] : أو متعذر [ق] : ومتعزرا [ط].
[182] فيستهوله [ب] : فستهوله [ق] : فتهوله لتصعبه [ط].
[183] أسهل [ب، ق] : أقرب وأسهل [ط].
[184] سهل [ب، ق] : + يسير [ط].
[185] يفيده لتلميذه [ب، ق] : يفيد والتلميذ [ط].
[186] من نهار أعني أمر الميزان [ب، ق] : بل هو أقرب وأسهل من كل قريب وسهل من الزمان فيتم فيه العمل بالميزان [ط].
[187] يحتاج [ب، ق] : + التلميذ [ط].
[188] سمع [ب، ق] : سمعه [ط].
[189] من [ب، ق] : في [ط].
[190] الوقت [ب، ق] : + فاعرفه [ط].
[191] كتبي [ب، ق] : مع كتبنا [ط].
[192] معلم [ب، ق] : + ولا موفق [ط].
[193] فإني قد شرحت [ب، ق] : لأنا قد شرحناها وشرحنا [ط].
[194] التام وزدت [ب، ق] : وزدنا [ط].
[195] كتاب [ب، ق] : + غرض [ط].
[196] الذي [ب، ق] : --- [ط].
[197] اثني عشر [ب، ق] : واثني [ط].

الذين[198] أضفناهما الى العشرين رسالة[199] وكتب أغراضنا التي فيها تفسير[200] كتبنا كثيرة جدا فنحن لا[201] ندع[202] لأحد أشياء[203] تحتاج كتبنا[204] إلى جميع[205] متفرق[206] وتفريق مجتمع[207] وفضل تأمّل في قراءتها وفكر[208] في معانيها لا غير تم كتاب القلعى[209] والحمد الله[210] وبمحمد[211] وآله أجمعين.

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198 الذين [ب، ق] : التي [ط].

199 رسالة [ب، ق] : + فصار اثنين وثلاثين [ط].

200 تفسير [ب، ق] : تفاسيرنا [ط].

201 لا [ب، ق] : لم [ط].

202 ندع [ب، ق] : + فيها [ط].

203 أشياء [ب، ق] : شيئا يحتاج في فهمه إلى أستاذ ولا موقف فاعلم ذلك واعمل عليه [ط].

204 تحتاج كتبنا [ب، ق] : بل يحتاج لكتبنا [ط].

205 جميع [ب، ق] : جمع [ط].

206 متفرق [ب، ق] : + منها [ط].

207 مجتمع [ب، ق] : + فيها [ط].

208 وفكر [ب، ق] : وفضل تفكر [ط].

209 القلعى [ب، ق] : + من الكتب المنسوبة إلى الكواكب السبعة في التراكيب وعلم الميزان [ط].

210 الله [ب] + وحده [ق، ط].

211 وبمحمد [ب، ق] : وصلى الله على محمد [ط].

[ب] MS Paris BnF Arabe 2606, ff. 50a-51a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, ff. 34b-35b
[ط] MS Tehran Mağlis 729, ff. 18a-19b

كتاب الأسرب

لجابر عليه الرحمة[1]

بسم الله الرحمن الرحيم

قال جابر في تحميد الله جل ذكره[2] هو الذي نرجوا به الخلاص من قبول[3] حجته علينا[4] وإليه المهرب[5] منه لا غير[6] [ط-18ب]

Nature of lead

فأقول إن الأسرب في طبعه بارد يابس هذا هو الإجماع فيه وإنه[7] مفرط اليبس يزيد على كثير من الحجارة [ق-35أ] في الأحجار[8] وفيه خواص كثيرة وله أفعال ظريفة في أبدان الحيوان وفي لقاء[9] الأجساد وفي ذوبه[10] واختلاطه[11] وفي قربه وفي بعده منها وإنه[12] من شد منه صفيحة على ظهره وكان على أي

[1] لجابر عليه الرحمة [ب، ق] : ألفه جابر وهو منسوب إلى زحل من كتب الأجساد السبعة الذائبة المنسوب إلى الكواكب السبعة من التراكيب علم الميزان [ط].

[2] قال جابر في تحميد الله جل ذكره [ب، ق] : الحمد الله على جزيل نعمه ونعوز به من حلول نقمه ونشكره بما يستحق وإن كنا تغير(؟) فنن(؟) بالتقصير في جميع شكره واتكالنا على فضله وعفوه [ط].

[3] قبول [ب، ق] : نروم [ط].

[4] علينا [ب، ق] : لنا [ط].

[5] المهرب [ط] : المحرب [ب، ق].

[6] غير [ب، ق] : إلى غيره والصلوة على نبيه الرحمة وآله الطيبين وسلم تسليما وبعد وقد نسبنا كتابنا هذا من هذه الكتب السبعة إلى الأسرب عافاك الله منسوب إلى زحل وإنما نبتدئ بذكر طبعه وخواصه ما لم نذكر في كتاب من كتبنا لأن في تلك الفصول تقصير في كل الكتب توفيرا ولكنا نجعل في كل موضع من كلامنا التصيب الذي يستحقه وما يليق به بحسب المعنى الذي نقصده [ط].

[7] وإنه [ب] : لأنه [ق] : فإنه [ط]

[8] الحجارة في الأحجار [ب، ق] : الأحجار في ذلك [ط].

[9] لقاء [ب، ق] : نقاء [ط].

[10] ذوبه [ط] : دونه [ب، ق].

[11] واختلاطه [ب، ط] : واختلاط [ق].

[12] منها وإنه [ب، ق] : واعلم فمنها أنه [ط].

طبع كان [ب-50ب] وفي أي مزاج اتفق أبطل[13] منه غلبة[14] شهوة الجماع وأضعف الآلة التي يكون بها[15] الجماع والعلة فيه التجفيف ومنها أنه[16] يدخل في الأكحال المجففة التي[17] يراد بها ذلك فيكون بليغا[18] في التجفيف ومن الأدوية أنه من شرب منه شيئا ممازجا للأدوية على السبيل التي وصفناها في الذهب والفضة[19] آثار عليه سوادة[20] عظيمة[21] وربما حين وهيّم من إفراط ما يهيجّ السوداء فإذا أخذ منه يسيرا باعتدال كان دواءً مشتهيا للطعام محمود الهضم منفذ[22] الثفل[23] فاعرف ذلك لأن[24] فيه فوائد خمس[25] وهو[26] يخالط الفضة فيكون فضة[27] مثلها ويجري مجراها في فعلها لا[28] يفسدها الإحراق[29] كما يفعل [ط-19أ][30] القلعى ولا يسودها سوادا منكرا بل يغيرها[31] إلى لون غير منكر ويغلب بياض الفضة[32] عليه ولا يغلب سواده[33] عليها وهو يجري مجرى القلعى في التراكيب والمزاجات ومن[34] جهة أفضل منه وأنفع[35] ولو شدة يبسه وغلبته عليه لكان ما يدخل منه في التراكيب أكثر مقدارا فينتفع من يعمل ذلك والقلعى

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[13] أبطل [ب، ط] : بطل [ق].

[14] منه غلبة [ب، ق] : عنه [ط].

[15] وأضعف الآلة التي يكون بها [ب] : وأضعف الآلة التي بها [ق] : وأضعفت آلة [ط].

[16] أنه [ب، ق] : أن [ط].

[17] التي [ب، ق] : الذي [ط].

[18] بليغا [ب، ق] : بليغة [ط].

[19] والفضة [ب، ق] : + فإذا أخذ منه كثيرا [ط].

[20] سوادة [ب، ق] : سوداء [ط].

[21] عظيمة [ب، ق] : + مفرطة [ط].

[22] منفذ [ب، ق] : مفيد [ط].

[23] الثفل [ب، ق] : التنقل [ط].

[24] لأن [ب] : فإن [ق، ط].

[25] خمس [ب، ق] : خمسة [ط].

[26] وهو [ب، ق] : ومنها أنه يفتت الذهب ويكسرها ويسحقه وأن [ط].

[27] فضة [ب، ق] : --- [ط].

[28] فعلها لا [ب، ق] : كل الأحوال ولا [ط].

[29] الإحراق [ب، ق] : بالإحراق [ط].

[30] يفعل [ب، ق] : + بها [ط].

[31] يغيرها [ب، ق] : + من لون [ط].

[32] بياض الفضة [ب، ق] : بياضها [ط].

[33] سواده [ب، ق] : سواد [ط].

[34] ومن [ب، ق] : وهو من [ط].

[35] وأنفع [ق، ط] : وأنقع [ب].

أيضا بيبس يبسا صار[36] يجعل[37] ما يخالطه[38] زجاجيا[39]

Occult properties of lead

فأما الأسرب فإنا نذكر من خواصه ههنا[40] ما نحتاج[41] إليه في الميزان وفي[42] الشيء الذي نرومه[43] [ب-51أ] ونقصده فإن جميع ما نقدم[44] من هذا[45] إنما هو توطية[46] وتوكيد للعمل[47] والتراكيب فافهم[48] واعلم أن فساده ليس اليسير وإفساد[49] وبإفراط وذلك عليه[50] وليس هو[51] من قبل غلبه[52] الفاعل الذي فيه[53] بل[54] من قبل المنفعل وفي هذا علم جمّة[55] وذلك أن الفاعلين [ق-35ب] كما سمينا فاعلين والأفعال[56] لهما والمنفعلين في العمل أضعف من الفاعلين وأزالة الأعراض الذي تحدث من المنفعلين[57] ليس [ط-19ب] من أزالته ما يكون من الفاعلين

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[36] صار [ب، ق] : ضارا [ط].

[37] يجعل [ب، ق] : + جميع [ط].

[38] يخالطه [ب، ق] : خالطه [ط].

[39] زجاجيا [ب، ق] : + ونحن نذكر في الكتاب الذي هو باسمه من طبعه وخاصية ما فيه كفاية واعلم [ط].

[40] ههنا [ب، ق] : في الكتاب [ط].

[41] نحتاج [ب، ق] : يحتاج [ط].

[42] وفي [ب، ق] : في [ط].

[43] نرومه [ب، ق، ط] : + من خواصه ههنا ما نحتاج إليه في الميزان في الشيء الذي [ب-51أ] نرومه [ب، ق].

[44] نقدم [ب] : تقدم [ق] : نقدمه [ط].

[45] هذا [ب، ق] : + المقدمات [ط].

[46] توطية [ب، ق] : طوطية [ط].

[47] للعمل [ب، ق] : لعمل [ط].

[48] فافهم [ب، ق] : + ذلك [ط].

[49] فساده ليس اليسير وإفساد [ب] : فساده ليس باليسير وإفساده [ق] : الفسادة [ط].

[50] وبإفراط وذلك عليه [ب، ق] : بالإفراط [ط].

[51] هو [ب، ق] : فيه ذلك [ط].

[52] غلبه [ب، ق] : --- [ط].

[53] الذي فيه [ب، ق] : --- [ط].

[54] بل [ب، ق] : + هو [ط].

[55] جمّة [ب، ق] : جمّ [ط].

[56] والأفعال [ب، ق] : فالأفعال [ط].

[57] الذي تحدث من المنفعلين [ب، ق] : التي يحدثها المنفعلان [ط].

[ب] MS Paris BnF Arabe 2606, ff. 52a-52b
[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, f. 36a-36b
[ط] MS Tehran Mağlis 729, ff. 20b-21b

Subject and predicate

واعلم بعد ذلك[58] أن قولنا أريد طبيب معنى يحفظ الصحة إنما نريد[59] صحة أبدان الناس إذا كانت موجودة وردها عليهم إذا[60] كانت مفقودة فإن[61] هذا القول مساوٍ ولقولنا نريد طبيب نريد به هذا المعنى بعينه فأما ما يتبع هذا الكلام والقول[62] في المقدمات إلا تتبيّنه [ط-21أ][63] فقد أوضحنا وجوهها[64] على سبيل المنطق والميزان من هذه لا على هذا السبيل وبعض هذه المواضع يحل بعد ذلك الموضع أول ذلك لآخر هذه وآخر هذه لأول ذلك[65] وافهم أنه ينبغي[66] أن تعتقد أن أكثر هذه الأشياء يجري [ق-36ب] لك من[67] علوم الميزان كالخواص التي لا بد للميزان والصنعة من ذلك والطب منها باسرها إذا كانت إنما يجري مجرى ذلك الفن وفيها[68] نبذة[69] يسيرة من الطلسمات أعني[70] أن المنطق في مواضع منه[71] يكون كالتوطية بهذه[72] العلوم لا بد لها منه لأنا[73] وضعنا كتب[74] الموازينية [ب-52ب] على معنى المنطق والطبيعة الحقيقية[75] فإن الواجب أن نعلم أن القضايا يرتبط محمولها بموضوعها أما بالقوة وهو إذا كان الرباط مضمرا

[58] بعد ذلك [ب، ق] : --- [ط].
[59] أريد طبيب معنى يحفظ الصحة إنما نريد [ب، ق] : هذا نريد به معنى مثال ذلك الطبيب وهو حفظ [ط].
[60] إذا [ب، ق] : إن [ط].
[61] فإن [ب، ق] : وإن [ط].
[62] والقول [ب، ق] : وهو القول [ط].
[63] المقدمات إلا تتبيّنه [ب، ق] : الثنائية [ط-21أ] والثلاثية [ط].
[64] وجوهها [ب، ق] : وجوه ذلك [ط].
[65] من هذه لا على هذا السبيل وبعض هذه المواضع يحل بعد ذلك الموضع أول ذلك لآخر هذه وآخر هذه لأول ذلك [ب، ق] : في هذا الكتاب وبعض هذا الموضع أول ذلك آخر هذا وأول هذا لآخر ذلك [ط].
[66] وافهم أنه ينبغي [ب، ق] : فاعلم ذلك وينبغي [ط].
[67] لك من [ب، ق] : في [ط].
[68] وفيها [ب، ق، ط] : ومنها [حاط].
[69] نبذة [ب، ق] : حدة (؟) [ط].
[70] أعني [ب، ق] : يعني [ط].
[71] في مواضع منه [ب، ق، هاط] : --- [ط].
[72] كالتوطية بهذه [ب] : كالتوطية لهذه [ق، ط] : كالمنطوية لهذه [حاط].
[73] لأنا [ب، ق] : في مواضع لأنا قد [ط].
[74] كتب [ب، ق] : كتبنا [ط].
[75] الحقيقية : الحقيقي [ب، ق، ط].

