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# Translating Ancient Alchemy: Fragments of Graeco-Egyptian Alchemy in Arabic Compendia

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Translation played a vital role in the development and transfer of alchemy in Antiquity and the Early Middle Ages. Since its origins in Graeco-Roman Egypt, alchemy was encapsulated in Greek texts which allegedly relied on Persian or Egyptian sources. Later, a variety of Greek and Byzantine writings were translated into Syriac and Arabic, and these translations were in turn fragmented and disseminated in later Arabic compendia. This paper will first review the main phases of this historical process of transmission of alchemy from one language and culture to another. Second, this process will be examined using two significant case studies: a close analysis of various quotations from Graeco-Egyptian authors (Pseudo-Democritus, Zosimus of Panopolis, and Synesius) as presented in two Arabic dialogues on alchemy, *The Tome of Images* and *The Dialogue between Āras and the King Caesar*. These sources demonstrate some of the concrete textual realities that underlie general patterns of translation and reception.

## Introduction

The ancient alchemical tradition is multilingual. This can be said in two slightly different ways. On the one hand, alchemical texts were produced in and translated into a variety of languages, such as Greek, Syriac, Arabic, Coptic, and Latin. On the other, alchemical texts include countless references to ancient books, which allegedly preserve the wisdom revealed by the founders of the art: this “original” wisdom is usually said to have been set down in foreign languages. For instance, in many

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cases, Greek texts, sometimes preserved only in Syriac or Arabic translation, refer back to Persian and Egyptian writings as their ultimate sources.

In what follows, I shall review the main historical and methodological issues raised by studying the transmission of alchemical practices and theories from one language to another. I shall start from the possible Babylonian and Egyptian sources of Graeco-Egyptian alchemy and continue to investigate the reception of Greek alchemy into Syriac and Arabic. Critical moments in this primarily diachronic narrative will be explored by comparing alchemy with disciplines that share a similar story of multiple translations (such as medicine, astronomy, and philosophy). This approach is meant to compensate for the lack of primary sources, which impairs the study of important chapters of this historical process. On the other hand, the last chapter of our narrative – namely the Arabic translation of Greek alchemical texts – will lead to the analysis of two significant case studies, in order to anchor key elements of the more general discussion in concrete textual examples. This examination will touch upon distinctive features of ancient alchemy, which regulate its mechanisms of transmission over the centuries: in particular fluctuating authorship, pseudepigraphy, and transfer of textual blocks from one tradition (and language) into another.

## Before Graeco-Egyptian alchemy: a mythical past?

References to a plurality of languages and cultures can be detected from the first emergence of alchemical literature in Graeco-Roman Egypt. In their accounts of the origins of the divine and sacred art, the earliest authors of Greek alchemical writings mention tablets engraved with Persian script as well as *stelae* carved with hieroglyphics. In a Syriac alchemical text (in all likelihood the translation of a lost Greek treatise), the Egyptian alchemist Pebichius (first–second century CE)<sup>1</sup> claims to have discovered the books of Ostanès written “in Persian characters.” He asks the magus Osrón to provide him with a tablet (or small book; *penqitā* in Syriac) containing the Persian alphabet, seemingly a useful tool with which to decipher (one would say transliterate) Ostanès’s alchemical books.<sup>2</sup> The Persian magus Ostanès was the alleged master of Democritus, under whose name Byzantine manuscripts hand down the earliest examples of alchemical writing, from the first century CE: Democritus himself is said to have discovered Ostanès’s books hidden in the Egyptian temple of Memphis.<sup>3</sup> According to Zosimus (third–fourth century CE), the Egyptians too were believed to have concealed their valuable alchemical knowledge in the *sancta sanctorum*: “they

<sup>1</sup> Already mentioned by Zosimus, Pebichius ranks among the earliest alchemical authors: see Jean Letrouit, “Chronologie des alchimistes grecs,” in *Alchimie: Art, Histoire et Mythes*, ed. Didier Kahn and Sylvain Matton (Paris and Milan: S.É.H.A and Archè, 1995), 21–22.

<sup>2</sup> On Syriac translations of alchemical texts, see below; Pebichius’s text – namely a correspondence between the Egyptian alchemist and the Persian magus Osrón – has been translated into French in Marcelin Berthelot and Rubens Duval, *La chimie au Moyen Âge, 2. L’alchimie syriaque* (Paris: Imprimerie Nationale, 1893), 309ff. See also Kevin Van Bladel, *The Arabic Hermes. From Pagan Sage to Prophet of Science* (Oxford: Oxford University Press, 2009), 48–57.

<sup>3</sup> See Matteo Martelli, *The Four Books of Pseudo-Democritus: Sources of Alchemy and Chemistry 1* (Leeds: Maney Publishing, 2014), 82–85 and 122–23.

used symbolic characters to carve them [i.e. their books] on the *stelae* in the dark and inner rooms [of the temples].”<sup>4</sup>

Despite these multiple mentions of alchemical sources written in a variety of languages, very few and scattered examples of ancient alchemical or proto-alchemical texts are known in languages other than Greek. No text on alchemy written in the Egyptian language (e.g. hieroglyphic inscriptions, Demotic papyri) has been discovered so far, so that the impact of the Pharaonic tradition on the emergence of the art in the Hellenistic Egypt is difficult to assess. In fact, if Egyptian texts on alchemy ever existed, we might wonder who during the late Hellenistic and Roman period might have been capable of reading them. We cannot easily dismiss Momigliano’s conclusions that Hellenistic Greeks had very little command of foreign languages: the clichés promoted by various Greek texts circulating under the names of Egyptian or Persian sages arose from the fact that their (Greek) authors could not read Babylonian, Persian, and Egyptian sources in the original.<sup>5</sup>

On the other hand, scholars have more recently emphasised how local elites, such as members of the Egyptian clergy, in many cases learned Greek and became sufficiently Hellenised to use Greek categories of thought to “translate” their own cultural tradition.<sup>6</sup> On a more practical level, analogous instances of multilingualism could have led to a certain exchange and transfer of technical knowledge, as one can observe in contiguous areas of expertise, such as pharmacology. For instance, the Egyptian priest Manetho (third century BCE) – author of the *Aegyptiaka* in Greek – is credited with writing a book *On the Preparation of Kyphi* (Περὶ κατασκευῆς κουφίων; *Souda* μ 142), an Egyptian ritual unguent whose recipe is preserved in Pharaonic sources as well as in the works of Greek physicians, from Dioscorides (first century BCE–first century CE) to Paul of Aegina (eighth century CE).<sup>7</sup> If we come back to alchemy, Greek alchemists do preserve recipes for making black bronze, which has been identified with a patinated alloy called *hmty km* in Egyptian.<sup>8</sup> This term is still used in a hieroglyphic inscription from the late Hellenistic temple of Dendara, which has

<sup>4</sup> Zosimus, *First Book of the Final Account* (Τὸ πρῶτον βιβλίον τῆς τελευταίας ἀποχῆς); see Festugière’s edition in André Festugière, *La révélation d’Hermès Trismégiste*, 1. *La astrologie et les sciences occultes* (Paris: Les Belles Lettres, 1986; 1st ed. 1944), 365: “αὐτοὶ δὲ ἐν ταῖς στήλαις αὐτὰ [i.e., τὰ συγγράμματα] ἐνέγλυψαν ἐν τῷ σκότει καὶ τοῖς μυχοῖς τοῖς συμβολικοῖς χαρακτηρισῖν.” According to Festugière’s interpretation (on 278, n. 3), the pronoun at the beginning of the sentence (i.e. “they”) refers to ancient Egyptians.