غير مظهر[76] وهذه هي الأشياء الذي يسمى الاثنينية[77] كقولنا سعيد حي فإن الرباط للحياة سعيد وهو[78] مضمر في هذه المقدمة كذلك[79] الزيادة النقصان[80] مضمر في الفضة والنحاس أن يكون[81] كالذهب هذا لا شك فيه ولا منازعة[82] ويحتاج أن نقول في بيانه وهو كقولنا سعيد حي[83] وهذه القضايا الثلاثية كذلك إن قال قائل[84] إن الفضة والنحاس [ط-21ب] إذا خالطت[85] الذهب صارا ذهبا والعلة[86] من جهة الكمية على سامع هذا الكلام أن[87] لا فائدة لأحد فيه

Transmutation of metals

وإنما الفائدة في انتقال الأسرب إلى الذهب إذا خالطها الفضة أعني أن يخلط[88] الفضة بالأسرب والذهب فإن هذين الجسمين أعني الأسرب والفضة باطن كل واحد منهما[89] ظاهر الذهب فظاهر[90] كل واحد منهما هو باطن الذهب[91] قد قلنا[92] هذا على أن طبع الذهب الظاهر فيه[93] حار رطب حتى يصير باطنه ضد هذا الظاهر[94] وكذلك أيضا ينبغي أن تعتقد أن باطن الأسرب والفضة حار رطب ذهب لأن الحار

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[76] أما بالقوة وهو إذا كان الرباط مضمرا غير مظهر [ب، ق] : إما بالقوة وهو إذا كان الرباط مضمرا غير مظهر وإما بالفعل وهو إذا كان الرباط مظهرا غير مضمر [ط].

[77] الأشياء الذي يسمى الاثنينية [ب، ق] : المقدمة الاثنائية [ط].

[78] الرباط للحياة سعيد وهو [ب، ق] : رباط الحيوة بالسعيد [ط].

[79] كذلك [ب، ق] : وكذلك [ط].

[80] النقصان [ب، ق] : والنقصان [ط].

[81] يكونا [ط] : يكون [ب، ق].

[82] لا شك فيه ولا منازعة [ب، ق] : بالتركيب [ط].

[83] ويحتاج أن نقول في بيانه وهو كقولنا سعيد حي [ب، ق] : --- [ط].

[84] كذلك إن قال قائل [ب، ق] : كقولنا [ط].

[85] خالطت [ب، ق] : خالط [ط].

[86] والعلة [ب، ق] : فالعلة [ط].

[87] أن [ب، ق] : أنه [ط].

[88] الفضة أعني أن يخلط [ب، ق] : مع الفضة هو أن يخالط [ط].

[89] منهما [ب، ق] : + هو [ط].

[90] فظاهر [ب، ق] : وظاهر [حاط] : --- [ط].

[91] فظاهر كل واحد منهما هو باطن الذهب [ب] : فظاهر كل منهما هو باطن الذهب [ق، حاط] : --- [ط].

[92] قد قلنا [ب، ق] : فدللنا [ط].

[93] فيه [ب، ط] : --- [ق].

[94] حتى يصير باطنه ضد هذا الظاهر [ب، ق، حاط] : --- [ط].

الرطب هو الذهب[95] فأما على طريق التدبير والوجه[96] في نقلها إلى الذهبية[97] أن يظهر باطنها الذي هو حار رطب بما يزيد في كميته فإذا زاد[98] وكثر ظهر بالغلبة [ب-53أ] فإذا غلب أحال الجسم الذي هو فيه غالب إلى الذهبية وقد قدمنا أن هذا على طريق التدبير فأما[99] طريق الميزان فهو [ق-37أ] بخلاف ذلك فهو مشاكله[100] من جهة وجهة[101] مشاكلته له أن الخاصية تحدث في الأجساد عند لقاء[102][ط-22أ] النار لها وعند مزاجها[103] فيحدث[104] لها تلك الخاصية[105] ونقلها[106] إلى قصد[107] المدبر لها[108] وليس للمدبر فيها شيء من عمل ولا استطاعة ولا إحالة غير الجمع والنفخ عليها وسبكها لكن استحالتها وانقلابها بالطبيعة يكون[109] ومن جهتها[110] تحدث[111] فقد شاكل هذا الطريق[112] التدبير الذي[113] من جهة الغلبة والانقلاب بالطبع بتلك[114] الخاصية الجاذبة إلى[115] أصلها أحداث المزاج لها ما لم يكن[116] فيها ولا لها

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[95] الذهب [ب، ق] : + فاعرف ذلك [ط].
[96] والوجه [ب، ق] : فالوجه [ط].
[97] الذهبية [ب، ق] : الذهب [ط].
[98] زاد [ب، ق] : ازداد [ط].
[99] فأما [ب، ق] : وأما على [ط].
[100] مشالكه [ب، ق] : يشاكله [ط].
[101] وجهة [ب، ق] : ووجه [ط].
[102] لقاء [ب، ق] : ملاقات [ط].
[103] وعند مزاجها [ب، ق] : ومزاجها لها [ط].
[104] فيحدث [ب، ق، فاط] : فيوجب [ط].
[105] الخاصية [ب، ق] : في الاستحالة [ط].
[106] ونقلها [ب، ق] : تقلبها [ط].
[107] قصد [ب، ق] : قصده [ط].
[108] لها [ب، ق] : بها [ط] : فيها [فاط].
[109] بالطبيعة يكون [ب، ق] : يكون بالطبيعة [ط].
[110] جهتها [ب، ط] : جهة ما [ق].
[111] تحدث [ب، ق] : + الخاصية [ط].
[112] هذا الطريق [ب، ق] : طريق الميزان طريق [ط].
[113] الذي [ب، ق] : --- [ط].
[114] بتلك [ب، ق] : فتلك [ط].
[115] الجاذبة إلى [ب، ق] : الحادث التي [ط].
[116] يكن [ب، ق] : تكن [ط].

حين وقد[117] اجتمعت عصب[118] الفلاسفة قبلنا ونحن[119] بعدهم[120] أن الطالع في[121] الفلك لا يكذب بالدلالة على ما يدل عليه أبدا[122] وهذا[123] الموضع نشرح معنى وصفه في كتابي[124] فيما اتفق من الفلسفة الثانية[125] معنى وضعته[126] في كتاب[127] في الموضع الذي تكلمت[128] فيه على علم الميزان

Children of lead

[ط] MS Tehran Mağlis 729, f. 25a-b	[ق] MS Cairo Ṭalʿat Kīmiyāʾ 187, f. 39a
فاعلم أن الأسرب يستحيل وينقلب إلى الألوان كثيرة وكل لون منها فائدة نافعة وعائدة جزيلة فافهم ذلك فيكون منه الأسرنج الأحمر نقي الأحمرة وهو دواء نافع وسم قاتل ويكون منه الإسفيداج الأبيض نقي الأبيض وهو دواء [ط-25ب] كبير للمراهم وفيه تجفيف من حال وترطيب من أخرى فاعلم ذلك فيكون منه المرتك وهو المرداسنج وصفته صفت الإخوة في المنافع والمضار ولو ذهبنا بشرح منافعها ومضارها لإزداد ذلك كتابا كبيرا والسلم وقد ختمناها هنا كتاب الأسرب من الكتب السبعة المنسوب إلى الكواكب السبعة في التراكيب وعلم الميزان والحمد وحده وصلواته على محمد وعزته	باب أولاد الأسرب لجابر عليه الرحمة يكون منه الأسرنج وهو دواء وسم قاتل وتستحيل وتنقلب إلى الألوان الكثيرة من كل لون منها فائدة عظيمة ويكون منها فائدة جزيلة فافهم فيكون منه إسفيداج أبيض نقي البياض وهو دواء كثير للمراهم وفيه تجفيف في حال وترطيب في حال في حال أخرى وتليين في حال وتصليب في أخرى فاعلم ذلك ويكون منه مرتك وهو المرداسنج وصفته صفة إخوته في الفعل والمنافع ولو ذهبنا نشرح مضارها ومنافعها لا زاد ذلك كتابا كبيرا والسلم والحمد الله رب العالمين

[117] حين وقد [ب، ق] : فاعلم ذلك فقد [ط].
[118] عصب [ب، ق] : عصبة من [ط].
[119] ونحن [ب، ق] : + من [ط].
[120] بعدهم [ب، ق] : + على [ط].
[121] في [ب، ق] : من [ط].
[122] أبدا [ب، ق] : وهو درجة القمر فاعرفه [ط].
[123] وهذا [ب، ط] : فهذا [ق].
[124] وصفه في كتابي فيما اتفق من [ب، ق] : ما وضعناه في كتابنا [ط].
[125] الثانية [ب، ق] : + ونشرح [ط].
[126] وضعته [ب، ق] : ما وضعناه [ط].
[127] كتاب [ب] : كتابي [ق] : كتاب المزاج [ط].
[128] تكلمت [ب، ق] : تكلمنا [ط].

الطاهرين وسلامة ورحمته

[ب] MS Paris BnF Arabe 2606, ff. 56a-57a
[ق] MS Cairo Ṭalʿat Kīmiyāʾ Ṭabīʿa 187, 39a-40a
[ط] MS Tehran Mağlis 729, ff. 66a-67b8

كتاب الخارصيني

لجابر عليه الرحمة والرضوان[1]

بسم الله الرحمن الرحيم وبه نستعين[2]

Introduction

قال فيه بعد تحميد الله عز وجل[3] قد تكلمنا على[4] كل جسد من الأجساد [ق-39ب] الذائبة في كتاب لها[5] مفرد منسوب إليه بما سهّل[6] الله في ذلك وقصدنا أن نقرب[7] العمل بالميزان والطريق إليه وقد دللنا عليه بالإشارة إليه والإفصاح عنه[8] والإبانة عن عمله[9] مرة بضرب[10] الأمثال ومرة بالخواص ومرة بالنجوم ومرة بالطب ومرة بالموازين العجيبة ومرة بنظم الحروف كل ذلك لندل[11] عليه من جميع طرقه والله المسهّل لما يريده المريد[12] فإن الرزق إذا نزل من الله[13] جاء يركض ركضا وإذا كان الرجل محروما[14] مقصودا[15] فليس ينفعه[16] فمن [ط-66ب] لم يفهم هذه الطرق[17] من هذه الكتب فعندي أنه لا يفهمها

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[1] الخارصيني لجابر عليه الرحمة والرضوان [ب، ق] : الخار وهو المنسوب إلى عطارد من كتب الأجساد السبعة المنسوبة إلى الكواكب السبعة في التراكيب وعلم الميزان ألفه جابر بن حيان [ط].

[2] وبه نستعين [ب] : --- [ق، ط].

[3] قال فيه بعد تحميد الله عز وجل [ب، ق] : الحمد الله كثيرا كما يجب والثناء له وصلى الله على محمد واله وبعد [ط].

[4] على [ب، ق] : عن [ط].

[5] لها [ب، ق] : له [ط].

[6] سهل [ب، ق] : سهله [ط].

[7] ذلك وقصدنا أن نقرب [ب، ق] : الكلام وما قال الحكماء في ذلك فصحتنا ولا عدلنا عن إرشادنا وقصدنا في ذلك تعريف [ط].

[8] إليه والإفصاح عنه [ب، ق] : عليه [ط].

[9] عمله [ب، ق، ط] : علمه [فاط].

[10] بضرب [ط، ق] : يضرب [ب].

[11] لندل [ب، ق] : ليدل [ط].

[12] لما يريده المريد [ب، ق] : ما تريد لمن يريد [ط].

[13] الله [ب، ق] : عند الله [ط].

[14] محروما [ب، ط] : محر [ق].

[15] مقصودا [ب، ق] : معصورا [ط].

[16] ينفعه [ب، ق] : ينفعنا وإنه معه شيء [ط].

[17] الطرق [ط] : الطريق [ب، ق].

من غيرها لأنه ما تكلم فيها خاصة[18]

Origin of *ḫārṣīnī*

وقد بقي لنا[19] من الأجساد الذائبة جسد[20] يقول له الخارصيني وهو يجلب[21] من بلاد الصين يستخرج من معدن[22] هناك كما تستخرج سائر الأجساد[23] ثم يجمع[24] اجزائه بالنار والسبك ولهم فيه عمل طويل ولا[25] حاجة لنا [ب-56ب] في اقتضاضه[26] ولا فائدة[27] لمن يقرأها[28] فتركناه ونخبر بطبع[29] الخار وخواصه وصفته[30]

Nature of *ḫārṣīnī*

وقال هو[31] جسد ذائب يجرى مجرى الأجساد[32] ولونه أسود[33] يشوب سواده حمر[34] وهو جسد حار يابس ويعمل أعمال الحارة ويؤخذ[35] لك[36] فيه وبيوسته عظيمة جدا مفرطة ويجب أن يستعمل في الأكحال

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[18] خاصة [ب، ق] : أحد بمثل كلامنا في هذه الكتب خاصة [ط].
[19] لنا [ب، ق] : علينا [ط].
[20] جسد [ب، ق] : + واحد [ط].
[21] يجلب [ب، ق] : يجيء [ط].
[22] معدن [ب، ق] : + له [ط].
[23] سائر الأجساد [ب، ق] : + من معادنها [ط].
[24] يجمع [ب، ط] : تجمع [ق].
[25] ولا [ب، ط] : فلا [ق].
[26] في اقتضاضه [ب، ق] : إلى اقتصاصه [ط].
[27] فائدة [ب، ق] : + فيه [ط].
[28] يقرأها [ب، ق] : يقرأه [ط].
[29] فتركناه ونخبر بطبع [ب، ق] : وتركناه ونقتصر بذكر طبع [ط].
[30] وصفته [ب، ق] : + إذ كان لا يعرف أحد من أهل البلدان البعيدة عن الصين ولا أهل الصين كلهم يعرفه [ط].
[31] وقال هو [ب، ق] : وهو [ط].
[32] الأجساد [ب، ق] : + الذائبة [ط].
[33] أسود [ب، ق] : --- [ط].
[34] حمر [ب] : حمره [ق، ط].
[35] ويؤخذ[ب، ق] : ويوجد [ط].
[36] لك [ب] : ذلك [ق، ط].

وحيث[37] يحتاج إلى التجفيف[38] وتليين[39] الأجساد الذائبة في النار فإن فعله في ذلك قوى وليس الواجب أن يستعمل في شيء غير[40] الحديد فإن له فعلا عجيبا في تليينه وإن استعمل في شيء[41] غير الحديد لم يتبين له تأثير[42] بإفراط وفيه منفعة في الأكحال إذا أحرق واستعمل[43] وهو من القواعد الغير محتاج إليها[44] في ضبط شيء من الأرواح بتة بل فيه[45] منفعة [ط-67أ] في التيبيس[46] لكل شيء يخالطه من الأجساد وتجفيف لرطوبات أجساد[47] الحيوان[48]

Burning *ḫārṣīnī*

وصفة إحراقه[49] أن يصنع له بوطقة صابرة على النار وتعمل لها غطاء مهندم[50] يؤضع عليها[51] ويوخذ الوصل جيدا ويجفف ويوضع[52] على نار جمر[53] الغضا وينفخ عليها ست ساعات [ق-40أ] مستويات[54] وينزل[55]

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[37] وحيث [ب، ق] : إلى حيث [ط].
[38] التجفيف [ب، ق] : التجفف [ط].
[39] وتليين [ب، ق] : وفي تليين [ط].
[40] الذائبة في النار فإن فعله في ذلك قوى وليس الواجب أن يستعمل في شيء غير [ب، ق] : --- [ط].
[41] شيء [ق] : --- [ب].
[42] وإن استعمل في شيء غير الحديد لم يتبين له تأثير [ب، ق] : --- [ط].
[43] بإفراط وفيه منفعة في الأكحال إذا أحرق واستعمل [ب] : --- [ق، ط].
[44] الغير محتاج إليها [ب] : الغير المحتاج إليها [ق] : السبعة فاعرفه ولا حاجة إليه [ط].
[45] بتة بل فيه [ب، ق] : بل هو [ط].
[46] التيبيس [ب، ق] : التليين [ط].
[47] لرطوبات أجساد [ب، ق] : = رطوبات [ط].
[48] الحيوان [ب] : + بإفراط وفيه منفعة في الأكحال إذا أحرق [ق، ط] : + واستعمل [ق].
[49] وصفة إحراقه [ب، ق] : وهذه إحراق الخار [ط].
[50] مهندم [ب، ط] : متهندم [ق].
[51] وتعمل لها غطاء مهندم يوضع عليها [ب، ق] : ويعمل له غطاء منه مهندما فيجعل فيها الغطاف يوضع عليها الخار [ط].
[52] ويوضع [ب، ق] : ثم يوضع [ط].
[53] جمر [ب،ق] : من جمر [ط].
[54] ست ساعات مستويات [ب، ق] : مقدار ست ساعات [ط].
[55] وينزل [ب، ق] : ثم يترك [ط].

حتى يبرد ويلقى[56] على صلاية ويسحق فإنه ينسحق ويغسل[57] ثم يستعمل[58] والذي جرّب[59] منه[60] أن قليلة[61] ينفع القلعى[62] ويشدده ويزيل[63] صريره ونتنه[64] بسرعة

Softening iron

وقال بعد ذكره تشوية الحديد بالزرنيخ[65] ويؤخذ الخار فيجعل في بوطقة محكمة ويلقى عليه مثل وزنه دوص وينفخ عليها في جمر حامى دائما[66] ثم يخرجان[67] فإذا برد سحقا ودقا[68] جيدا ثم يوضع[69] الحديد [ب-57أ] في بوطقة وثيقة ويجعل معه الخار والدوص الذي خرج[70] [ط-67ب] ثم ينفخ عليه الجمر في البوطقة فإن الحديد[71] ينسبك كيف شئت فادخله في أعمال الحديد، لينا يطاوعك[72] في الممازجة كما تريد فاعلم ذلك[73] إن شاء الله عز وجل[74] وقد أخبرنا[75] بطبعه وخواصه وأفعاله وليس[76] يدخل في شيء من

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[56] ويلقى [ب، ق] : ويخرج فيترك [ط].
[57] ويغسل [ب، ق] : + قليلا [ط].
[58] يستعمل [ب، ق] :+ فاعرفه [ط].
[59] جرّب [ب، ق] : حبّت [ط].
[60] منه [ب، ق] : من فعل الخار [ط].
[61] قليلة [ب، ق] : القليل منه [ط].
[62] القلعى [ب، ق] : الكثير من القلعى [ط].
[63] ويشدده ويزيل [ب، ق] : فيشدده ويذهب [ط].
[64] ونتنه [ب] : ونتته [ق] : ويثبته ويقيمه إقامة منه وكذلك يفعل الدوس لكن الخار أبلغ ومن رام تليين الحديد بالخار لينه [ط].
[65] وقال بعد ذكره تشوية الحديد بالزرنيخ [ب، ق] : وذلك أن يسحق برادة الحديد بالزرنيخين ويثوى بالليل ثم يخرج فيعزل [ط].
[66] حامى دائما [ب، ق] : خام ودائم ثلث ساعات [ط].
[67] يخرجان [ب، ق] : يخرج [ط].
[68] برد سحقا ودقا [ب، ق] : برّد يسحق ودق [ط].
[69] يوضع [ب، ق] : يجعل مع [ط].
[70] وثيقة ويجعل معه الخار والدوص الذي خرج [ب، ق] : --- [ط].
[71] ثم ينفخ عليه الجمر في البوطقة فإن الحديد [ب، ق] : وينفخ على الجمع فإن الجسد [ط].
[72] أعمال الحديد لينا يطاوعك [ب، ق] : أعمالك تجده لينا مطاوعا [ط].
[73] فاعلم ذلك [ب، ق] : --- [ط].
[74] عز وجل [ب، ق] : --- [ط].
[75] وقد أخبرنا [ب، ق] : واعلم وأخبرناك [ط].
[76] وليس [ب، ق] : لا [ط].

التراكيب[77] التي وصفنا في كتبنا بحال من الأحوال إلا أنه[78] لما كان قويّ الفعل في[79] تليين الحديد حتى يسبكه صار ذلك نافعا والحديد يا أخي[80] إذا لأن ففيه[81] كفاية وبلاغ[82] فلا[83] تحتاج[84] إلى غيره[85] وإنه[86] لان بالخار[87] وحده[88] في شيء من[89] الطلسمات قد ذكرناه من كلام لنا في الطلسمات وفي بعض كتبنا الكبار ليس وحق سيدي أسميه لك[90] لتتعب بطلبه قليلا[91] وتعرف مكان متّتنا عليك[92] [ط-67ب8]

[ط] MS Tehran Mağlis 729, ff. 67b8-68a4
= [ب] MS Paris BnF Arabe 2606, ff. 30b-31a
= [ق] MS Cairo Ṭalʿat Kīmiyāʾ Ṭabīʿa 187, 21a-21b
(This section of [ط] is preserved as part of the *Book of Copper* in [ب] and [ق].)

Mercury according to the wise
(In the *Book of Copper*)

[ط] MS Tehran Mağlis 729, f. 68a4-68a9

Mercury

[ط-68أ4] وصفة عطارد يا أخي عند القوم أنه ذكر مع الذكران وأنثى مع الإناث نهاري مع النهارية ليلي

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77 التركيب [ب، ط] : + وقد [ق].
78 في كتبنا بحال من الأحوال إلا أنه [ب، ق] : كتبنا هذه عليها لأنه [ط].
79 في [ب، ق] : --- [ط].
80 والحديد يا أخي [ب، ق] : واعلم أيها الأخ أن الحديد وحده [ط].
81 ففيه [ب] : كان فيه [ق] : فيه [ط].
82 وبلاغ [ب، ق] : وغنى [ط].
83 فلا [ب، ق] : لا [ط].
84 تحتاج [ب، ق] : + معه [ط].
85 غيره [ب، ق] : + بتة فافهم ذلك [ط].
86 وإنه [ط] : إذا [ب، ق، فاط]
87 بالخار [ب، ق] : + خاصة وحده أو بالدوص [ط].
88 وحده [ب، ق] : + دخل [ط].
89 من [ب، ق] : + عمل [ط].
90 قد ذكرناه من كلام لنا في الطلسمات وفي بعض كتبنا الكبار ليس وحق سيدي أسميه لك [ب، ق] : في كتاب من كتبنا لكن ليس وحق سيدنا نسميه لك [ط].
91 بطلبه قليلا [ب، ق] : لطلبه [ط].
92 منتنا عليك [ق] : منثنا عليك [ب] : والجزئي والكلي جميعا فاعرف ذلك [ط].

مع الليلية رطب مع الرطبة يابس من اليابسة منقلب الأصباغ باعث الأرواح وصابغها إلى الأجساد الميتة فيحيها بعد الموت ويبعثها بعد الدثور ويحركها عند السكون ويرفعها بعد الرسوب وكذلك الزيبق من الأرواح نسبت عطارد من الكواكب بالأعمال وبالبروج لا غير [ط-68أ9]

[ب] MS Paris BnF Arabe 2606, ff. 57a-59b
[ق] MS Cairo Ṭalʿat Kīmiyāʾ Ṭabīʿa 187, 40a-41b
[ط] MS Tehran Mağlis 729, ff. 76b9-77a9, 77b4-77b8,77b3-77b4, 77a9-77b2, 68a9-71a
(Underlined folios are preserved as part of the *Book of Silver*)

Similarity and oppositeness

وذلك إنما يحمل بذاته[93] في القطع عملا[94] [<ط-76ب9] فإنه جوهري الطبع وادر أنه الخارجة[95] من القوة إلى الفعل من باب المضاف وهو جزء من أجزائه أي من كله[96] وهو المسمى[97] المماثلة والمقابلة وقد جودنا تفسيره لك[98] في غير شيء[99] من كتبنا [ط-77أ] خاصة[100] من المنطق[101] بغاية[102] التجويد ولا بد من القول ههنا على ذلك وبما يستوعب المعني فيه[103] وهو أن المماثلة مشاكلة الأشياء بعضها إلى بعض[104] واستجلابها[105] والاستكثار منها كمماثلة الكبريت بالنار[106] والمقابلة مباينة الأشياء بعضها من

[93] بذاته [ب] : نباته [ق]
[94] وذلك إنما يحمل بذاته في القطع عملا [ب] : --- [ط].
[95] وادر أنه الخارجة [ب، ق] : وأدواته التي لم تخرج [ط].
[96] أي من كله [ب] أي من كلمه [ق] : إلى جزء من كله والكل أعظم من الجزء [ط].
[97] المسمى [ب، ق] : يسمّى [ط].
[98] تفسيره لك [ب، ق] : فيه ذلك [ط].
[99] شيء [ب، ق] : --- [ط].
[100] خاصة [ب، ق] : وخاصة [ط].
[101] من المنطق [ب، ق] : في كتاب المنطق فإنه فيه [ط].
[102] بغاية [ب، ق] : فإنه فيه بغاية [ط].
[103] المعنى فيه [ب، ق] : فيه المعنى [ط].
[104] إلى بعض [ب، ق] : ببعض [ط].
[105] واستجلابها [ب، ق] : + لها [ط].
[106] بالنار [ب، ق] : للنار [ط].

بعض وبعدها منها[107] ومنافرتها والانتقال[108] منها[109] ولها من [ق-40ب] ثنتان[110] في المماثلة والمقابلة أما [ب-57ب] المماثلة فإن الأشياء التي[111] تماثل بالفاعل[112] أقوى وأمكن من التي يتماثل بالمنفعل[113] والأشياء التي تتماثل بالطرفين معا[114] أقوى وأمكن من التي[115] تتماثل بأحدهما فإن النسبة بين الحار اليابس والحار[116] الرطب أقوى من النسبة[117] بين[118] الحار[119] واليابس والحار اليابس أقوى وليكن[120] من الشكل[121] المتقدمين فاعلم ذلك[122] وإذ قد بان أمر[123] المماثلة فلنقل في[124] المقابلة [ط-77أ9 >][< ط-77ب4] اعلم أن الأشياء التي تتقابل بالفاعل[125] أقوى مباينة من التي تتقابل[126] بالمنفعل والتي تتقابل بالطرفين معا[127] أقوى وليكن من التي يتقابل[128] بأحدها[129] ومثال ذلك أن الأشياء التي تتقابل على هذا

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[107] منها [ب، ق] : عنها [ط].

[108] والانتقال [ب، ق] : والاستقلالها [ط].

[109] منها [ب، ق] : +كمقابلة الماء للنار [ط].

[110] من ثنتان [ق] : من تنتان [ب] : مرتبتان [ط].

[111] التي [ط] : الذي [ب، ق].

[112] بالفاعل [ط] : والفاعل [ب، ق].

[113] بالمنفعل [ب، ق] : بالمفعول [ط].

[114] معا [ب، ق] : جميعا [ط].

[115] التي [ب، ق] : الذي [ط].

[116] والحار [ب، ق، ط] : البارد [فاط].

[117] من النسبة [ب، ق] : وأمكن ما نسبة [ط].

[118] بين [ب، ق] : + الأشياء [ط].

[119] الحار [ب، ق، ط] : البارد [فاط]

[120] واليابس والحار اليابس أقوى، وليكن [ب، ق] : الرطبة [ط].

[121] الشكل [ب، ق] : الوجهين [ط].

[122] فاعلم ذلك [ب، ق] : --- [ط].

[123] أمر [ب، ق] : وجه [ط].

[124] فلنقل في [ب، ق] : --- [ط].

[125] بالفاعل [ب، ق] : بالفاعلين [ط].

[126] تتقابل [ب، ق] : متقابل [ط].

[127] معا : معناه [ب، ق]

[128] بالمنفعل والتي تتقابل بالطرفين معا أقوى وليكن من التي يتقابل [ب، ق] : --- [ط].

[129] بأحدها [ب، ق] : بأحدهما [ط].

وهو[130] أن يكون أحدهما حارا يابسا[131] والآخر حارا رطبا[132] الأشياء[133] التي هي حارة يابسة [ط-77ب8 >][< ط-77ب3] أقوى وأمكن مباينة البارد والرطب[134] من الوجهين[135] المتقدمين[136]

Talismans and occult properties

وإذ قد بان وجه المماثلة والمقابلة[137] [ط-77ب4 >][< ط-77أ9] فإنا راجعون إلى ذكر الطلسمات وقد قلنا في الخواص[138] إنها إما استحالات واستكثار[139] كاستجلاب الدواب والحيات[140] والسمك[141] والناس والوحوش[142] وإما في طرد[143] وأبعاد مثل طرد هذه[144] عن[145] المدن والأماكن [ط-77ب] وهذه الطلسمات تابعة شيئين[146] إخراج ما في القوة إلى الفعل وطباع الأدوية والعقاقير وطباع حركات النجوم وطباع مواضعها لا غير[147] وليس كذلك علم الخواص لأن الخواص تتبع[148] أحدهما إما طباع النجوم بالحركة وإما طباعها أيضا بالموضع[149] وإما طباع الأدوية[150] وإما طباع الممتزجة[151] من الأجساد والعقاقير والأدوية

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[130] وهو [ب، ق] : + أن يكون أحدهما حارا يابسا والآخر باردا يابسا فإن هذا أقوى وأمكن مناسبة الأشياء من التي تقابل [ط].

[131] حارا يابسا [ق، ط] : حار يابس [ب].

[132] حارا رطبا [ق، ط] : حار رطب [ب].

[133] الأشياء [ب] : والأشياء [ق، ط].

[134] مباينة البارد والرطب [ب، ق] : --- [ط].

[135] الوجهين [ب، ق] : الشكلين [ط].

[136] المتقدمين [ب، ق] : + فاعلم ذلك [ط].

[137] والمقابلة [ب، ق] : فلنقل في المقابلة [ط].

[138] في الخواص [ب، ق] : فيها [ط].

[139] استحالات واستكثار [ب، ق] : استجالاب [ط].

[140] والحيات [ب، ق] : والحياة [ط].

[141] والسمك [ب، ق] : والسماك [ط].

[142] والناس والوحوش [ب، ق] : والوحوش والناس [ط].

[143] في طرد [ب، ق] : --- [ط].

[144] هذه [ب، ق] : + الحيوانات [ط].

[145] عن [ب، ق] : من [ط].

[146] شيئين : سنين [ب، ق] : شيئين وهما [ط].