<sup>5</sup> Arnaldo Momigliano, *Alien Wisdom. The Limits of Hellenization* (Cambridge: Cambridge University Press, 1975), 146–47 (see also chap. 1). For a recent positive assessment of this view, discussed on the basis of new textual evidence, see Francesca Schironi, *From Alexandria to Babylon. Near Eastern Languages and Hellenistic Erudition in the Oxyrhynchus Glossary, P.Oxy. 1802–481* (Berlin: De Gruyter, 2009), 23–27.

<sup>6</sup> See, for instance, Garth Fowden, *The Egyptian Hermes. A Historical Approach to the Late Pagan Mind* (Princeton: Princeton University Press, 1993), 45–74; on the mutual influence between Greek and Demotic in magical texts composed in an Egyptian priestly milieu, see Jacco Dielmann, *Priests, Tongues and Rites. The London-Leiden Magical Manuscripts and Translation in Egyptian Ritual (100–300 CE)* (Leiden and Boston: Brill, 2005).

<sup>7</sup> See, for example, Philippa Lang, *Medicine and Society in Ptolemaic Egypt* (Leiden and Boston: Brill, 2013), 175; Marie-Hélène Marganne, “L’emplâtre *Isis* et autres recettes d’origine égyptienne,” in *La coupe d’Hygie. Médecine et chimie dans l’Antiquité*, ed. Muriel Pardon-Labonnelie (Dijon: Éd. universitaires de Dijon, 2013), 63–82 (at 75–76 on *kyphi*, with further bibliography).

<sup>8</sup> See, for instance, Alessandra Giumlia-Mair, Stephen Quirke, “Black Copper in Bronze Age Egypt,” *Revue d’Égyptologie* 48 (1997): 95–108; Erika C. D. Hunter, “Beautiful Black Bronzes: Zosimos’ Treatises in Cam. Mm. 6.29,” in

been interpreted as a commentary on an earlier (and lost) handbook on the making of statues.<sup>9</sup> Regrettably, one can only speculate about the kind of instructions that might have been included in similar handbooks (for instance, did they include recipes similar to later alchemical material?), and the role eventually played by late Egyptian priests in their circulation.

A safer textual ground is perhaps provided by Akkadian sources. A handful of Middle and Neo-Assyrian cuneiform tablets describe techniques that pertain to the same areas of expertise encompassed by the earliest Greek texts on alchemy (the Leiden and Stockholm papyri and Pseudo-Democritus's *Four Books*): glassmaking, glazing, and dyeing of stones, metals, and textiles.<sup>10</sup> Already in the 1970s, Oppenheim emphasised these Near Eastern antecedents of Greek alchemical recipes, and a case can be made that the references in Greek alchemical authors to Persian magi and scripts actually hint at a Babylonian rather than Iranian lore.<sup>11</sup> The mechanisms of transfer of this technical knowledge remain, however, difficult to reconstruct. Greek alchemical sources usually refer to Egypt as the country where alchemists first discovered or inherited a kind of Persian (*lege* Babylonian) proto-alchemical knowledge. Scholars have recently identified transcriptions of Babylonian lunar tablets in Greek astronomical papyri found in Egypt, thus confirming that Hellenised Egypt was receptive to Babylonian science.<sup>12</sup> Yet how did this knowledge reach the banks of Nile? The above-mentioned stories about the discovery of Persian books and their transliteration from one alphabet to another seem to point to a written transmission. A scribe in a third-century BCE Babylonian temple could certainly read and write Akkadian, and speak "Aramaic to his children or Greek to his tax official."<sup>13</sup> The so-called *Graeco-Babyloniaca* are products of such a syncretic and multilingual milieu: a cluster of tablets that provide Akkadian texts in cuneiform script as well as in Greek transliteration – a feature that may shed some light on Peibichius's account of deciphering Ostanēs's books. Scholars disagree about the dating of these tablets, which some read as important evidence for the

<sup>8</sup> *Continued*

*I bronzi antichi: produzione e tecnologia*, ed. Alessandra Giunliá-Mair (Montagnac: Ed. Monique Mergoil, 2002), 655–60.

<sup>9</sup> See Philippe Derchain, "L'Atelier des Orfèvres à Dendara et les origines de l'alchimie," *Chronique D'Égypte* 65 (1990): 219–42.

<sup>10</sup> See, for instance, A. Leo Oppenheim, "Mesopotamia in the Early History of Alchemy," *Revue d'assyriologie et d'archéologie orientale* 60 (1966): 29–45 (on stones and metals); Oppenheim, *Glass and Glassmaking in Ancient Mesopotamia: An Edition of the Cuneiform Texts Which Contain Instructions for Glassmakers with a Catalogue of Surviving Objects* (Corning, NY: Corning Museum of Glass Press, 1970); Erle Lechty, "A Collection of Recipes for Dyeing," in *Studies in Honor of Tom B. Jones*, ed. Marvin A. Powel and Ronald H. Sack (Kevelaer: Verlag Butzon & Bercker, 1979), 15–20 (on purple dyeing of wool). Texts are available on-line in the database "Corpus of Glass Technological Texts," by Eduardo A. Escobar: <http://oracc.museum.upenn.edu/glass/corpus> (accessed 18 November 2017).

<sup>11</sup> Matteo Martelli and Maddalena Rumor, "Near Eastern Origins of Graeco-Egyptian Alchemy," in *Esoteric Knowledge in Antiquity*, ed. Klaus Geus and Markham J. Geller (Berlin: MPIWG Preprint, 2014), 37–62.

<sup>12</sup> See, for instance, Alexander Jones, "A Greek Papyrus Containing Babylonian Lunar Theory," *Zeitschrift für Papyrologie und Epigraphik* 119 (1997): 167–72; Jones, *Astronomical Papyri from Oxyrhynchus*, 2 vols. (Philadelphia: American Philosophical Society, 1999).

<sup>13</sup> Markham J. Geller, "The Last Wedge," *Zeitschrift für Assyriologie und Vorderasiatische Archäologie* 87 (1997): 43–85, on 45.

survival of the cuneiform tradition into the third century CE.<sup>14</sup> It remains in any case unlikely that the ability to read cuneiform ever circulated outside Babylonian scribal schools, especially among those Greeks living in Roman Egypt, who had – as Momigliano pointed out – so little command of foreign languages. As recently postulated by Markham Geller for medicine, further research should explore the possible role played by intermediary languages, in particular Aramaic, which became a lingua franca from Babylonia to Egypt under the Persian domination and beyond.<sup>15</sup>

### After Graeco-Egyptian alchemy: translations into Syriac and Arabic

Centuries after the possible transfer of proto-alchemical techniques from Babylonia to Hellenised Egypt (perhaps through Aramaic), Syriac – namely a dialect of Aramaic – did play a pivotal role in the transmission of alchemy. In fact, rich collections of alchemical treatises probably dating from the sixth to the tenth centuries are preserved in Syriac manuscripts.<sup>16</sup> In these collections, Syriac alchemical books are attributed to the same authorities already established in the Greek tradition, such as the philosopher Democritus, the Persian magus Ostanes, and the Graeco-Egyptian alchemist Zosimus of Panopolis. Some of these writings were certainly translated from Greek, as tended to happen with books dealing with philosophy and the sciences.<sup>17</sup> On the other hand, we may wonder to what extent the many narratives incorporated into Greek alchemical texts that allege a Near Eastern origin for the art attracted the attention of those Syriac scholars who presented themselves as the ultimate heirs of Babylonians. After all, a letter attributed to the famous seventh-century scholar, Severus of Sebokht, well-versed in Greek astronomy and philosophy, reads:

Concerning the fact that some of the Greeks who are with you, as you wrote, say that the Syrians can know nothing at all of such things (I mean, the computation of the stars and the eclipse of the sun and the moon), believing that all knowledge belongs to the Greeks alone because they speak Greek, they ought to know, since there are the wise Babylonians, that the Babylonians were the first inventors of knowledge, and not the Greeks, as all the writings of the Greeks themselves testify; and after the Babylonians came the Egyptians, and then the Greeks – I do not think anyone will dispute that the Babylonians were Syrians.<sup>18</sup>

<sup>14</sup> See Geller, “The Last Wedge”; Aage Westenholz, “The Graeco-Babyloniaca Once Again,” *Zeitschrift für Assyriologie und Vorderasiatische Archäologie* 97 (2007): 262–313; Markham J. Geller, “Graeco-Babylonian *Utukkū Lemmūtu*,” *Nabu* 33 (2008): 42–44.