[147] إخراج ما في القوة إلى الفعل وطباع الأدوية والعقاقير وطباع حركات النجوم وطباع مواضعها لا غير [ب، ق] : --- [ط].

[148] تتبع : يتبع [ب, ق].

[149] بالموضع : بالموضوع [ب، ق].

[150] وليس كذلك علم الخواص لأن الخواص تتبع أحدهما إما طباع النجوم بالحركة وإما طباعها أيضا بالموضع وإما طباع الأدوية [ب، ق] : --- [ط].

[151] الممتزجة [ب، ق] : الممتزج [ط].

وطباع[152] حركات النجوم [ب-58أ] ودور الفلك وطبع مواضع[153] الكواكب من [ط-77ب2>] البروج لا غير[154] [<ط-68أ9] وههنا يختلف أمر الخواص وأمر الطلسمات لأن الخواص تتبع أحدهما[155] إما[156] طباع النجوم بالحركة وإما طباعها بالموضع وإما طباع [ق-41أ] الأدوية والعقاقير والحجارة[157] وغير ذلك فهذا هو الفرق بين الطلسم [ط-68ب] والخاصة[158] فافهمه[159] والذي يخصّ الطلسم أنه فعل الشيء لشيء[160] وحيّ سريع مسلط قاهر[161] لا يتأخر والظهور[162] في الوقت بتة ولا ممتنع بحيلة[163] ولا بأس أن نُمثل[164] أمر الطلسمات وعملها على إتباعها للنجوم وكيفيته[165] ذلك بحسب ضرورة[166] الفلك في حركته وتنقله[167] فإنه مما تحتاج[168] إليه ضرورة في عمل التراكيب بالميزان فافهم[169]

Astrological description

أما المماثلة فهي المساواة وهي مساواة الأول للخامس والتاسع وجميعها[170] كذلك[171] ثم قال ويعطى

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[152] وطباع [ب، ق] : أو طباع [ط].
[153] وطبع مواضع [ب، ق] : ومواضع [ط].
[154] البروج لا غير [ب، ق] : --- [ط].
[155] لأن الخواص تتبع أحدهما [ب، ق] : فأما الطلسمات فإنها يتبع [ط].
[156] إما [ب، ط] : وإما [ق].
[157] طباع الأدوية والعقاقير والحجارة [ب، ق] : الخواص فإنها يتبع طبائع الحجارة والعقاقير والأدوية [ط].
[158] والخاصة [ب] : والخاصية [ق، ط].
[159] فافهمه [ب، ق] : فافهم [ط].
[160] الشيء لشيء [ب، ق] : شيء بشيء أو في شيء [ط].
[161] قاهر [ب، ط] : قام [ق].
[162] والظهور [ب، ق] : عن الظهور [ط].
[163] ممتنع بحيلة [ب، ق] : تمتنع بحيله بتة [ط].
[164] أن نُمثل [ب، ق] : لذى مثل [ط].
[165] إتباعها للنجوم وكيفيته [ب] : إتباعها للنجوم وكيفية [ق] : إطباعها النجوم وكيف [ط].
[166] ضرورة [ب، ق] : صورة [ط].
[167] تنقله [ب، ق] : نقله [ط].
[168] تحتاج [ب] : يحتاج [ق، ط].
[169] فافهم [ب، ق] : --- [ط].
[170] وجميعها [ب، ق] : في جميعها [ط].
[171] كذلك [ب، ق] : + الحار للحار والبارد وللبارد والرطب للرطب واليابس لليلبس [ط].

الأضعف[172] بالطرفين الأول وهو الحمل[173] أضعف من الأخير وهو القوس [ط-69أ][174] فأما المقابلة فان النسبة فيه السباعية لأن السباعية[175] أضداد لأن نور كل أول مظلم[176] عند ظهور سابعة[177] ونور سابعة مظلم عند طلوعه ومثاله في[178] النسبة من[179] الأول إلى السابع لنسبة[180] الثاني إلى الثامن والثالث إلى التاسع والرابع إلى العاشر[181] والخامس إلى الحادي عشر والسادس إلى الثاني عشر ويدور فيزيد[182] على العدد [ب-58ب] فيصير نسبة السابع إلى الأول كنسبته إلى الثالث عشر والثامن[183] إلى الرابع عشر والتاسع إلى الخامس عشر والعاشر إلى السادس عشر والحادى عشر إلى السابع عشر والثاني عشر إلى الثامن عشر ومثال ذلك من[184] فلك البروج وهي اثنا عشر برجًا وأسماؤها[185] قال فإن المخالف الأول[186] بالسباعية[187] فقط من غير زيادة في العدد كمقابلة برج الحمل للميزان وذلك الباقية [ط-69أ][188]

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[172] ثم قال ويعطى الأضعف [ب، ق] : ويعطى القوة بالأوسط والضعف [ط].

[173] وهو الحمل [ب، ق] : --- [ط].

[174] وهو القوس [ب، ق] : ومثل ذلك أن الحمل والأسد والقوس أول وخامس وتاسع وهي متناسبتان جميعها حار والأقوى منها الأسد لأنه الأوسط والحمل أضعف فعلا من القوس وهما الطرفين والقوس أقوى فعلا من الحمل وكذلك الثور والسنبلة والجدى وكذلك الجوزاء والميزان والدلو وكذلك السرطان والعقرب والحوت فهذا [ط-69أ] ما في المماثلة [ط].

[175] السباعية لأن السباعية [ب، ق] : السباعة [ط].

[176] أول مظلم [ب، ق] : واحد ينظلم [ط].

[177] سابعة [ط] : صابعة [ب، ق].

[178] في [ب، ق] : أن [ط].

[179] من [ب، ق] : --- [ط].

[180] لنسبة [ب] : كنسبة [ق، ط].

[181] من العاشر [ب، ط] : + كنسبة : [ق].

[182] ويدور فيزيد [ب، ق] : فيدور ويزيد [ط].

[183] كنسبة إلى الثالث عشر والثامن [ب، ق] : وهو الثالث عشر كنسبة الثامن [ط].

[184] من [ب، ق] : في [ط].

[185] وأسماؤها [ب، ق] : باثنا عشر أسماؤها الحمل والثور والجوزاء والسرطان والأسد والسنبلة والميزان والعقرب والقوس والجدى والدلو والحوت [ط].

[186] قال فإن المخالف الأول [ب، ق] : وإن المقابلة الأولى [ط].

[187] بالسباعية [ب] : بالسناعية [ق] : بالسابعة [ط].

[188] وذلك الباقية [ب] : وذكر الباقية [ق] : وإن المقابلة الأولى بالسابعة فقط من غير زيادة في العدد كمقابلة برج الحمل للميزان وهي نسبة الأول إلى السابع والثور للعقرب وهي نسبة الثاني إلى الثامن والجوزاء للقوس وهي نسبة [ط-69ب] الثالث إلى التاسع والسرطان للجدى وهي نسبة الرابع إلى العاشر والأسد للدلو وهي نسبة الخامس إلى الحادي عشر والسنبلة للحوت وهي نسبة السادس إلى الثانى عشر [ط].

ثم قال فهذه[189] الأوتاد المسماة من[190] الدوائر من غير عكس الدوائر جميعا[191] متساوية وكل واحد مثل الآخر من الأول إلى السابع ومن السابع[192] إلى الأول فيعكس[193] فيصور الأول معدودا مرتين فيزيد دائرة الاثنا عشر واحد وكذلك[194] الثامن إلى الرابع عشر والتاسع إلى الخامس [ق-41ب] عشر وذلك الباقية[195] ثم قال[196] مثال ذلك الميزان[197] إلى الحمل مرتين[198] فيكون الحمل مكررا مرتين وهو في[199] أصل الدائرة الاثنا [200]عشر والحمل[201] ثلاثة عشر والعقرب والثور[202] من الحمل أربعة عشر[203] وكالدلو إلى الأسد من الحمل سبعة[204] عشر وكالحوت إلى السنبلة من الحمل ثمانية عشر [ط-70أ][205] فهذا ما في علم الطلسمات في المقابلة للبروج[206] فافهم لم تكلمنا بذلك ولأي شيء مثلناه ويستدل[207] على وجه

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189 ثم قال فهذه [ب، ق] : وهذه [ط].

190 من [ب، ق] : --- [ط].

191 الدوائر جميعا [ب، ق] : وجميع ذلك [ط].

192 ومن السابع [ب، ق] : --- [ط].

193 فيعكس [ب، ق] : الذي أول له كيف عكس كان ذلك فأما الثاني فهو هذا والقول فيه كالقول فيما تقدم نسبة السابع إلى الثالث عشر وهي نسبة السابع إلى الأول [ط].

194 وكذلك [ق] : ولذلك [ب] : وكذلك نسبة [ط].

195 والتاسع إلى الخامس عشر وذلك الباقية [ب، ق] : والعاشر إلى السادس عشر والحادي عشر إلى السابع عشر والثاني عشر إلى الثامن عشر [ط].

196 ثم قال [ب، ق] : --- [ط].

197 الميزان [ب، ق] : نسبة الميزان [ط].

198 مرتين [ب، ق] : --- [ط].

199 في [ب، ق] : --- [ط].

200 الاثنا [ب، ق] : اثنا [ط].

201 والحمل [ب، ق] : والحمل ثانيا [ط].

202 والعقرب والثور [ب، ق] : وكالعقرب إلى الثور [ط].

203 عشر [ب، ق] : + وكالقوس إلى الجوزاء من الحمل خمسة عشر وكالجدى إلى السرطان من الحمل ستة عشر [ط].

204 سبعة [ط] : اثنا [ب، ق].

205 عشر [ب، ق] : + وكالحوت إلى السنبلة من الحمل ثمانية عشر [ط].

206 في المقابلة للبروج [ب، ق] : من مقابلة البروج [ط].

207 ويستدل [ب، ق] : + به [ط].

الميزان صحيحا مكشوفا[208] فأما الكواكب فإن الأول حمل[209] أن يكون[210] النجم في برجه ليكون[211] في بيته للاشياء المتوسطة أو[212] في بيت شرفه للاشياء العالية[213] [ب-59أ] أو في بيت هبوطه ورجوعه[214] الأشياء[215] الدون الصغار ويكون[216] على هذا المثال كالشمس فإنها حارة يابسة[217] فإن عدمت فعل[218] الشمس أن يكون مع[219] البرج فليكن بدل الشمس[220] المريخ فإن[221] أجوز فالزهرة وأمثال ذلك

Bibliographical information

وقد ذكرنا في[222] ذلك شيئا شافيا في كتبنا هذه[223] في الطلسمات ما[224] فيه كفاية وغنًى فليطلب ولينظر[225] فيه ويجمع[226] معانيه من المكان[227] وهذا المكان ولست أرمز[228] عليك شيئا بتة وقد ذكرته[229] في **كتاب إخراج ما في القوة إلى الفعل** وكررته ههنا الفوائد لك فيه بالتكرير يكون فإن جمعت من

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208 مكشوفا [ب، ق] : منسوبا فاعرفه [ط].
209 الأول حمل [ب، ق] : الأحمر [ط].
210 يكون [ط] : تكون [ب، ق].
211 ليكون [ب، ق] : أو يكون [ط].
212 أو [ب، ط] : و [ق].
213 العالية [ب، ق] : + الكبار [ط].
214 ورجوعه [ب، ق] : --- [ط].
215 الأشياء [ب، ق] : للأشياء [ط].
216 ويكون [ب، ق] : أو يكون [ط].
217 يابسة [ب، ق] : + يكون في بروج [ط].
218 فعل [ب، ق] : --- [ط].
219 مع [ب، ق] : في [ط].
220 بدل الشمس [ب، ق] : بدلها [ط].
221 فإن [ب، ق] : وإن [ط].
222 في [ب، ق] : من [ط].
223 كتبنا هذه [ب، ق] : كتاب من كتبنا الكبار [ط].
224 ما [ب، ق] : --- [ط].
225 فليطلب ولينظر [ب] : فلتطلب ولينظر [ق] : فلتطلب ولتنظر [ط].
226 ويجمع [ب، ق] : وتجمع [ط].
227 المكان [ب، ق] : ذلك المكان [ط].
228 ولست أرمز [ب، ق] : وليس رمز [ط].
229 بتة وقد ذكرته [ب، ق] : هذا قد ذكرناه [ط].

الكتابين كان جيدا وإن لم يحضرك إخراج ما في القوة إلى الفعل فهذا الكلام ههنا فيه كفاية وحب[230] إن شاء الله تعالى[231]

Constellations and colours

ولا بد أن ناتي[232] بعد ذلك وبعد ما قد مضى[233] من اختيارك لأوقات[234] العمل ليكون[235] هذه الكتب مكتفية عن غيرها ومستغنية عن سواها [ط-70ب][236] فنقول إنه ينبغي أن يكون العمل للحمرة[237] والأحمر والطالع أحد البروج الذكر أن[238] النارية وهي المثلثة التي من الحمل والأسد والقوس وإن[239] كانت[240] الشمس في أحدها[241] فهذا النهاية وإن لم تكن في[242] أحدها فليكن إذا كانت[243] الشمس في عاشر كل برج أن عاشر[244] الحمل الجدى وعاشر الأسد الثور وعاشر القوس سنبلة وهذه العواشر مثلها مثلث أرضي ترابي بارد [ب-59ب] والطوالع يكون من تلك الثلاثية النارية الحارة اليابسة[245] وإذا كان العمل للبياض[246] فلتكن الطوالع البروج[247] المائية وهي السرطان والعقرب والحوت والشمس في

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[230] وكررته ههنا الفوائد لك فيه بالتكرير يكون فإن جمعت من الكتابين كان جيدا وإن لم يحضرك إخراج ما في القوة إلى الفعل فهذا الكلام ههنا فيه كفاية وحب [ب، ق] : وكررناه لك في هذا الكتاب [ط].

[231] تعالى [ب، ق] : + فاعرفه [ط].

[232] نأتي [ب، ق] : يأتي [ط].

[233] وبعد ما قد مضى [ب، ق] : --- [ط].

[234] لأوقات [ب، ق] : لأوقاته [ط].

[235] ليكون [ب، ق] : لتكون [ط].

[236] مكتفية عن غيرها ومستغنية عن سواها [ب، ق] : السبعة مستغنية بفنها [ط-70ب] عن غيرها وكتفية يعنيها عما سواه [ط].

[237] للحمرة [ب، ق] : حمرة [ط].

[238] الذكر أن [ب، ق] : المذكورة [ط].

[239] وإن [ب، ط] : فإن [ق].

[240] كانت [ب، ق] : كان [ط].

[241] فهذا [ب] : فهو [ق] : فهي [ط].

[242] تكن في [ط] : يكن [ب، ق].

[243] فليكن إذا كانت [ب، ق] : فلتكن [ط].

[244] برج أن عاشر [ب، ق] : واحد منها فعاشر [ط].

[245] مثله ما مثلث أرضي ترابي بارد والطوالع يكون من تلك الثلاثية النارية الحارة اليابسة [ب، ق] : ثلاثتها مثلثة أرضي باردة يابسة [ط].

[246] للبياض [ب، ق] : للبياض أو الأبيض [ط].

[247] فلتكن الطوالع البروج [ب، ق] : فليكن الطالع أحد البروج الإناث [ط].

عواشرها أيضا كما ذكرنا في باب الأحمر فهي الأبيض[248] ووجه ثاني وهو دون[249] الأول وهو أن يكون الطالع برج[250] مستوى الطلوع في الأمرين جميعا أعني[251] الأحمر والأبيض جميعا[252] ويكون التدبير[253] كلاهما في برج أو برجين[254] كذلك فهذا ما في الاختيار للعمل[255] فتوكّل على الله وعونه[256] فإنا نتوكل عليه ونستعين به وحسبنا[257] ونعم الوكيل وقد تممنا في هذا الكتاب وهو **الكتاب** [ط-71أ] **الخار** آخر الكتب السبعة مما كنا اعتمدنا فيما تقدم[258] وفيه أصل عظيم كبير خطير من[259] الطلسمات فاعرفه[260] فاعرف قدره إن شاء الله تعالى[261]

تمت الكتب السبعة بمحمد واله وسلم[262]

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[248] الأبيض [ب، ق] : الأفضل فاعرفه [ط].

[249] دون [ق، ط] : دوب [ب].

[250] برج [ب، ق] : برجا [ط].

[251] أعني [ب، ق] : --- [ط].

[252] جميعا [ب، ق] : --- [ط].

[253] التدبير [ب، ق] : الميران [ط].

[254] أو برجين [ب، ق] : أو في برجين متقابلين [ط].

[255] للعمل [ب، ق] : العمل [ط].

[256] وعونه [ب، ق] : جل جلاله استغن به [ط].

[257] وحسبنا [ب، ق] : وهو حسبنا [ط].

[258] مما كنا اعتمدنا فيما تقدم [ب، ق] : ما ذكرناه في الكتب المقدمة من هذه الكتب السبعة [ط].

[259] من [ب، ق] : + عمل [ط].

[260] فاعرفه [ب، ق] : --- [ط].

[261] إن شاء الله تعالى [ب، ق] : وتدبره حسنا [ط].

[262] تمت الكتب السبعة بمحمد واله وسلم [ب، ق] : تم الكتاب الخار من الكتب السبعة المنسوبة إلى الكواكب السبعة في التراكيب وعلم الميزان والحمد الله حق حمده وصلى الله على النبي محمد وسلم سيدنا كثيرا كثيرا [ط].

[ب 5099] MS Paris BnF Arabe 5099, ff. 34a-35b
(The underlined texts are found in the *Book of Copper* as well.)

كتاب الطبيعة الخامسة

لأبي موسى

وتم الكتاب

والحمد الله رب العالمين عز وجل في †... صص ى من بى† جابر بن حيان الصوفي

بسم الله الرحمن الرحيم عز وجل رب أعز بهدايتك الحمد الله وبه نستعين وأؤمن به وأتو كل عليه وأشهد أن لا إله إلا الله وحده لا شريك له وأن محمدا صلى الله عليه وآله عبده ورسوله.

[FN0.1] فينبغي أن تعلم أنا قد ذكرنا في كتبنا في هذه الموازين على جميع الآراء ولكل واحد من جميع الأشياء وأحدث حادثا لا من القاعدة ولا من المحمول عليها [FN0.2] والذي نروم في هذه الرسالة هو سر هذه القاعدة والآخر نسميه المحمول الثاني وهو الحمل الجاري مجرى الذات كالإنسان على الجسم [FN0.3] وليعلم أن الأشياء الزائدة على الطبائع تسمى[1] الخوامس ومعنى ذلك أنه حادث شيء هو غير الطبائع والطبائع أربعة والآخر فقد صار خمسة لها حقيقة والسادس محادث لا حقيقة له فاعلم.
[FN0.4] وقد سمينا كتابنا هذا كتاب الطبيعة الخامسة ونحتاج أن نقول في ذلك بحسب الواجب ليعلم ما في الأجناس وما هو أعلى منها إلى عالم الجوهر من المركبات أصولها على تحقيق لا على تحريف فانظر الآن في ذلك بعين العقل المطلق نصب الطريق إن شاء الله تعالى وحده.
[FN0.5] اعلم أن الجوهر في جميع الأشياء التي تجرى مجرى البسائط كالأفلاك والطبائع والنجوم كلها هو الطبيعة الجامسة والجسم الحادث من الجوهر في جميع المركبات من عالم النار والهواء والماء الأرض هو الطبيعة الثالثة والجوهر في جميع الحرارة والبرودة واليبوسة والرطوبة وهو الطبيعة الثانية فمن قال الطبيعة الثانية اعتقد النفس الجوهر ومن قال الثالثة اعتقد معها الشهوة.
[FN0.6] ويجب عليك أن تبحث عن كل شيء في العالم بالطبيعة الخامسة وهو الذى يسمى القاعدة كالجوهر ومعناه كالموضوع لأن غير ذلك إنما هو محمول حتى تأتى إلى عالمنا نحن أعني الحيوان والنبات والحجر فإنك تجد قواعدنا وطبائعنا الخوامس هو شيء غير الجوهر وغير الجسم وإن كان منها لكن ينبغي

[1] تسمى : يسمى [5099ب].

أن يعتقد أن الجوهر هو البسيط الذي لا حدّ له يطول[2] غيره.

[FN0.7] وقد استوفينا حدوده في غير موضع ونحن ندلّك عليه بجوهر بسيط لا مقدار فيه يعني الكمية والجسم الذي له طول وعرض وعمق والفضل بين أن ليس ذلك فيها هو أن الجسم وإن كان طويلا عريضا عميقا فإنه لا كون له ونحن فالذي تكوّننا[3] منه أعني الأجناس [34ب] الثلثة فإنما هو من جسم قد كان من جوهر لكن له كون.

[FN1] ومثاله أن الجوهر كان موضوعا للجسم ثم حمل على الجوهر الطول والعرض والعمق فصار جسما ثم حمل عليه كون فصار طينة هذه الثلثة الأجناس سبحان الخالق البارئ المصوّر ثم أنه عمل من هذه الأجناس جميع ما رأيت وكشفت وينبغي أن تعلم أن كل شيء يخبر به في الفلسفة فإنه ممكن أن يكون ما كانت المقدمات منظومة نظما صحيحا فإما وهي فاسدة النظم أو يحمل وجوه النقيض فاياك وقبول شيء من ذلك.

[FN2] وإذ قد بيّنا أن الجوهر هي القاعدة الأولى فغير شك أنه للحرارة فقط وأحوالها الأربعة وإن الجسم قاعدة جميع الأفلاك إلى الحرارة والبرودة واليبوسة والرطوبة التي في عالمنا نحن وهي الماء والهواء والنار والأرض لا غير فاعلم وإن الجسم المسمى ذا الكون قاعدة ما بعد ذلك.

[FN3] وتنازع الفلاسفة في ذلك عظيم جدا من جهة ما نقول إن الجوهر أصل الحرارة والبرودة واليبوسة والرطوبة والجسم أصل الفلك المنير فقط والطينة أصل ما دونه لأن جميعه مرئي فاعلم ذلك.

[FN4] فأما هولاى فنقول إن جميع ذلك غير مرئي لكن إنما يرى ما هو لها مجانس للطينة ومتقارب لها كعيون النار والهواء والماء والأرض وإن الذي نراه أيضا إنما هو غير النار والهواء والماء والأرض في ذواتها بل إنما نرى ما انحلّ منافي الفساد والكون المتصل بكل واحدة من هذه العناصر وإن الطينة إذا انحلّت منافيا[4] تصلت بحصّتها بالنار رأينا ذلك لأنا نرى النار الأولى وكذلك ما خرج بالزيادة وأمثال ذلك فكذلك القول في العناصر الأربعة وإن هذه الأربعة لا نصل إليها ولو وصلنا إليها عملنا لها ما نريد فاعلم ذلك.

[FN5] فقد وضح من قولنا أن الطبيعة الخامسة هي بالضرورة القاعدة لجمع الحامل من جميع الأعراض والفصول الملازمة والمفارقة والعامة والخاصة وخاصة الخاصة فاعلم ذلك.

[FN6] فقد أوجبنا اختراع الأشياء أو بعضها لنا كالاختراع الأول سواء فاعلم ذلك ولا بشك فيه

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[2] يطول : بطول [5099ب].

[3] تكوّننا : تكوّنا [5099ب].

[4] منافيا : منافا [5099ب].

وذلك واجب متى أوجدنا شيئا[5] من الألوان لم يكن إذ الجوهر لنا والكل فاعلم ذلك وهذا الممتنع عند بعض أصحاب النظر من قبل أن الألوان كلها محصورة لا يمكن أن يزيد فيها ولا ينقص منها فالجواب في ذلك إنها إذا كانت في القوة كلها أو بعضها بالفعل ممّا أخرجنا من القوة إلى الفعل فهو اختراع لنا ومع أنه لا يلزم أنا ما أخرجناه من القوة إلى الفعل وقد خرج فهو اختراع لنا وأمثال ذلك.

[FN7] فإن الهندسة إنما هي في أقليدس في القوة أعني في ذاتها فإذا فلما نريد أن نبين كيف يقطع زاوية معلومة بنصفين ونجعل الزاوية المعلومة التي من **ب أ د** فإذا أردنا أن يقطع زاوية **ب أ د** بنصفين فإنا نعلم على خط **أ ب** نقط **د** وعلم خط **أ ب** نقطة ه ونجعل **أ ه** مثل **أ د** ونصل **ه ب د** بخط ونعلم عليه مثلثا متساوى الاضلاع عليه **د ه د** و نصل **أ ب د** بخط فأقول إنا قد قطعنا الزاوية بنصفين. برهان ذلك أنه قد استبان أن خط **ذ أ** مثل خط **أ ه** وخط **ب ه**[6] مشرك بخط **أ د** وإذ قاعدة **ه د به** قاعدة **ه به** والزاوية التي من **د أ به** مساوية التي **ه أ به** فقد قطعنا الزلوية التي من **ب أ د** [35أ] بنصفين بخط **أ د** وذلك ما أردنا أن نبين فقد أخرجناه من القوة إلى الفعل وقد كان في ذاته صحيحا فاعلم ذلك

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[FN8] ومن جود النظر في باب العلوم الأربعة التي علمناك إياها علم ذلك بسهولة وهو قولنا أعيان الأمور في ذواتها فإن الهندسة وجميع المقادير الخفية حق في ذاتها وإن لم تعلم ولا يقال بحسب جهل من قال لا أقول إن العسل حلو إن لم أذقه فإن هذا عناد الحق والصواب إذ قرب الأجوبة فيه فيجب أن يكون كلما ذيق[7] مما هو حلو بالحلارة حامض بالحموضة ولا يجوز عليه المنتقل من حال إلى حال غيرها وهذا عناد الحق فاعلم ذلك.

[FN9] ثم تصورها للعقل فإن العقل قد ينقسم أيضا أربعة أقسام قد علمناك أيضا كما يقال في حدود الموضوع الانتهاء[8] فإن هذه كلها سهلة على المرتاض بالمنطق وهو قوله في الموضوع قد يقال على موضوع وهو في موضوع ولا يقال على موضوع وليس في موضوع ولا يقال على موضوع فهو في موضوع. فإن العقل قد يتصور شيئا وقد يكون له حقيقة وقد يبقى شيء لا يتصوره ولا له حقيقة وقد يتصور شيئا ولا حقيقة له في ذاته ولهذه العلل وحق سيدنا علمناك المنطق فاعلم ذلك وكيف هو نصب[9] الطريق إن

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[5] أوجدنا شيئا : اوجد ناشا (؟) [5099ب].

[6] ب ه : به [5099ب].

[7] ذيق : دبّى [5099ب].

[8] الانتهاء : † الانها † [5099ب].

[9] نصب : تصب [5099ب].

شاء الله تعالى وحده العزيز واتعب[10] يا أخي ما في هذه[11] الأربعة في العقل أن يتصور ما له حقيقة على يقين ويبقى ما لا حقيقة له فإنك إذا صرت في هذه المنزلة نلت إلى آخر العلم الفلسلة والسلم.

[FN9.1] وإذ قد أتينا على ما هي الطبيعة الخامسة فإنا نحتاج أن نقول في تمامها إذ كنا قد أوجبنا أن الطبيعة الخامسة شيئان أحدهما داخل والآخر خارج فيجب على ذلك أن تعلم أنا قد فرغنا من واحد منهما نحتاج الآن أن نقول في الثاني حسب ما قلناه في الأول إن شاء الله تعالى وحده العزيز.

[FN9.2] اعلم أن الطبيعة الخامسة في[12] الظاهر هو جميع الحمل الفصلي[13] الخاصي كالضحاك للإنسان والصهيل للفرس الذي ينعكس فنضع المقدمات فيه والنظام والنتائج مثال ذلك أن كل إنسان ضحاك وكل إنسان ضحاك والمقدمة الأولى صحيحة وهي قولنا كل ضحاك إنسان فإذا عكست كانت فكل إنسان ضحاك والعكس أن يجعل الأول آخر أو الآخر أولا هذا بالطبع يلزمه اشتقاق الكلام والمعنى قد علمناك ذلك في التقرير كما قد بانت وكذلك كل صهال فرس وإذا عكس نتج نتيجة لها حقيقة كالاول ولو لم يكن فصل الخاصي يفسد وإن كان قد يجوز في بعض الفصول الخاصية فقط والعامية فيقول فكل فرس صهال قول حق.

[FN9.3] كذلك نقول كل كمية ميزان وكل ميزان كمية قول صحيح وكل صبغ كيفية وكل كيفية تصبغ قول حق لا مراء فيه ولا منازعة وكل صابغ اكسير وكل إكسير صابغ.

[FN9.4] فأما في قسم الزيادة فيقع في نفوس الناس شك منه[14] وهو قولنا وكل كثير قليل فقد يصح أن يكون قليل كثيرا[15] بالإضافة وهو موضع الشك إذا قلنا إن القليل هو أجزاء الكثير فقد صحت القضايا فكذلك نريد أن نثبت هذه الصنعة من كل وجه.

[FN9.5] فقد صح ووجب أن يكون كل تأثير غير ذاتي كائن لم يكن ثم ظهر أن القاعدة السالمة وهو الطبيعة الخامسة لأنا قد علمناك أن الطبيعة الخامسة متضمنة قسمين.

[FN10] وإن كان ما قال جالينوس حقا فإن الروح تابعة المزاج البدن على تفسير الحمقاء[16] فإذن [35ب] الحيوة هي الطبيعة الخامسة وهي بغير شك من فوق وإن كان ما قال به حقا على تفسير المحقين وهو إن كان المزاج فاسدا كانت الروح فاسدة وإن كان معتدلا كانت معتدلة وأمثال ذلك فهي الطبيعة

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[10] واتعب [5099ب] : واصب (؟) [5099فاب].