<sup>15</sup> See, for example, Markham J. Geller, *Akkadian Healing Therapies in the Babylonian Talmud* (Berlin: MPIWG Preprint, 2004), 1ff. Telling examples of the use of Aramaic in Egypt under the Persian domination are fifty-two papyri found in Elephantine and Syene: see Bezalel Porten, *The Elephantine Papyri in English. Three Millennia of Cross-Cultural Continuity and Change* (Leiden, New York, and Köln: Brill, 1996), 74–276.

<sup>16</sup> See the pioneering work by Berthelot-Duval, *L’Alchimie syriaque*.

<sup>17</sup> On the relations between the extant Greek fragments of Pseudo-Democritus’s *Four Books* and their Syriac translations, see Martelli, *Four Books*. On the Syriac translations of Zosimus of Panopolis, see Matteo Martelli, “L’alchimie en syriaque et l’œuvre de Zosime,” in *Les sciences en syriaque*, ed. Émilie Villey (Paris: Geuthner, 2014), 191–214.

<sup>18</sup> Syriac text edited by Edgar Reich, “Ein Brief des Severus Sebökht,” in *Sic Itur ad Astra. Studien zur Geschichte der Mathematik und Naturwissenschaften. Festschrift für den Arabisten Paul Kunitzsch zum 70. Geburtstag*, ed. Menso Folkerts and Richard Lorch (Wiesbaden: Harrassowitz, 2000), 478–89, on 479–80; translation (slightly modified) by Hidemi Takahashi, “Syriac as a Vehicle for Transmission of Knowledge Across Borders of Empires,” *Horizons* 5 (2014): 29–52, on 34.

Were alchemical texts at some point counted among those “writings of the Greeks” that testified to the Babylonian and Egyptian discoveries? Severus taught in the monastery of Qennešre (northern Syria, on the banks of Euphrates), a bilingual centre of learning with a rich library of philosophical and scientific texts in Greek and in Syriac translation.<sup>19</sup> Later Syriac chronicles (such as the *Chronicle of Zuqnin* or Michael the Syrian’s *Chronicle*) link the practice of alchemy to Qarṭmin, another monastery on the banks of Tigris.<sup>20</sup> Scholars working in similar monastic and learned *milieux* may have developed an interest in Greek alchemical texts, which were indeed presented as the writings of Eastern wise men or their pupils. By translating these texts, Syriac scholars might have believed they were recovering the legacy of their ancestors, thus gaining access to the inventions of the earliest nations that practiced the sciences.<sup>21</sup>

When alchemy came to be written in Arabic, its alien and “antediluvian” origins became the subject of a variety of narratives disseminated in a rich alchemical literature. A full inventory of these accounts is still awaited, so that it is difficult to assess how far they vary or deviate from earlier accounts. In some cases, specific features of a single narrative may unveil critical information about the cultural setting in which it was produced, as Christopher Braun has recently argued for the *Book of the Ziziphus Tree of the Furthest Boundary* (*Kitāb sidrat al-muntahā*), falsely attributed to Ibn Waḥšīya (tenth-century CE). After listing ten stories on the origins of alchemy (treating Persian, Babylonian, Greek, and Yemenite origins, to name but a few), the author of this dialogue opts for the Egyptian hypothesis – claiming that all the books he consulted were originally Egyptian.<sup>22</sup> Moreover, he presents his own alchemical book as the Arabic translation of a Coptic commentary on a hieroglyphic text (discovered in the temple of Memphis), thus revealing a fascination with ancient Egypt and suggesting a possible Egyptian origin for the dialogue.<sup>23</sup>

Such a story recalls many accounts found in Graeco-Egyptian alchemical treatises, some of which were most likely translated into Arabic at some point. As clearly stated by Dimitri Gutas, “a century and a half of Graeco-Arabic scholarship has amply documented that from about the middle of the eighth century to the end of the tenth, almost all non-literary and non-historical secular Greek books that were available throughout the Eastern Byzantine Empire and the Near East were

<sup>19</sup> See Émilie Villey, *Les sciences en syriaque*, “Introduction,” 5–6, and “Qennešre et l’astronomie aux VI<sup>e</sup> et VII<sup>e</sup> siècles,” 149–90.

<sup>20</sup> Martelli, “L’alchimie en syriaque,” 195–99.

<sup>21</sup> On the reception of Babylonian astronomy and medicine in Syriac works see Siam Bhayro, “On the Problem of Syriac ‘Influence’ in the Transmission of Greek Science to the Arabs: The Cases of Astronomy, Philosophy, and Medicine,” *Intellectual History of the Islamic World* 5 (2017): 211–27.

<sup>22</sup> See Christopher Braun, *Das Kitāb Sidrat al-muntahā des Pseudo-Ibn Waḥšīya. Einleitung, Edition und Übersetzung eines hermetisch-allegorischen Traktats zur Alchemie* (Berlin: Klaus Schwarz, 2016), and Braun, “Who Began This Art? From Whence Did It Emerge? A Hermetic Frame Story on the Origins of Alchemy in the Pseudo-Ibn Waḥšīya’s *The Book of the Ziziphus Tree of the Furthest Boundary*,” *al-Qanṭara* 37 (2016): 373–98.

<sup>23</sup> Coptic material investigated by Sebastian Richter confirms a strong continuity of the alchemical tradition in Egypt: see Tonio Sebastian Richter, “What Kind of Alchemy is Attested by Tenth-Century Coptic Manuscripts?,” *Ambix* 56 (2009): 23–35; Richter, “The Master Spoke: Take One of the Sun and One Unit of *Almulgam*. Hitherto Unnoticed Coptic Papyrological Evidence for Early Arabic Alchemy,” in *Documents and the History of the Early Islamic World*, ed. Alexander T. Schubert and Petra M. Sijpesteijn (Leiden and Boston: Brill, 2015), 158–94.

translated into Arabic.”<sup>24</sup> This massive cultural enterprise, usually referred to as a translation movement, made Greek books on philosophy and the sciences – alchemy included – available in Arabic translation, sometimes through Syriac intermediaries.<sup>25</sup>

In their monumental bio-bibliographical works, Manfred Ullmann and Fuat Sezgin list many alchemical works in Arabic attributed to a variety of Greek authorities.<sup>26</sup> However, only a few Arabic treatises have been so far recognised as the direct translation of an extant Greek alchemical text.<sup>27</sup> Three basic reasons can explain this distinctive feature of the alchemical tradition, especially when compared to other disciplines, such as natural philosophy or medicine. Byzantine manuscripts only preserve anthologies of alchemical writings, in which anonymous compilers excerpted, reshaped, and reassembled an originally much richer corpus of texts. As recently summarised by Lawrence Principe, “while priceless to scholars, these collections represent only a frustratingly slim remainder of alchemy’s foundational epoch.”<sup>28</sup> This fragmented tradition makes straightforward comparison with the Arabic material difficult. Arabic translators probably had access to treatises not included in the Byzantine anthologies, or to earlier versions of Greek treatises that Byzantine manuscripts preserve in abridged and reshaped forms. On the other hand, most Arabic works on alchemy remain unedited and largely unexplored, so that any comparison with the Byzantine material is very difficult and can be only attempted by assessing texts directly in manuscripts. Finally, the significant number of pseudepigrapha – later texts falsely attributed to ancient Greek authorities – does not allow us to easily link Arabic material to the earlier Greek production.

The combination of pseudo-authorship and a lack of editions can also explain why the chronology of (Syriac and) Arabic translations of alchemical texts still remains open to question. Unlike other sciences, no translator of an alchemical text has so far been identified. We have no primary sources comparable with the famous letter by Ḥunayn ibn Iṣḥāq (ninth century CE) on his own translations of Galen’s works, or with the personal notes left by Sergius of Reš’ayna concerning his translation technique in the preface to his *Commentary on Aristotle’s Categories*.<sup>29</sup> The *Book of the Catalogue (Kitāb al-fihrist)* by Ibn al-Nadīm is one of

<sup>24</sup> Dimitri Gutas, *Greek Thought, Arabic Culture: The Graeco-Arabic Translation Movement in Baghdad and Early ‘Abbasid Society (2nd-4th/8th-10th centuries)* (London: Routledge, 1998), 1.

<sup>25</sup> Many Greek texts were in fact translated into Syriac as well, in some cases by Christian scholars (or physicians) working in the early Abbasid Baghdad, in other cases by scholars who were active well before the flowering of the translation movement. The famous Sergius of Reš’ayna (sixth century), for instance, is well known for his translations of a wide range of Aristotelian and Galenic texts. On Syriac translations, see Hidemi Takahashi, “Syriac as the Intermediary in Scientific Graeco-Arabica,” *Intellectual History of the Islamicate World* 3 (2015): 66–97 (with further bibliography).

<sup>26</sup> Fuat Sezgin, *Geschichte des arabischen Schrifttums*, 4. *Alchimie – Chemie – Botanik bis ca. 430 H.* (Leiden: Brill, 1971), 31–119; Manfred Ullmann, *Die Natur- und Geheimwissenschaften im Islam* (Leiden: Brill, 1972), 145–91.

<sup>27</sup> Notable examples have been recently discovered and discussed by Benjamin Hallum with regard to Zosimus: see Benjamin Hallum, “Zosimus Arabus. The Reception of Zosimos of Panopolis in the Arabic/Islamic World” (Ph.D. diss., Warburg Institute, 2008), 113–92.

<sup>28</sup> Lawrence M. Principe, *The Secrets of Alchemy* (Chicago: Chicago University Press, 2013), 11–12.

<sup>29</sup> See Ḥunayn ibn Iṣḥāq on His Galen Translation. *A Parallel English-Arabic Text*, ed. and trans. John C. Lamoreaux (Provo, Utah: Brigham Young University Press, 2016), with an appendix by Grigory Kessel on Syriac translations of



the earliest works to offer a broad picture of those Arabic writings attributed to Greek alchemists that were available in tenth-century Baghdad.<sup>30</sup> However, scholars have often questioned the information given in this source, such as the famous story of the Omayyad prince Ḥālīd ibn Yazīd (d. ca. 704 CE) said to have promoted translations of Greek (and Coptic) alchemical texts into Arabic. The story has been judged as a later invention, and the various texts attributed to Ḥālīd recognised as later pseudepigraphic works.<sup>31</sup> On the other hand, these texts, such as the famous *Questions of Ḥālīd to the Monk Maryānus* (*Masā'il Ḥālīd li-Maryānus al-rāhib*; known as *De compositione alchemiae* in its Latin translation), include a great number of quotations from Greek authors.<sup>32</sup> The same can be said for other Arabic alchemical dialogues as well, in some cases attributed to Greek authors, in other cases compilations by (anonymous) authors who were well acquainted with Greek alchemy and its legacy. The origins of these quotations and their possible relationship to earlier Arabic translations of Greek texts remain difficult to assess, and call for further investigation. A proper analysis would be expected to situate these quotations in the new “textual context” in which they are embedded and, at the same time, to compare them with the Greek originals, when available. Hopefully, this approach will make it possible to better discuss the complex relationships between “original” text and translation, and will allow us to collect new data to be compared with the information available in later sources (such as the *Book of the Catalogue*).

In the following paragraphs, these points will be addressed through the analysis of two relevant case studies. I shall focus on two valuable Arabic dialogues on alchemy that have been recently made available in facsimile: the *Tome of Images* (*Muṣḥaf al-ṣuwar*) and a dialogue between Āras and the King Caesar.<sup>33</sup> The two texts are clearly indebted to the Greek alchemical tradition. The *Tome of Images*

<sup>29</sup> *Continued*

Greek medical texts; Henri Hugonnard-Roche, *La logique d'Aristote du grec au syriaque* (Paris: Vrin, 2004), 134 and 167–70.

<sup>30</sup> See Johan W. Fück, “The Arabic Literature on Alchemy According to An-Nadīm (A.D. 987). A Translation of the Tenth Discourse of *The Book of the Catalogue* (Al-Fihrist) with Introduction and Commentary,” *Ambix* 4 (1951): 81–144.

<sup>31</sup> See, in particular, Manfred Ullmann, “Ḥālīd ibn Yazīd und die Alchemie: Eine Legende,” *Der Islam* 55 (1978): 181–218.

<sup>32</sup> Regula Forster, “The Transmission of Secret Knowledge: Three Arabic Dialogues on Alchemy,” *al-Qanṭara* 37 (2016): 399–422, on 401–05, and Forster, *Wissensvermittlung im Gespräch. Eine Studie zu klassisch-arabischen Dialogen* (Leiden: Brill, 2017), 240–42 and 461ff. Part of the Arabic text has been edited in Ahmad Y. Al-Hassan, “The Arabic Original of *Liber de compositione alchemiae*. The Epistle of Maryānus, the Hermit and Philosopher, to Prince Khālīd ibn Yazīd,” *Arabic Sciences and Philosophy* 14 (2004): 213–31. On the manuscript tradition, see Marion Dapsens, “De la *Risālat Maryānus* au *De Compositione alchemiae*. Quelques réflexions sur la tradition d'un traité d'alchimie,” *Studia graeco-arabica* 6 (2016): 121–40.

<sup>33</sup> The first text is preserved in Istanbul, Archaeology Museums, MS 1574; see Theodor Abt, *The Book of Pictures. Muṣḥaf al-ṣuwar by Zosimos of Panopolis. Facsimile with an Introduction* (Zurich: Living Human Heritage Publications, 2011); English translation in Salwa Fuad and Theodor Abt, *The Book of Pictures. Muṣḥaf al-ṣuwar by Zosimos of Panopolis* (Zurich: Living Human Heritage Publications, 2011). The second text – handed down in Chester Beatty Library, MS Ar. 4121 and to be distinguished from the *Muṣḥaf al-Ḥayāt* – has been recently identified by Sylvain Matton, *Responsiones Aros philosophi ad Nephes regem de philosophia malis et improbis occulta et sapientibus manifesta, avec un fac-similé du manuscrit arabe Chester Beatty Ar. 4121* (Paris: S.É.H.A., 2017); its title (missing in the Chester Beatty MS) is reconstructed by Matton as *Agwibat Āras al-ḥakīm ilā su'ālāt Qaiṣar malik al-Rūm*.

takes the form of a dialogue in thirteen books between Zosimus of Panopolis and Theosebeia, a well-off (perhaps Roman) woman to whom the Graeco-Egyptian alchemist addresses many of his writings (although never in a dialogic form) in both the Greek and Syriac traditions.<sup>34</sup> The second work, despite the enigmatic identity of Āras,<sup>35</sup> is linked to the Byzantine tradition through the figure of Caesar, King of the Romans – that is, of the Byzantines (*Qāṣar malik al-Rūm* in Arabic). As we shall see, both dialogues provide us with precious textual examples that shed light on the dissemination of Greek alchemical writings – in particular, of the treatises of Pseudo-Democritus, Zosimus, and Synesius – in Arabic alchemical works as well as on some mechanisms that facilitated the transfer of Greek alchemy into Arabic.