[11] هذه [5099تاب].

[12] في [5099فاب].

[13] الفصلي : الفضلى [5099ب].

[14] شك [5099فاب].

[15] كثيرا : كثير [5099ب].

[16] الحمقاء [5099ب] : الحمقى [Kraus (1942), p. 330, n. 3]

الخامسة الظاهرة.

[FN11] وإن كان الإكسير قد لا تكون أجزاؤه صابغة فقد صح أن الطبيعة الخامسة إذ ذلك الصبغ فصل له من الأجزاء عن الصابغة فاعلم ذلك.

[FN12] فهذا وحق سيدنا هو موضوع الطبيعة الخامسة الظاهرة فالنتيجة من ذلك والفائدة مع ما تقدم فهو قولنا ما هي قواعد هذه الأشياء وقد أنبّأ[17] عن جواهر هذه الأشياء كلها في كتاب من هذه الكتب فاطلبه فإني لا أسميه لتعرف موضع المنة عليك فالتحقيق يوجب أن الأجزاء في الأحمر غيرها هي الأبيض وقد يحصرها كلها اسم واحد إن علمت ذلك فاعرفه وابحث عنه تصب الطريق إن شاء الله تعالى وحده العزيز.

[FN13] وانظر الآن من الطبيعة الخامسة هل يجب أن يكون الشيء من دواء واحد أو من أدوية كثيرة فإن الخصوصة في ذلك بين الفلاسفة كثيرة طويلة.

[FN14] وذلك أن أهل الشيء الواحد يقولون إن الأشياء لا يتساوى في طبع واحد ولو تساوت في الطبع والحد لكانت هي الصبغ الفاصل إنما يكون في الشيء الواحد ولا يتساويه ما كانت من أشياء كثيرة ومن قال إنها لا يتساوى على القضية الأولى.

[FN15] وقالوا أصحاب الجماعة في جواب ذلك لعمرى إنكم قد صدقتم أن الأشياء لا يتساوى في حد واحد فما ينكرون أن يكون أشياء كثيرة من جنس واحد تعمل ذلك إما أكثر وإما أقل من عمل ذلك الواحد وأعني بذلك العمل الكيفية فاعلم ما نقول وانظر الآن يا أخي بعين العقل بالله الطالب الغالب الحمن الرحيم أين الحقائق فإنك تجده وحق سيدنا في الوجهين جميعا إلا أنك ستجده في باب الجماعة أقرب وأقل في باب الجماعة على جملة واحدة أبعد وأعزر ويجب أن يضاف[18] إليه واتعب والسلام.

[FN16] وإذ قد أتينا على هذا الموضع من الطبيعة الخامسة فإنا نحتاج أن نقول في تمام ذلك في القسمين الآخرين. إذ قد حكمنا وجوّدنا القول في أعيان الأمور وذوات الأشياء وفي تصورها للعقل فغير شك أنها لما كانت أربعة وقد كنا قدمنا أن الإثنين منها قد تكلمنا عليها وأن الباقي إثنان وهما اللفظ بها والكتابة لها.

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[17] أنبّأ : انبّاء [5099ب].

[18] يضاف : نصاف [5099ب].

The Work of Four Elements[1]

Ed. Berthelot & Ruelle, *CAAG* (1888), II, pp. 337-342.[2]

[1] The beginning of a broad explanation of the work

Take the white and yolk of the eggs,[3] mash them together with your hand so that they become [like] marrow. Put them into a newly-made clay pot, close [it] and bury [it] in manure, in hot ashes or in straw for 7 or 14 days[4]. Then, take [it] up and put [its contents] in a still as you know[5] with a very low fire. Remove the white water extracted from them. When you see that it drops mud or dark water, let [it go] and keep it aside. Add oil too and the fire should be stronger. After adding [it], keep it aside. Cover the matter that remains on the plate, which is burnt copper and Asian magnet.

[2] The first element: Water[7]

– The first work of divine vinegar

1] ΑΡΧΗ ΤΗΣ ΚΑΤΑ ΠΛΑΤΟΣ ΤΟΥ ΕΡΓΟΥ ΕΞΗΓΗΣΕΩΣ.

— Λάβε τὰ λευκὰ καὶ ξανθὰ τῶν ὠῶν, καὶ μάλαξον τῇ χειρί σου ὁμοῦ, ὡς γενέσθαι μυελόν, καὶ βάλε αὐτὰ εἰς καινὴν χύτραν, καὶ φίμωσον καὶ χῶσον εἰς κόπρον ἢ ἐν θερμοσποδιᾷ ἢ ἐν ἀχύρῳ ἡμέρας ζ΄ ἢ ιδ΄. Εἶτα ἀνελών, θὲς ἐν ἄμβιξι, ὡς ἔγνως, μετὰ ταπεινοῦ[6] λίαν πυρός· καὶ λάβε τὸ ἐξ αὐτῶν ὕδωρ λευκόν. Ὅταν δὲ νοήσῃς ὅτι στάζει θολὸν ἢ μέλαν, ἔα, καὶ ἔχε τοῦτο ἰδίως. Δέχου δὲ καὶ τὸ ἔλαιον, καὶ ἔστω ὑστεία δυνατωτέρα, καὶ ἀποδεξάμενος καὶ αὐτὸ ἰδίως ἔχε· τὴν δὲ ἀπομένουσαν ἐν τῷ πατελλίῳ ὕλην κρύψον, ἥτις χαλκὸς κεκαυμένος καὶ μαγνήτης ἀσιατικός.

2] ΣΤΟΙΧΕΙΟΝ ΠΡΩΤΟΝ ΤΟΥ ΥΔΑΤΟΣ.

— ΕΡΓΑΣΙΑ ΠΡΩΤΗ ΤΟΥ ΘΕΙΟΥ ΟΞΟΥΣ.

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[1] For a discussion on the relationship between the *Four Elements* ([1] to [14]) and the Arabic and Latin *Book of Thirty Words* (the 1st words to the 27th words), see Colinet (2000), pp. 188-190.

[2] Cf. Fr. tr. *CAAG* (1888), III, pp. 322-327.

[3] The object that is separated into the four elements is not an egg but a stone in Arabic and Latin *Book of Thirty Words*.

[4] In the Greek text of *CAAG*, ιδ΄ (14) is written as δ΄ (4) which might be a misprint for ιδ΄ since it seems improbable that fewer days come after 7 days as an optional time duration. In its French translation, it is not read as 4 but 14. The letter ι might have simply dropped from ιδ΄ in transmission of the text.

[5] The phrase "As you know" (ὡς ἔγνως or others that are similar to this expression) is often found in the alchemical recipes. It implies that the author expects his readers to understand the procedure that he refers to, even if he gives only rough explanation.

[6] Ταπεινοῦ is a variant of ταπεινὴν which is adopted in *CAAG*. If this ταπεινός modifies πῦρ here, ταπεινοῦ is preferable. On the other hand, if λίαν is a feminine noun that was partially miswritten in the manuscripts, ταπεινὴν is understandable as a modifier of that feminine noun, although I have not come up with any alternative word for λίαν.

[7] Compared with the subtitles for the third and the fourth elements (τὸ πῦρ and ἡ γῆ respectively), τοῦ ὕδατος in the second subtitle here should be nominative although there is no such a variant. The reason why it is genitive could be conjectured from the next sentence "ΕΡΓΑΣΙΑ ΠΡΩΤΗ ΤΟΥ ΘΕΙΟΥ ΟΞΟΥΣ" in [2] and the introductory way of the second elements "ΑΡΧΗ ΤΗΣ ΕΡΓΑΣΙΑΣ ΤΟΥ ΑΕΡΟΣ" in [5], in both of which the element is written with genitive.

When you distil the divine water directly through the apparatus until 3 [times], every time, put divine lime, 1 ounce, in a litra [8] of water. Then distil again with leaves of myrtle[9] for 7 times. Operate like this until the water becomes shining and transparent. This is called divine vinegar.

[3] Pay attention to the first procedure, as we said, at every operation through this apparatus, put a jar in manure, in straw or in hot ashes for a day. [The jar] contains water with 1 ounce of fresh quicklime. Then distil [it]. Every time, put fresh quicklime. Throw away the first [outcome]. The more you distil, the more you will benefit.

[4] Name list of divine vinegar and divine water[13]

This is called, among philosophers, divine water, divine vinegar, white *magnēsia*, quicklime water, pure urine, quicksilver, sea water, milk of a virgin, ass milk, dog milk, milk of a black ox, alum water, water of cabbage ashes, natron (sodium carbonate) water, and western vapour (or breeze). It whitens the body of *magnēsia*,[14]

— Καὶ ἐξαναμβικίσας διὰ τοῦ ὀργάνου εὐθέως τὸ θεῖον ὕδωρ ἕως τρίς, καὶ κάτε φοράν[10] βάλε τῇ λίτρᾳ τοῦ ὕδατος γ° α΄ θείαν ἄσβεστον. Εἶτα ἀμβίκισον αὖθις μετὰ μύρτων φύλλα φορὰς ζ΄· καὶ οὕτως ποίησον ἕως γένηται τὸ ὕδωρ τηλαυγὲς καὶ φαεινόν. Καὶ τότε λέγεται θεῖον ὄξος.

3] Πρόσχες δὲ ἵνα[11] τῇ πρώτῃ ἀγωγῇ, ὡς εἴπομεν, σήπτῃς [12] κάτε φορὰν τοῦ διοργανισμοῦ ἡμέραν α΄ τὸν βίκον, ἢ ἐν τῇ κόπρῳ, ἢ ἐν ἀχύρῳ, ἢ ἐν (f. 227 v.) θερμοσποδιᾷ τὸν ἔχοντα τὸ ὕδωρ μετὰ τῆς μιᾶς γ° τῆς ἀσβέστου τῆς νεαρᾶς. Εἶτα ἀμβικίαζε· κάτε δὲ φορὰν βάνε νεαρὰν ἄσβεστον· τὴν δὲ πρώτην ῥίπτε· ὅσον γοῦν ἀμβικιάζεις, τοσοῦτον ὠφελήσεις.

4] ΟΝΟΜΑΤΟΠΟΙΙΑ ΤΟΥ ΘΕΙΟΥ ΟΞΟΥΣ ΚΑΙ ΥΔΑΤΟΣ.

— Τοῦτο λέγεται παρὰ φιλοσόφων θεῖον ὕδωρ, θεῖον ὄξος, μαγνησία λευκὴ, ὕδωρ ἀσβέστου, οὖρον ἄφθορον, ὑδράργυρος, ὕδωρ θαλάσσης, γάλα παρθένου, ὀνόγαλα, κυνόγαλον, γάλα βοὸς μελαίνης, ὕδωρ στυπτηρίας, ὕδωρ σποδοκράμβης, ὕδωρ νίτρου, καὶ δυτικὴ πνοή. Τοῦτο λευκαίνει τὸ σῶμα τῆς

[8] Oungia (οὐγχία) is 27.288g and litra (λίτρα) is 327.45g according to [Beck (2005), p. xii].

[9] In addition to 'myrtle', 'bamboo' (Ar. *al-ḫayzrān*; Lat. *alkesseram* / *alkaisaram*) is mentioned in the 3rd words of Arabic and Latin *Books of Thirty Words*.

[10] Κάτε φοράν is a specific phrase that only appears in *The Work of Four Elements* according to TLG although the phrase κάθε φοράν is very common.

[11] Based on TLG, πρόσχες (imperative of προέχω) is not used in alchemical texts except the *Four Elements* but found in late Byzantine anonymous mathematical writings (e.g., an anonymous arithmetical treatise in MS Vatican Barb. gr. 4 as the source of Nicholas Rhabdas' letter to Khatzykes. The main hand of the Greek manuscript displays a typical script in Constantinople during the first quarter of the fourteenth century [Acerbi, Manolova & Martín (2018), p. 7]). This peculiar usage of imperative can be a clue to date the *Four Elements* to the late Byzantine era. The combination of πρόσχες and ἵνα is rare and only seen in our text.

[12] Σήπτῃς can be a second-person singular subjunctive of a verb σήπτω that occurs in Byzantine texts as a later form of σήπω and could mean "to be converted into excrement".

[13] Name lists, i.e., [4], [7], [8] and [11], are unique for the *Four Elements* and not found in Arabic and Latin *Book of Thirty Words*.

[14] The body of *magnēsia* is an expression that was used since ancient times. When Synesius tried to interpret ps.-Democritus' words "take mercury and make it solid with the body of *magnēsia*" (Ps.-Democritus, *On the Making of Purple and Gold*, 5 [ed. & tr. Martelli (2014), pp. 86-87]), he regarded the body of *magnēsia* as a mixed substance in general – the solid bodies – according to a peculiar etymology, i.e., μαγνησία is a

that is, burnt copper. It brings outside the nature which is hidden inside. This is the nature which conquers the [other] nature, transforms natures, makes [them] smooth, puts [them] in chains, makes [them] conceive, and brings [them] into the world. That is the nature through which everything is completed.

[5] The beginning of the work of Air

Likewise, take oil and put 1 ounce of quicklime in a litra of it (i.e., the oil). Make [it] macerated in manure for a day, and then distil [it]. Carry out this operation only for a day; distil [it] with leaves of myrtle[15] up to 20 or 30 times, until it becomes very clean, whitish and yellow.[16]

[6] As for the fire of the furnace, I do not have to say to you anything about its kind, except that it must be of a torch, a straw fire, or very low [heat] of manure, as it was no longer fire. As for the alembic, it is buried in the middle of hemp, [in] boiling water, manure, or ashes.[17] It is better [to put it] on water which is also called moist furnace. Some people carry out the operation by means of this apparatus for 50 times. For, every 10 times, it appears more brilliant in colour. The sign of its

μαγνησίας, ἤγουν τὸν κεκαύμενον χαλκόν, τοῦτο φέρει ἔξω τὴν φύσιν τὴν ἔνδον κεκρυμμένην· αὕτη ἐστὶν ἡ φύσις ἡ νικῶσα τὴν φύσιν, ἡ μεταλλάττουσα τὰς φύσεις, καὶ λειοῦσα, καὶ δεσμέυουσα, ἡ ἐγκυοῦσα καὶ τίκτουσα· ἡ δι' οὗ τὸ πᾶν ἀποτελεῖται.

5] ΑΡΧΗ ΤΗΣ ΕΡΓΑΣΙΑΣ ΤΟΥ ΑΕΡΟΣ. — Ὁμοίως λάβε τὸ ἔλαιον καὶ βάλε τῇ λίτρᾳ αὐτοῦ γ° α΄ ἄσβεστον, καὶ σῆψον ἐν τῇ κόπρῳ ἡμέραν α΄· εἶτα ἀμβίκισον, καὶ οὕτω ποίησον α΄ ἡμέραν καὶ μόνον· μέχρι δὲ φορὰς κ΄ ἢ καὶ λ΄, ἀμβίκιζε μετὰ μύρτων φύλλων, ἕως γένηται καθαρώτατον, ὑπόλευκον, ξανθόν.