### Democritus through Zosimus: a case of fluctuating authorship

Despite his foundational role for Graeco-Egyptian alchemy and the rich corpus of works attributed to him in Syriac, Democritus does not seem to be credited with alchemical works in Arabic manuscripts. Only a brief pseudo-Democritean treatise (apparently unconnected to the *Four Books*) has so far been identified in two witnesses: London, British Library, MS 13006 and Istanbul, Carullah, MS 1086.<sup>36</sup> In contrast, Democritus continues to be extensively quoted in a great variety of Arabic alchemical texts, from the so-called Jabirian *Corpus* up to the above-mentioned dialogues. This situation basically mirrors what one can already find in the Greek alchemical corpus: late antique and Byzantine alchemical authors, in fact, packed their own writings with references to Pseudo-Democritus's works. For instance, in many passages of his writings Zosimus of Panopolis substantiates his own alchemical theories and practices through ad hoc quotations of various recipes from Pseudo-Democritus's *Four Books*. A clear example can be found in the “chapter” (κεφάλαιον in Greek) *On Sulphur Water* (Περὶ θείου ὕδατος), where Zosimus discusses how ancient alchemists refer to “the white” (τὸ λευκόν) and “the yellow” (τὸ ξανθόν) and, in particular, to yellow and white watery substances (ζωμοί, lit. “washes”).<sup>37</sup> In order to support his argument, he quotes three recipes from Pseudo-Democritus's *Book on the Making of Gold*<sup>38</sup> and interprets all the liquid ingredients mentioned in the recipes as cover names for the water of sulphur:

<sup>34</sup> See Benjamin Hallum, “Theosebeia,” in *Encyclopedia of Ancient Natural Scientists. The Greek Tradition and Its Many Heirs*, ed. Paul Keyser and Georgia Irby-Massie (London and New York: Routledge, 2008), 802–03.

<sup>35</sup> Scholars have tentatively identified this figure with a Christian priest: see Fück, “Arabic Literature on Alchemy,” 120; or with the Egyptian Horus: see Julius Ruska, “Ein dem Chälid ibn Jazid zugeschriebenes Verzeichnis der Propheten, Philosophen und Frauen, die sich mit Alchemie befaßten,” *Der Islam* 18 (1929): 293–99, on 296.

<sup>36</sup> See Qatar Digital Library, [https://www.qdl.qa/archive/81055/vdc\\_100023512370.0x000005](https://www.qdl.qa/archive/81055/vdc_100023512370.0x000005) (accessed 17 September 2017; I warmly thank Benjamin Hallum for bringing this MS to my attention); Sezgin, *Geschichte des arabischen Schrifttums*, 50. See also Hans Daiber, “Democritus in Arabic and Syriac Tradition,” in *Proceedings of the 1st International Congress on Democritus* (Xanthi, 6–9 October 1983) (Xanthi, Greece: International Democritean Foundation, 1984), 251–65, on 257–58.

<sup>37</sup> Marcelin Berthelot and Charles Émile Ruelle, *Collection des anciens alchimistes grecs*, 3 vols. (Paris: Georges Steinhel, 1887–1888), vol. 2, 184–86.

<sup>38</sup> In the *Physika kai Mystika*, i.e. the compilation that Byzantine manuscripts hand down under the name of Democritus, these recipes correspond to §§ 7, 9 and 11 (Martelli, *Four Books*, 88–91).

Φησὶν οὖν ἐπὶ τοῦ πυρίτου· λαβὼν πυρίτην, οἰκονόμεν ἢ λείου ὀξάλμῃ καὶ τοῖς ἐξῆς, ὃ αἰνίττεται ὕδωρ θείου ἀθίκτου λευκόν. Εἶτα ἐπὶ τῆς κινναβάρεως· τὴν κιννάβαριν ποίει λευκὴν δι' ἐλαίου ἢ ὄξους καὶ μέλιτος καὶ τῶν ἐξῆς. Ἐπὶ δὲ τοῦ ἀνδροδάμαντος ὁμοίως πάλιν ἄλμῃ ἢ ὀξάλμῃ. Εἶτα ἐπιφέρει· Ἐνυει ὕδωρ θείου ἀθίκτου, ἵνα γνῶς ὅτι ὕδατα θαλάσσια, καὶ οὖρον, καὶ ὄξος, καὶ τὸ ἐν τῇ κινναβάρῃ ἐλαιον καὶ μέλι, ὕδωρ θείου ἀθίκτου ἐστίν.<sup>39</sup>

Therefore he [i.e. Democritus] says in [the recipe on] pyrite: “take pyrite and process or crush it with brine-vinegar and so on,” words that hint at the white water of untouched sulphur. Afterwards in [the recipe on] cinnabar: “Make cinnabar white by means of oil or vinegar or honey or so on”; in [the recipe on] *androdamas* again in a similar way: “with brine or brine-vinegar”; then he adds: “boil with water of untouched sulphur,” so that you understand that seawater and urine and vinegar and the oil mentioned in the cinnabar [recipe] and honey are the water of untouched sulphur.

The same passage occurs in the first book of the *Tome of Images*. In the middle of a long and articulate response to Theosebeia’s question about the composition of the water of sulphur, Zosimus says:

فما سمعت من الرطوبات في شيء من كتب الحكماء فاعلمى انما (!) سموها به ماء الكبريت.<sup>41</sup>  
 الا تزين الى ذومقراط كيف قال دبروا البوروطس<sup>42</sup> بالخل والملح الذي هو ماء الكبريت<sup>43</sup>  
 الابيض وقال في القنبار ببيضه بالدهن والخل والعسل وقال في الاندرداموس<sup>44</sup> دبروه بالخل وبعد  
 هذا كله قال فاطبخوه بالماء النقى فهذه الرطوبات كلها التي سموها انما هي ماء الكبريت<sup>45</sup>

As for what you heard of moistures in some of the books of the sages, know the name (?) by which they called the water of sulphur. Did you not look at Democritus, how he said: process pyrite with vinegar and salt, [things] which are white water of sulphur? He said in [the recipe on] cinnabar: make it white with oil, vinegar and honey; and he said in [the recipe on] *androdamas*: process it with vinegar, and, after all this, he said: then cook it with pure water. For all these kinds of moisture that they mentioned are anything but water of sulphur.

It is evident that citations from the *Four Books* are here included in the Arabic text indirectly, through the translation of a passage of Zosimus who was already referring to Pseudo-Democritus. More difficult to understand is the relationship between Zosimus’s Greek text and the *Tome of Images*. The Greek chapter *On Sulphur Water* is not in dialogue form and introduces the three Pseudo-Democritean

<sup>39</sup> Berthelot-Ruelle, *Collection*, vol. 2, 185. The text printed here has been emended according to a new analysis of the main Byzantine manuscripts: see Matteo Martelli, *Pseudo-Democrito, Scritti alchemici con il commentario di Sinesio* (Paris and Milan: S.É.H.A and Archè, 2011), 77.

<sup>40</sup> This is the reading of the MS. Perhaps, we should read اسم .

<sup>41</sup> In the MS the term is written with *tā' marbūta* (كبرية). I introduced the standard form; see, e.g. Fabian Käse, *Die Mineralien in der arabischen Pharmakognosie. Eine Konkordanz zur mineralischen Materia medica der klassischen arabischen Heilmittelkunde nebst überlieferungsgeschichtlichen Studien* (Wiesbaden: Harrassowitz, 2010), 917–21.

<sup>42</sup> The term, a transliteration of the Greek πυρίτης (*pyritēs*), usually occurs with the slightly different spelling بوريطس (*būrītīs*); see Alfred Siggel, *Arabisch-deutsches Wörterbuch der Stoffe aus den drei Naturreichen, die in arabischen alchemistischen Handschriften vorkommen* (Berlin: Akademie-Verlag, 1950), 77; Käse, *Die Mineralien*, 337–40.

<sup>43</sup> See above, n. 41.

<sup>44</sup> Transliteration of the Greek ἀνδροδάμας (*androdamas*); see Siggel, *Arabisch-deutsches Wörterbuch*, 77.

<sup>45</sup> Istanbul, Archaeology Museums, MS 1574, fols. 31b19–32a5.

recipes in a slightly different context. Zosimus cites these recipes while differentiating Pebichius's and Democritus's ways of referring to white and yellow liquids. Pebichius made use of different liquids to whiten (presumably) metallic bodies and to make them yellow; Democritus, on the other hand, used only one liquid in whitening (λευκωσις) and yellowing (ξάνθωσις), two processes that Zosimus identifies respectively with roasting (καύσις) and boiling (έψησις). This unique liquid substance is indeed the water of sulphur, Zosimus argues.

By contrast, the passage of the *Tome of Images* includes no reference to Pebichius and refers only marginally to “the white” and “the red” (*lege* yellow)<sup>46</sup> in the lines that follow the above-mentioned passage. Zosimus then closes his answer to Theosebeia with a short description of Pseudo-Democritus's *Four Books*. The books are actually mentioned at the end of the Greek passage as well,<sup>47</sup> but without the description provided by the Arabic text:

الآن ترين الى ذمقراط انه لم يكتب الا اربع رسائل فجعل اول رسائله في الحرق والثانية في التبييض والثالثة في الصبخ والرابعة في الفرفر<sup>48</sup>

Did you not look at Democritus? He only writes four books [lit. “letters”]: he produced the first of his books on burning, the second on whitening, the third on dyeing, and the fourth on purple.

This report differs from what we find in other Greek sources, which usually mention gold (or yellowing), silver (or whitening), precious stones, and purple as the topics of the *Four Books*. If we suppose that the Arabic text still relies on the Greek chapter *On Sulphur Water*, the unusual topic of the first book – namely “burning” – might be explained in light of Zosimus's identification of yellowing with roasting.<sup>49</sup> It remains difficult, however, to account for the many differences between the Greek and the Arabic texts. Some discrepancies might be due to the epitomised form in which Zosimus's treatises have been transmitted in Byzantine anthologies: the Arabic translators might have had different (and perhaps more complete) versions of Zosimus's works at his disposal. On the other hand, as already suggested by Benjamin Hallum with regard to other textual examples, it seems likely that the author of the *Tome of Images* uses and reshapes already extant Arabic translations of Zosimus's writings.<sup>50</sup>

<sup>46</sup> Already in the Syriac alchemical tradition, the Greek adj. ξανθός (“yellow, golden”) is regularly translated as أحمر (“red”).

<sup>47</sup> See Berthelot and Ruelle, *Collection*, vol. 2, 186, 3: ὅδωρ θεῖον διὰ τῶν τεσσάρων βιβλίων διαφορῶς διέρχεται κτλ. On this passage, see Martelli, *Pseudo-Democrito*, 68–69.

<sup>48</sup> Archaeology Museums, MS 1574, fol. 32a10–12.

<sup>49</sup> The alchemist Synesius proposes a slightly different identification, namely whitening with roasting (καύσις) and yellowing with rekindling (ἀναζωπύρησις): see Martelli, *Four Books*, 127 and 241. In the Arabic passage, the identification of the topic of the third book with dyeing (rather than “stones”) remains open to question.

<sup>50</sup> See Benjamin Hallum, “The *Tome of Images*: An Arabic Compilation of Texts by Zosimos of Panopolis and a Source of the *Turba Philosophorum*,” *Ambix* 56 (2009): 76–88, on 82–86. Here Hallum convincingly argues that “the *Tome of Images* is a compilation of disparate writings, some, if not all, by Zosimos, that were already available to the compiler in Arabic translation.”

The Arabic translation of *On Sulphur Water* could be the source of another quotation of the same passage, which is found in the dialogue between Āras and Caesar:

ومنهم من جمع بين الابيض والاحمر ومنهم من فرق ذلك وتصديق ذلك قول ذومقراط دبروا  
البوريطس والملح<sup>51</sup> والخل الذي من ماء الكبريت<sup>52</sup> حتى يبيض وقال في القنبار بيضه بالدهن  
والخل قال في الانترداموس دبروه بالخل والملح [قال]<sup>53</sup> وبعد هذا قال اطبخوه بالماء النقى وانما  
عنا (!)<sup>54</sup> بهذا كله ان تعلمنا ان هذه الرطوبات هي ماء الكبريت<sup>55</sup>

One of them combines the white with the red, another distinguishes these colours; a confirmation is this statement of Democritus: process pyrites and [read “with”] salt and vinegar, which are from (?) the water of sulphur, until it turns white; and he said in [the recipe on] cinnabar: make it white with oil and vinegar; he said in [the recipe on] *androdamas*: process it with vinegar, and, after this, he said: cook it with pure water. With all this his only concern was to make us know that these kinds of moisture are the water of sulphur.

This text shows close similarities with the above-discussed passage from the *Tome of Images*, as appears particularly in the section taken from the recipe on *androdamas*. Both Arabic texts have “with vinegar” instead of the Greek “with brine and brine-vinegar”; both read “cook it with pure water” rather than the Greek “boil with water of untouched sulphur” (ὔδωρ θείου ἄθικτου; the Arabic translator probably read ὔδωρ ἄθικτου). One cannot definitively rule out the possibility that the dialogue between Āras and Caesar actually depends on the *Tome of Images* (even though the chronology of the two texts remains uncertain). In this case, however, it would be difficult to justify the opening sentence of the passage in the second text (“Some of them combine the white with the red, others distinguish these colours”). This sentence explicitly refers to the distinction between “the white” and “the yellow,” which is the actual topic discussed by Zosimus in the Greek chapter *On Sulphur Water*, while it is almost omitted in the *Tome of Images*. It is safer to suppose that the two Arabic passages depend on a common source, perhaps an extant Arabic translation of Zosimus’s *On Sulphur Water*.

On the other hand, if the author of the dialogue between Āras and Caesar relied on an Arabic translation of Zosimus, he certainly omitted any reference to the Graeco-Egyptian alchemist. Through this simple omission the three citations from Pseudo-Democritus’s *Four Books* lose any connection to the “authorial” context in which they were originally transmitted, and can be presented as authentic excerpts of pseudo-Democritean writings. The use of similar strategies probably allowed Arabic authors to disseminate indirect pseudo-Democritean quotations without further acknowledging their real textual sources.<sup>56</sup>

<sup>51</sup> In all likelihood, one must read بالملح (*bi-l-milḥ*).

<sup>52</sup> In the MS this term usually occurs with the odd spelling الكبريته: see above, n. 41.

<sup>53</sup> This verb represents a superfluous reduplication and must be left aside.