6] Τὸ δὲ πῦρ τῆς καμίνου οὐχ ἔχω τί σοι λέγειν, ὅποιον δεῖ εἶναι,[18] πλὴν ἔστω σοι, ἢ λαμπάδος, ἢ καλάμης, ἢ κόπρου λίαν μαλθακόν, καὶ οὐχὶ ὡς πῦρ· Ὁ δὲ ἄμβιξ ἔστω μέσον καννάβου κεχωσμένος, ἢ ὕδατος ζέοντος, ἢ κόπρου, ἢ στακτῆς· κρεῖττον δὲ ἐπὶ ὕδατος, ἥτις καὶ ὑγρὰ λέγεται κάμινος. Τινὲς δὲ ἕως πεντηκοντάκις τοῦτο διοργανίζουσιν·[19] κάτε γὰρ δέκα φορὰς λαμπρότερον φαίνεται τῇ χρείᾳ. Τὸ δὲ σημεῖον τῆς αὐτοῦ τελειώσεώς (f. 228 r.) ἐστιν οὕτως.

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combination of μείγνυμι (to mix) and οὐσία (substance) [Martelli (2014), p. 247, n. 21].

[15] 'Leaves of myrtle' were originally 'stems [or branches] of myrtle' (*quḍbān ās*; *rami myrti*) in the 5th words of Arabic and Latin sources. Colinet notes that it is not possible to judge whether the Greek replacement of 'stems' for 'leaves' is necessary for the operation, since the role of stems is not clear [Colinet (2000), p. 176].

[16] Being whitish and yellow at the same time can mean pastel yellow, which is perceived as a colour between white and yellow.

[17] Although there are various possibilities of how to read στάκτης (or στακτῆς), here it seems to mean 'ashes' as a Byzantine term considering its role of mild heating in the same way as the other substances mentioned in parallel do.

[18] "Τὸ δὲ πῦρ τῆς καμίνου οὐχ ἔχω τί σοι λέγειν, ὅποιον δεῖ εἶναι" is a variant of the text "Τὸ δὲ πῦρ οὐχ ἔχω τί σοι λέγειν, ὅποιον εἶναι τῆς καμίνου" which Berthelot and Ruelle adopted. The main difference is whether there is δεῖ or not. Both seem acceptable but I adopted "I do not have to say" rather than "I do not say".

[19] The verb διοργανίζομαι means "treated *dia organōn* (διὰ ὀργάνων)". *Organa* here refer to a specific device for distillation [Martelli (2014), p. 245, n. 16].

completion is like this.

After you burn a leaf of horseshoes iron for 7 times, dip [it] into that divine oil. If the leaf [of iron] is whitened, softened and transformed in terms of its essence, it becomes perfect, namely, more beautiful than gold. If not, return again to its work, that is to say, carry out the operation by means of this device.

Πυρώσας πέταλα ἀλόγου[20] σιδηρᾶ ἕως ἑπτάκις, κατάβαπτε ἐν αὐτῷ τῷ θείῳ ἐλαίῳ· καὶ εἰ μὲν λευκαίνεται τὸ πέταλον, ἀπαλύνεται καὶ μεταλλάττεται ἐκ τῆς οὐσίας αὐτοῦ, καὶ γίνεται τέλειον, χρυσοῦ κάλλιαν· εἰ δὲ οὔ, στράφηθι πάλιν εἰς τὴν ἐργασίαν αὐτοῦ, ἤγουν τοῦ διοργανίζειν τὸ θεῖον ἔλαιον.

[7] The beginning of its (i.e., of Air) name [list]

7] ΑΡΧΗ ΤΗΣ ΟΝΟΜΑΣΙΑΣ ΑΥΤΟΥ.

Its saffron [yellow substance] is called yolk, gold sphere, cinnabar, Cilician saffron, Attic ochre, Sinopian earth, flame-coloured natron, Egyptian natron,[21] *Armeniakon*[22], vitriol, and oil. The oil which comes from it, when being made macerated and treated by means of the apparatus, is called divine oil, Aminean wine[23], cinnabar of the philosophers, *komaris*,[24] untouched sulphur, radish seed [oil],[25] castor [oil], gold broth, quince-yellow, linseed oil, unburnt sulphur, realgar, orpiment, a little gum,[26] Aristolochia, mandragora oil, rhubarb

— Καὶ ὁ μὲν κρόκος αὐτοῦ λέγεται λέκιθος, καὶ χρυσοῦ σφαῖρα, κιννάβαρις, καὶ κιλίκιος κρόκος, καὶ ὤχρα ἀττική, καὶ γῆ σινώπη, καὶ νίτρον τυρρόν, καὶ νίτρον αἰγύπτιον, καὶ ἀρμενιακόν, καὶ χάλκανθον, καὶ ἔλαιον. Τὸ δὲ ἐξ αὐτοῦ ἔλαιον, ὅταν σαπῇ καὶ διοργανισθῇ, λέγεται θεῖον ἔλαιον, καὶ οἶνος ἀμιναῖος, καὶ κιννάβαρις τῶν φιλοσόφων, καὶ κόμαρις, καὶ θεῖον ἄθικτον, καὶ ῥεφάνιον, καὶ κίκινον, καὶ χρυσοζώμιον, καὶ μήλινον, καὶ λινέλαιον, καὶ θεῖον ἄπυρον, καὶ σανδαράχην, καὶ ἀρσένικον, καὶ κομμιάκιον, καὶ ἀριστολοχία, καὶ μανδραγουρέλαιον, καὶ ῥέου, καὶ

[20] Ἄλόγον is an enigmatic word in this context as long as it is used in its common meaning, i.e., 'irrational' or 'speechless'. In French translation by Berthelot and Ruelle, "à cheval" is an equivalent of ἀλόγου and 'πέταλα ἀλόγου σιδηρᾶ' means, as a whole, 'an iron leaf made of horseshoes'. Colinet follows the same interpretation and considers this specification of iron to be an example of a practical feature of Greek text compared with the Arabic 7th words where iron (*al-ḥadīd*) is mentioned with no specific information [Colinet (2000), p. 175].

[21] Egypt was one of the famous sources of natron that is a natural mixture of sodium carbonate. *Wādī al-Naṭrūn* (the Valley of Natron), located in the northwest of Cairo, has salt lakes where natron is extracted from.

[22] *Armeniakon* can be a blue substance. Cf. ἀρμενιακὸς λίθος (limestone coloured blue by copper carbonate).

[23] Aminean wine (οἶνος ἀμιναῖος) is a renowned Roman and Byzantine variety of wine, which, when aged, acquired a golden hue [Merianos (2014), p. 256].

[24] *Komaris* is an important ingredient in the third one of the Syriac recipes under the title of "*Again by Democritus: I greet you wise men*", in which *komaris* from Scythia is said to be strong and deadly for men since it kills them easily, and it gives beauty to stones when it is mixed with quicklime and wine dregs [Martelli (2014), pp. 182-183].

[25] Radish seed oil (ῥεφάνιον) works as a yellow dye which is used in other recipes such as *The Chrysopoeia of Cosmas* [Colinet (2010), p. 69, 7].

[26] Κομμιάκιον seems to be a diminutive and might mean a piece of gum or a specific kind of gum.

[oil],[27] celandine [oil], water of purple(-fish), [water] of copper flower, gold-gleaming [water], [water] of asbestos,[28] alum, (…?),[29] Anatolian quicksilver.

[8] [Substances] of other natures

The same spirits and waters are also called pearls and precious stones by the philosophers: indeed, they are full of great powers. For, if you work these [substances] in order to bring the nature which is hidden inside to the outside, then you will reach the mystery of philosophers. This (i.e., nature) is a main point of the mystery. In this way, being whitened and yellowed again, burnt copper becomes Cyprian copper, and the body of *magnēsia* [does the same]; they say about this: "*Magnēsia*, when treated [properly], does not let [metallic] bodies break. It whitens copper, softens iron, makes tin infusible, and restores quicksilver to gold".

[9] The beginning of the work of Fire.

The third element: Fire.

Then, take Fire, namely, burnt copper, or ashes of the eggs that were burnt in the plate, pound [them] continuously under the sun for a whole day. For it is moistened

ἐλυδρίου, καὶ ὕδωρ πορφύρας, καὶ ἄνθους χαλκοῦ, καὶ χρυσαυγὲς καὶ ἀμιάντου, καὶ στυπτηρία ἐξυπορηθεῖσα (?), καὶ ὑδράργυρος ἀνατολική.

8] ΑΛΛΗΣ ΦΥΣΕΩΣ.

— Τὰ αὐτὰ πνεύματα, καὶ ὕδατα, καὶ μαργαρίτας, καὶ λίθους τιμίους ἐκάλεσαν οἱ φιλόσοφοι· μεγάλης γὰρ δυνάμεώς εἰσιν ἔμπλεα· ἐὰν γὰρ ἐργάσῃς αὐτὰ ὥστε φέρειν τὴν φύσιν ἔξω τὴν ἔνδον κεκρυμμένην, τότε ἔφθασας τὸ μυστήριον τῶν φιλοσόφων. Αὕτη ἐστὶν ἡ κεφαλαίωσις τοῦ μυστηρίου, καὶ οὕτως λευκαίνεται, καὶ πάλιν ζανθοῦται, καὶ γίνεται χαλκὸς κύπριος ὁ κεκαυμένος χαλκός, ἤτοι τὸ σῶμα τῆς μαγνησίας, περὶ οὗ φασιν· « Ἡ μαγνησία οἰκονομηθεῖσα οὐκ ἐᾷ ῥήγνυσθαι (f. 228 v.) τὰ σώματα· τὸν χαλκὸν λευκαίνει, τὸν σίδηρον μαλάττει, τὸν κασσίτερον ἄρρευστον τοῦτον ποιεῖ, τὴν ὑδράργυρον χρυσὸν ἀποκαθίστησι. »[30]

9] ΑΡΧΗ ΤΗΣ ΕΡΓΑΣΙΑΣ ΤΟΥ ΠΥΡΟΣ. ΣΤΟΙΧΕΙΟΝ ΤΡΙΤΟΝ· ΤΟ ΠΥΡ.

— Εἶτα λάβε τὸ πῦρ, ἤγουν τὸν χαλκὸν τὸν κεκαυμένον, ἤτοι τὴν ἐν τῷ πατελλίῳ τῶν κεκαυμένων ὠῶν τέφραν, λειότριβε συνεχῶς ἐν ἡλίῳ ὅλην τὴν ἡμέραν, ὑγραίνεται γὰρ κατὰ μικρόν· καὶ ὁ καπνὸς

[27] Ῥᾶ, precisely in the name of πόντιον ῥᾶ (Pontic rhubarb), was interpreted as something that dissolves any solid substance in the hermeneutic tradition after ps.-Democritus [Martelli (2014), p. 225, n. 50]. In ps.-Democritus' *Natural and Secret Questions*, it is said that ῥᾶ can be replaced with ἐλύδριον (celandine) [Martelli (2014), p. 98, 194-196].

[28] Ἀμίαντον [λίθος], mentioned in Dioscordes' *De materia medica* V 138, is a fibrous stone, i.e., asbestos. This natural resource was utilised in fabric manufacture and ceramic production since ancient times. See Kakoulli et al. (2014).

[29] Ἐξυπορηθεῖσα can be a modifier of στυπτηρία (alum) but it is not clear. It is marked with a question mark also in the edition by Berthelot and Ruelle. According to TLG, ἐξυπορηθεῖσα does not appear in any other alchemical texts besides the *Four Elements*. It might be worth mentioning another example of alum modified with an aoristic passive participle: 'humbled' alum (στυπτηρία ταπεινωθεῖσα) appears in *The Catalogues by Democritus* which are excerpts from so-called *Chemistry of Moses*, i.e., the original catalogues of ps.-Democritus as commented on in Synesius' dialogue [Martelli (2014), pp. 116-117].

[30] As pointed out in Colinet (2000), pp. 168-169, this quotation is based on Ps.-Democritus' *On the Making of Silver*, 3 & 4 [Martelli (2014), pp. 106-108].

little by little and its smoke[31] begins to leave out. Then make it moist, pound [it] and dry [it] up under the sun, or in hot ashes, or in a furnace with divine vinegar, 3 times a day. You should do it until you arrive at such a sign. Then, make silver smooth in a crucible. Throw [it] on the upper side of that ash. If it looks gold, it is good. if not, return to its work.

[10] And the beginning of the work of Earth, or of all-powered lime.

The fourth element: Earth.

Pound the shells of eggs fine, mordant them with natron and water for a day. And then, wash them many times with water.[33] Then, dry [them] up and pound [them] fine until it is heaped. Then, put [them] in water, the same quantity than the eggs,[34] and pour [the mixture] into a bakery furnace or hot ashes until it becomes dry for 7 days. And then, after you take [it] out, pound [it] fine again, and after you mix [it] with water, in the same quantity than the eggs, close [the container] again, and leave it in the furnace for 7 days. Carry out this operation until 3 times.

And then, pound [it] fine, after you dry [it] under the sun many times and make [it] moist for 3 days. Following this, pound [it] fine, place [it] into a vessel, close [it], and put [it] in a glassmaker-furnace for 2 days

αὐτοῦ ἄρχεται ἐκλείπειν. Εἶτα πότιζε αὐτόν, καὶ τρίβε καὶ ξήραινε ἐν ἡλίῳ, ἢ ἐν θερμοσποδιᾷ, ἢ φούρνῳ μετὰ τοῦ θείου ὄξους, τρὶς τῆς ἡμέρας, καὶ τοῦτο ἔσῃ ποιῶν μέχρις ἂν καταντήσῃς εἰς σημεῖον τοιοῦτον· ἤγουν λείωσον τὸν ἄργυρον[32] ἐν τῇ χώνῃ· ῥίπτε ἐπάνω ἐκ ταύτης τῆς τέφρας· καὶ εἰ μὲν χρυσανθῇ, καλόν· εἰ δὲ οὔ, στράφηθι εἰς τὴν αὐτοῦ ἐργασίαν.

10] ΚΑΙ ΑΡΧΗ ΤΗΣ ΕΡΓΑΣΙΑΣ ΤΗΣ ΓΗΣ, ΗΤΟΙ ΤΗΣ ΠΑΓΚΡΑΤΟΥΣ ΑΣΒΕΣΤΟΥ. ΣΤΟΙΧΕΙΟΝ ΤΕΤΑΡΤΟΝ· Η ΓΗ.