<sup>54</sup> This is the reading of the MS; we should probably read عنى .

<sup>55</sup> Chester Beatty, Ar. 4121, fol. 194b9–13.

<sup>56</sup> We might wonder whether Zosimus is again the ultimate source of another passage of the dialogue between Āras and Caesar that provides a description of the *Four Books* in line with what we have just read in the *Tome of Images*

## Was Synesius's commentary translated into Arabic? Possible fragments of a so-far unknown translation

The quotations embedded in Syriac or Arabic alchemical writings may in some cases confirm scattered information preserved by indirect sources. For instance, we know very little about the Eastern tradition of Synesius's commentary on Pseudo-Democritus's alchemical books, properly speaking a dialogue between the alchemist Synesius and Dioscorus, priest of the Alexandrian Serapeum, which Byzantine manuscripts preserve (at least partially) under the title *The Philosopher Synesius to Dioscorus: Notes on Democritus's Book* (Συνεσίου φιλοσόφου πρὸς Διόσκορον εἰς τὴν βίβλον Δημοκρίτου ὡς ἐν σχολίοις).<sup>57</sup> Among the titles of books on alchemy available in tenth-century Baghdad, Ibn al-Nadīm lists (1) the *Book of Dioscorus on the Art* (*Kitāb Dīsqurus fī al-šan'a*), and (2) the *Book of Dioscorus when Synesius Questioned Him on the Problems* [*Kitāb Dīsqurus fī ḥīmi sa'alahu Badsiyūs* (sic; lege *Sinasiyūs*) 'an al-masā'il].<sup>58</sup> Regrettably, no further details are known about these books.<sup>59</sup> Only a simple mention of Synesius is apparently detectable in the gallery of alchemical fathers that opens the *Paradise of Wisdom* (*Firdaūs al-ḥikma*) attributed to Ḥālīd ibn Yazīd: after giving the names of those prophets who received their alchemical knowledge from God, the author lists the ancient and wise philosophers, among whom one reads the name *Badbasiyūs*. This form, similar to that found in the *Fibrīst*, should probably be read as *Sinasiyūs* (i.e. Synesius).<sup>60</sup> His presence in similar lists can be confirmed by comparison with the Byzantine tradition: along with Dioscorus, Synesius is indeed mentioned in a catalogue of alchemists included in Byzantine manuscripts.<sup>61</sup>

These meagre pieces of information have not so far been confirmed or complemented by other Arabic sources on alchemy. According to Kraus's preliminary survey, Synesius and Dioscorus do not rank among the main Greek sources

### Continued

(Chester Beatty, Ar. 4121, fol. 195b5–6; see Matton, *Responsiones*, ix): دومقراط كتب اربع مصاحف وجعل الاول منها في الحرق والثاني: (Democritus wrote four volumes, and produced the first of them on burning, the second on reverberation (? or tarnishing; *ad rubificandum* in the Latin translation), the third on dyeing, and the fourth on purple.)

<sup>57</sup> Edition and translation in Martelli, *Four Books*, 122–51.

<sup>58</sup> See Al-Nadīm, *Kitāb al-Fibrīst*, ed. Gustav Flügel (Leipzig: F. C. W. Vogel, 1872), vol 1, 354, ll. 13–15. On Synesius's name (actually given as *Badsiyūs* in Flügel's edition), see Fück, "Arabic Literature on Alchemy," 94.

<sup>59</sup> No bibliographical information about Synesius's writings or manuscripts is provided in Sezgin, *Geschichte des arabischen Schrifttums*, or Ullmann, *Die Natur- und Geheimwissenschaften im Islam*.

<sup>60</sup> The list of the *Paradise of Wisdom* has been edited and translated in Ruska, "Ein dem Chälid ibn Yazid zugeschriebenes Verzeichnis der Propheten," 293f. Pace Ruska (on 297), who interpreted *Badbasiyūs* as the misspelled name of the Byzantine physician Oribasius, I follow the interpretation already proposed by Fück, "Arabic Literature on Alchemy," 71.

<sup>61</sup> The list is edited in Berthelot and Ruelle, *Collection*, vol. 2, 25: "Συνέσιος, Διόσκορος ὁ ἱερεὺς τοῦ μεγάλου Σεραπίδος τοῦ ἐν Ἀλεξανδρείᾳ" ("Synesius, Dioscorus, priest of the great Serapis in Alexandria"). On the other hand, Synesius and Dioscorus do not appear in the list of ancient alchemists provided by Ibn al-Nadīm: see Flügel, *Kitāb al-Fibrīst*, 353; Fück, "Arabic Literature on Alchemy," 92. In the list we do read the name Sinaqhā, which Berthelot proposed identifying with Synesius: Marcelin Berthelot and Octave V. Houdas, *La chimie au Moyen Âge*, 3. *L'alchimie arabe* (Paris: Imprimerie Nationale, 1893), 29; this hypothesis, however, has been dismissed by more recent studies: see Sezgin, *Geschichte des arabischen Schrifttums*, 57–58.

quoted in the Jabirian Corpus,<sup>62</sup> nor do these figures or their writings seem to be taken into account in important tenth-century alchemical writings, such as the *Book of Testimonies* (*Kitāb al-šawāhid*) by al-Rāzī or the *Book of the Silvery Water and Starry Earth* (*Kitāb al-mā' al-waraqī wa-l-ard' al-nağmīya*) by Ibn-Umayl.<sup>63</sup> However, in contrast with this disappointing picture, the *Tome of Images* explicitly refers to Synesius and Dioscorus as two alchemical authorities in three different passages.<sup>64</sup> The names of the two alchemists are not immediately recognisable, since they appear in corrupted forms in the unique manuscript that preserves the Arabic text. We have, in fact, *Siyūs* (سيوس) or (less frequently) *Siyus* (سيس) on the one hand,<sup>65</sup> and *Dīsqūs* (ديسقوس) or (less frequently) *Disqiyūs* (دسقيوس), *Dilsiqūš* (دلسقوش), and *Dīsiqūš* (ديسيفوش) on the other.<sup>66</sup> However, the Greek authors Synesius and Dioscorus can be safely recognised behind the misspelled Arabic transliterations of their names, easily confirmed if we compare a passage from the *Tome of Images* mentioning these figures with the corresponding Greek text in the work *The Philosopher Synesius to Dioscorus: Notes on Democritus's Book*.

In the eleventh book of the *Tome of Images*, in the middle of a wider discussion on the uses of mercury, Zosimus urges Theosebeia to study the books of the sage – *al-ḥakīm* in Arabic, which corresponds to the Greek ὁ φιλόσοφος, namely Democritus, the philosopher *par excellence*. The Arabic text reads as follows:

[...] فانظري في الكتابين في قول الحكيم في صنعة الذهب وصنعة الورق انه بدا في اول شي بكتابه في الزبيق فقال زبيق القنبار ثم قال في كتابه في صنعة الورق زبيق من زرنبخ .  
 قالت : فلم قال سيوس لديسقوس الزبيق اخر واخر فقال ديسقوس نعم هو اخر واخر وهو واحد .  
 قال : سألته لعله علمه بالاصل .  
 قالت : فانبنتني عن ذلك الاصل الذي جهله سيوس<sup>67</sup> .

[Zosimus said] ... then examine the two books, the words of the sage in the making of gold and the making of silver. In the first place he started with his book on mercury and said: mercury of cinnabar. Then in his book on the making of silver he said: mercury from arsenic.

She said: Why did Synesius say to Dioscorus: mercury is of one kind and another? and why did Dioscorus say: yes, it is of one kind and another, but it is one?

<sup>62</sup> See Paul Kraus, *Jābir ibn Ḥayyān, contribution à l'histoire des idées scientifiques dans l'Islam. Jābir et la science grecque* (Paris: Les Belles Lettres, 1986), 347–54 (index of names).

<sup>63</sup> See Henry E. Stapleton and Rizkallah F. Azo, “An Alchemical Compilation of the Thirteenth Century A.D.,” *Memoirs of the Asiatic Society of Bengal* III (1910): 57–94, on 70–72 (on the *Book of Testimonies*); Muḥammad T. ‘Alī, Henry E. Stapleton, and M. Hidāyat Ḥusain, “Three Arabic Treatises on Alchemy by Muḥammad bin Umāl (10th Century A.D.),” *Memoirs of the Asiatic Society of Bengal* XII (1933): 1–123 (see index of names).

<sup>64</sup> For the first passage, see Fuad and Abt, *Book of Pictures*, 150–51, where we find various references to (and selected quotations from) §§ 5–7 of the Greek dialogue *The Philosopher Synesius to Dioscorus* (see Martelli, *Four Books*, 127–30); for the second passage, see Fuad and Abt, *Book of Pictures*, 564–65, which depends on §§ 2–3 of the Greek *The Philosopher Synesius to Dioscorus* (see Martelli, *Four Books*, 124); for the third passage, see below.

<sup>65</sup> See Istanbul, Archaeology Museums, MS 1574, fols. 7b, l. 13; 8a, ll. 10; 207b, ll. 4 and 7; 214b, l. 17; see also Fuad and Abt, *The Book of Pictures*, 712, s.v. Sius.

<sup>66</sup> See Archaeology Museums, MS 1574, fol. 7b, l. 14; 8a l. 7 and 10; 207b, ll. 4–5 and 11; 214b, l. 17; see also Fuad and Abt, *Book of Pictures*, 634, s.v. Disqiyūs/Dilsiqūš.

<sup>67</sup> Archaeology Museums, MS 1574, fol. 207b1–7.

He said: He asked it because of his lack of knowledge about the origin [i.e. of mercury?].

She said: then tell me about this origin that Synesius did not know.

The reference to Synesius and Dioscorus in the second paragraph hints at the source of the entire Arabic passage, which clearly depends on the following lines of the Greek dialogue between the two alchemists (§§ 8–9, ll. 121–28):<sup>68</sup>

[Synesius] ... πρόσεχε εἰς τοὺς δύο καταλόγους, ὅτι πρὸ πάντων ἡ ὑδράργυρος ἐτάγη, καὶ ἐν τῷ ξανθῷ, τουτέστιν χρυσῷ, καὶ ἐν τῷ λευκῷ, τουτέστιν ἀργύρῳ. Καὶ ἐν μὲν τῷ χρυσῷ εἶπεν ὑδράργυρος ἡ ἀπὸ κινναβάρεως, ἐν δὲ τῷ λευκῷ εἶπεν ὑδράργυρος ἡ ἀπὸ ἄρσενίκου, ἢ σανδαράχης, καὶ τὰ ἐξῆς.

Διόσκορος εἶπεν Διάφορος οὖν ἐστὶν ἡ ὑδράργυρος;

Συνέσιος. Ναί, διάφορός ἐστι, μία οὖσα.

If you want to obtain accurate knowledge, turn your attention to the two catalogues: he listed mercury before all other substances, both in the yellow, that is, in [his book on] gold, and in the white, that is [in his book on] silver. He said in [his book on] gold: mercury that comes from cinnabar, and he said in [his book on] silver: mercury that comes from orpiment and realgar and so on.

Dioscorus said: So is mercury of different kinds?

Synesius: Yes, it is of different kinds, although it is only one.

If the match between this Greek text and the *Tome of Images* passage confirms the identification of *Siyūs* and *Disqiyūs* with Synesius and Dioscorus, it also raises challenging questions about the possible sources used by the author of the Arabic dialogue. Did he rely on a lost Arabic translation of the Greek dialogue *The Philosopher Synesius to Dioscorus: Notes on Democritus's Book*? If so, we might identify this (lost) translation with the alchemical work that Ibn al-Nadīm refers to with the title *Book of Dioscorus when Synesius Questioned him on the Problems*. Or did the author of the *Tome of Images* use the Arabic translation of a Greek text by Zosimus, which already referred to the dialogue between Synesius and Dioscorus? In this case, this would be the only work in which Zosimus showed a certain familiarity with Synesius's dialogue with Dioscorus (which is otherwise never mentioned in what remains of Zosimus's alchemical writings in Greek) and would add interesting data on the chronology of the two alchemists, who might be almost contemporaries.<sup>69</sup>

## Conclusion

To sum up, the two case studies discussed above show how fragmented passages of various Greek alchemical works can be identified in the Arabic tradition. This

<sup>68</sup> See Martelli, *Four Books*, 132–33 = Berthelot and Ruelle, *Collection*, vol. 2, 61–62.

<sup>69</sup> See Martelli, *Four Books*, 51–52.



identification is possible even when the full Arabic translations of the Greek originals are not accessible,<sup>70</sup> such as in the cases of Zosimus's chapter *On Sulphur Water*, Pseudo-Democritus's *Four Books*, and Synesius's dialogue. Quotations from these works (or accurate references to them) are disseminated in Arabic writings that cannot be identified with direct translations of Greek alchemical texts. The *Tome of Images* does not correspond to the style of any extant Greek work by Zosimus (never in dialogue form): it may rather be a substantial Arabic composition heavily dependent on shorter works of Zosimus, which had probably already been translated into Arabic. The anonymous author of the *Tome of Images* also includes citations from Pseudo-Democritus, which correspond very closely to passages in the *Four Books*. However, a close comparison between the Arabic text and Zosimus's Greek chapter shows that these Pseudo-Democratean passages were originally quoted in the Greek original of Zosimus, which was then translated into Arabic: this Arabic translation must be identified with the ultimate source of the *Tome of Images* for the above-discussed quotations of Pseudo-Democritus.

On the other hand, another anonymous Arabic text on alchemy, the dialogue between Āras and Caesar, quotes the same passage(s) of Pseudo-Democritus as does the *Tome of Images*. Certain differences between the two quotations seem to suggest that the one work was not copying from the other; they both rather used the same Arabic translation of Zosimus (quoting in turn Pseudo-Democritus's *Four Books*), which – we can now argue – circulated among different authors and compilers of Arabic alchemical works.

Moreover, the author of the *Tome of Images* seems to have had access not only to the Arabic version of Zosimus's texts, but also to a wider choice of Greek alchemical writings in translation, which probably included Synesius's *Notes on Democritus's Book* as well. This translation is mentioned in Arabic bio-bibliographical sources and its circulation is further confirmed by a close analysis of the precise references to Synesius and Dioscorus disseminated in the *Tome of Images*.

The study of analogous cases of dissemination of Greek alchemical works, combined with a rigorous philological investigation of their extant Arabic translations, will hopefully allow us to follow the different paths of transmission of ancient alchemy to the Arabic World. Passages like those discussed above exemplify the complex and rich relationships between texts produced in and transmitted across different cultural and linguistic traditions. A proper understanding of the mechanisms that regulate these relationships will make it possible to better assess the role played by real or alleged translations in the transmission of ancient alchemy, and, at the same time, to better illuminate the strategies behind the work of ancient alchemical writers: both proper translators and authors who, since the earliest

<sup>70</sup> In some cases, the Arabic translations are simply lost; in other cases, they might be preserved in poorly investigated or still unknown Arabic manuscripts. On Benjamin Hallum's recent identification of Zosimus's chapters in Arabic translation, see above, n. 50.

phases of alchemy, presented their own writings as though they were translations of earlier and more authoritative works.

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