— Λειοτρίβησον τὰ κέλυφα τῶν ὠῶν, καὶ ἀπόστυφε αὐτὰ νίτρῳ καὶ ὕδατι ἡμέραν α΄. Εἶτα ἀπόκλυζε αὐτὰ πολλάκις διὰ γλυκέως· εἶτα ξήρανον καὶ λειοτρίβησον ὡς χοῦν· εἶτα βάλε ἰσοστάθμῳ ὕδατι ὠῶν, καὶ ἄφες ἐν φούρνῳ ἀρτοποιοῦ, ἢ θερμοσποδιᾷ ἕως ξηράνσεως ἡμέρας ζ΄. Εἶτα ἐξελών, λειοτρίβησον αὖθις, καὶ ἴσον ὕδατι ὠῶν μίξας, πάλιν φιμώσας, ἔα ἐν φούρνῳ ἡμέρας ζ΄· καὶ οὕτω ποίησον ἕως τρισσάκις.

Εἶτα λειοτρίβησον, ἐν ἡλίῳ πολλάκις ξηράνας, καὶ ποτίζων ἄχρις ἡμερῶν γ'· τῇδε ἐξῆς, λειοτρίβησον, καὶ βάλε εἰς ἄγγος, καὶ φίμωσον, καὶ δὸς καμίνῳ ὑελουργικῷ ἡμερονύκτια δύο, καὶ

[31] 'Smoke' (καπνός) corresponds to 'oil' (*duhn*) in the 9th word in Arabic *Book of Thirty Words* where, by 'oil', Ǧābir means Air as one of the four elements. This transformation from oil to smoke is also found as *fumositas* in the Latin version [Colinet (2000), p. 176].

[32] ἤγουν λείωσον τὸν ἄργυρον is a variant of γελάσει σοι ἄργυρος which Berthelot and Ruelle adopted. Since γελάω (to laugh) is hard to understand in this context, I adopted the variant.

[33] Διὰ γλυκέως as adopted by Berthelot and Ruelle has its variant διὰ γλυκέος ὕδατος. To keep clarity of its grammatical structure, γλυκέος (adj.) seems better than γλυκέως (adv.) as a word governed by διά. However, there can be another case of γλυκέως as the genitive according to TLG. The 'sweet water' probably means non-salty water as opposed to salt water like water from the sea, instead of literally sweet water. See Stéphanidès (1922), p. 309.

[34] The eggs here probably mean the ones of which shells were pounded at the beginning of [10].

and nights. When you take it out [of the vessel], you will find Cimolian green.[35] After you pound it fine again and make [it] moist many times a day, roast [it] on the heat of manure. After you operate this for 3 or 5 times, you will find it to be the whitest lead. You will find its perfection if you [can] whiten copper in the melting-pot. If not, return to its work.

[11] Name list of Earth

The sages called them divine lime, Chian earth, earth of mythical precious stone (Asterite), cloven alum, white litharge, Cimolian [earth], stibia [earth], moon stone, gum, vitriol, infusible urine, white lead, *androdamas* (a kind of pyrites) of alabaster, fig juice, and sea spurge [juice].

[12] Union of four elements

Pay attention, O friend, if you do not treat the four elements correctly according to the way that was told to you, you should not attempt to unite them so that you do not treat [it] untimely. You would only conceive its trouble.

Pay attention – Take 1 part of the treated Fire, 4 parts of the treated Earth. After you pound [them], put [them] in a vessel. On [them], put the treated Air, the double with respect to the Fire. Hang the vessel in the middle of another large vessel which has pungent vinegar.[36] Close the vessel and leave [it] for several days until [its

ἐκβαλὼν, εὑρήσεις κιμωλίαν χλωράν. Ταύτην (f. 229 r.) δὲ πάλιν λειοτριβήσας καὶ ποτίσας πολλάκις τῆς ἡμέρας, ὄπτησον ἐν πυρὶ κόπρου· καὶ τοῦτο τρὶς ἢ πεντάκις ποιήσας, εὑρήσεις αὐτὴν ψιμμίθιον λευκότατον. Εὑρήσεις δὲ αὐτῆς τὸ τέλειον εἰ λευκάνεις ἐπὶ χώνης τὸν χαλκόν· εἰ δὲ οὔ, στράφηθι εἰς τὴν ἐργασίαν αὐτῆς.

11] ΟΝΟΜΑΤΟΠΟΙΑ ΤΗΣ ΓΗΣ.

— Ταῦτα ἐκάλεσαν οἱ σόφοι θείαν ἄσβεστον, γῆν χείαν, γῆν ἀστερίτην, στυπτηρίαν σχιστὴν, λιθάργυρον λευκήν, κιμωλίαν, στιλβίδα, ἀφροσέληνον, κόμμι, χάλκανθον, οὖρον ἄρρευστον, ψιμμίθιον, ἀνδροδάμαντα ἀλαβάστρινον, ὀπὸν συκῆς καὶ τιθυμάλλου.

12] Η ΕΝΩΣΙΣ ΤΩΝ ΤΕΣΣΑΡΩΝ ΣΟΙΧΕΙΩΝ. — Πρόσχες, ὦ φίλε, ἂν μὴ κατὰ τὸν εἰρημένον σοι τρόπον καλῶς οἰκονομήσης τὰ τέσσαρα στοιχεῖα, μὴ ἐπιχειρήσῃς τὴν ἕνωσιν αὐτῶν, ἵνα μὴ ἀκαίρως κομήσῃς, σὺ δὲ αὐτὸς τὸν κάματον ὑποστῇς μόνος.

ΠΡΟΣΧΕΣ. — Λάβε ἀπὸ τοῦ ᾠκονομημένου πυρὸς μέρος ἕν, καὶ ἀπὸ τῆς ᾠκονομημένης γῆς μέρη δ΄, καὶ λειώσας, βάλε εἰς ἄγγος, καὶ ἐπάνω βάλε τοῦ ᾠκονομημένου ἀέρος[37] διπλάσιον τοῦ πυρός· καὶ κρέμασον τὸ ἄγγος μέσον ἑτέρου μεγάλου ἄγγους ἔχοντος ὄξος δριμύ, καὶ πώμασον τὸ ἄγγος, καὶ ἔα

[35] 'Cimolian green' was originally 'earthy grey' or 'dust colour' (*ġabrāʾ*) in the 13th and the 14th words in Arabic *Book of Thirty Words*. The same word is expressed as *cimolea* and *color cimolee* in the Latin version [Colinet (2000), p. 176].

[36] 'Vinegar' here and in [14] is probably a mistake for 'dissolution', that is *ḥall* (حل) in Arabic, which can be easily misread as 'vinegar' (خل *ḫall*) due to their similar written form. The Latin translation too has the same replacement of 'dissolution' with 'vinegar' (*acetum*) [Colinet (2000), p. 176].

[37] Based on the context, ἀήρ here should be accusative as an object of βάλλω. The genitive of τοῦ ᾠκονομημένου ἀέρος seems to derive from the Latin 'olei predici' in the 17th words. The Arabic text that corresponds to 'olei predicti' is '*min al-duhn*' without an equivalent to 'predictus'. This is one of the signs that the *Four Elements* does not directly depend on the Arabic original but on its Latin version.

contents] become like leavened dough.
[13] You should know that some people take 2 parts of Earth and 1 part of Fire, others [take] 3 [parts] of Earth and 1 [part] of Fire, others [take] 4 [parts] and more <of Earth> and 1 [part] of Fire. These [options] are all good but what is mentioned earlier is stronger.[38]
[14] We wrote this to you, O friend, being without malicious intent so that you will not go astray. After the composite becomes like leavened dough, remove [it] and roast [it] with a low flame so that it will be dried. Then, pound it again in Roman marble,[39] put [it] in a vessel and also put [there] Air, the double with respect to the Fire. Hang the vessel in the middle of vinegar like [we did] earlier too. You carry out this operation according to the above model up to 7 times. Every time, put Air, the double with respect to Fire.

ἡμέρας τινὰς ἕως γένηται ὡς ζύμη.
13] Γίνωσκε ὅτι τινὲς ἔβαλον μέρη δύο τῆς γῆς, καὶ ἓν τοῦ πυρός· καὶ ἄλλοι γ΄ τῆς γῆς, καὶ ἓν τοὺ πυρός· καὶ ἄλλοι δ΄ καὶ πλείον <τῆς γῆς>, καὶ ἓν τοῦ πυρός. Καὶ ταῦτά εἰσι πάντα καλά· ἀλλὰ τὸ κρεῖττον τὸ ἄνωθέν ἐστιν εἰρημένον.

14] Τοῦτο δὲ πρὸς σέ, ὦ φίλε, γεγράφαμεν, ἔξω τοῦ φθόνου ὄντες, ἵνα μὴ πλανηθῇς. Μετὰ δὲ τὸ γενέσθαι ὡς ζύμην τὸ σύνθημα, ἐξελών, ὄπτησον εἰς ἐλαφρὰν (f. 229 v.) πύραν, ἵνα ξηρανθῇ. Εἶτα πάλιν τρίψον αὐτὸ ἐν ῥωμαίῳ μαρμάρῳ, καὶ βάλε ἐν τῷ ἄγγει, καὶ βάλε καὶ ἐκ[40] τοῦ ἀέρος διπλάσιον τοῦ πυρός· καὶ ἀπαιώρησον ὡς καὶ πρώην τὸ ἄγγος μέσον τοῦ ὄξους· καὶ οὕτως ποίει κατὰ τὸν ἄνω τύπον μέχρι καὶ φορὰς ζ΄· κάτε φορὰν δὲ βάνε διπλάσιον τοῦ πυρὸς τὸν ἀέρα· μετὰ δὲ τὴν ζ΄, ἐξελών, ξήρανον καὶ

[38] It is said that the strongest ratio of Fire to Earth is 1: 4. This is the same description as in both Arabic and Latin *Books of Thirty Words* except that "the Air whose quantity is double of the Fire" is added in Greek. However, the other examples of valid ratio are different. In Greek, the ratio of Fire to Earth is exemplified with 1 : 2, 1 : 3 and 1 : 4 or more, whereas we have the ratio 1 : 3, 1 : 7, and 1 : 12 in the 17th to the 20th words of the Arabic and Latin sources. The *Four Elements* does not have corresponding texts to the Arabic and Latin 21st words where 1 : 4 is introduced as an opinion of the 'proponents of natures' (*aṣḥāb al-ṭabāʾiʿ*), 1 : 7 as an opinion of the 'proponents of celestial spheres' (*aṣḥāb al-aflāk*), and 1 : 12 as an opinion of the 'proponents of constellations and a luminous sphere' (*aṣḥāb al-burūǧ wa al-falak al-munīr*).

[39] Roman marble is an original description of the *Four Elements* and does not appear in its Arabic and Latin *Book of Thirty Words*. "Εἶτα πάλιν τρίψον αὐτὸ ἐν ῥωμαίῳ μαρμάρῳ, καὶ βάλε ἐν τῷ ἄγγει" roughly corresponds to the beginning of the 23rd words, i.e., "ثم أجد سحقه في أناء نظيف من قوارير أو حجارة محكمة" (Then, do its pounding well in a transparent vessel of glass bottles or firm stones) [ed. Lory (1988), p.48] and "Post hoc autem meliora eius triturationem in limpido uase facto de lapide optime" [ed. Colinet (2000), p. 186]. Even the Latin translation differs from the Arabic original text due to the vagueness of *qawārīn* (pl. of *qārūra*) which generally means 'flask' and 'bottle' and implies it is made of glass. It seems reasonable to take *qārūra* here as an example of a glass-made bottle, rather than a mere bottle whose material is not specified, since *qawārīn* is put in parallel with *ḥiǧāra* (stones). On the other hand, the Latin translator's interpretation – the vessel is limited to stone-made one – is understandable, given that the Arabic text he relied on is the same as shown above, because the Arabic text does not clearly refer to 'glass' (*zǧaǧ*) and the Latin translator seems to have considered that *qārūra* (long-necked vessels) is a specified description of a general word *anāʾ* (container).

[40] A preposition ἐκ in ἐκ τοῦ ἀέρος might be a reminiscent of *min* in *min al-duhn* that means 'some amounts of oil' in the 24th words (Oil means Air as one of the four elements in Arabic). However, the Latin version also says 'ex oleo'; from the presence of ἐκ before ἀήρ, it cannot be said that the Byzantine author of the *Four Elements* directly consulted Arabic text.

After the 7th time, you take [it] out, dry and pound [it] fine with Earth, the double with respect to the [abovementioned] Air. Put the vessel into manure for a day and night. Then, when you take [it] out, watch what colour it is. If its colour is changed, consider that it began the way to be carried. If not, turn it back to its work until you produce another appearance. Thus, after taking [it] out, pound [it] fine separately from Air, but mix the Air and the sulphur; namely, [mix] the divine vinegar with it (i.e., Air). Pound [it] fine many times a day. Then make [it] macerated again, as we mentioned above, in a vessel with pungent vinegar for 2 days. For, it will be dissolved like water. After it becomes like this, take (it) out of vinegar and fix [it] in soft and proper fire until you make [it] solid [like] a firm beeswax stone. Thus, have plentiful grace of God for its honour and solution of poverty.

λειοτρίβησον μετὰ διπλοῦ τῆς γῆς τοῦ ἀέρος· καὶ βάλε τὸ ἄγγος εἰς σαρζεῖν[41] ἡμερονύκτιον.

Εἶτα ἐκβαλών, σκόπησον τί χροιᾶς ἐστί· καὶ εἰ ἐνήλλακται ἡ χροιὰ αὐτοῦ, σκόπησον ὅτι ἤρξατο τῆς ὁδοῦ πορεύεσθαι· εἰ δὲ οὔ, στρέψον[42] αὐτὸ εἰς τὴν ἐργασίαν αὐτοῦ ἕως φέρῃ θεωρίαν ἑτέραν· καὶ οὕτως ἐξελών, λειοτρίβησον χωρὶς τοῦ ἀέρος, ἀλλὰ μίξον τὸν ἀέρα, καὶ τὸ θεῖον, ἤγουν τὸ ὄξος θεῖον μετ' αὐτοῦ· λειότριψον πολλάκις τὴν ἡμέραν· εἶτα σῆψον πάλιν, ὡς ἀνωτέρω προείπομεν, εἰς ἄγγος μετὰ ὄξους δριμέος[43] ἡμέρας δύο· λύεται γὰρ ὡς ὕδωρ· καὶ οὕτως γενόμενον ἔκβαλε τοῦ ὄξους, καὶ πῆξον ἐν μαλθακῷ πυρὶ καὶ ἀρτίῳ, ἕως εἰς λίθον κηροῦ στερεωτάτου πήξῃ. Καὶ οὕτως ἔχε Θεοῦ χάριν ἄφθονον εἰς αὐτοῦ τιμὴν καὶ πενίας λύσιν.

[41] Σαρζεῖν can be a transliteration of an Arabic word *sirǧīn* [Colinet (2000), pp. 176-177]. Κόπρον is shown as a variant of σαρζεῖν in *CAAG*.
[42] A similar phrase "εἰ δὲ οὔ στράφηθι" is found in [6], [9] and [10], but only here does the verb take the active voice "στρέψον".
[43] Δριμέος is a modified form of δριμέως adopted by Berthelot and Ruelle. Although no variant of δριμέως is shown in *CAAG*, this modification is inevitable in terms of grammar. See n. 33 above.

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