

CHAPTER 10

# The Master Spoke: “Take One of ‘the Sun’ and One Unit of *Almulgam*.” Hitherto Unnoticed Coptic Papyrological Evidence for Early Arabic Alchemy\*

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*Dedicated to the memory of Holger Preissler (1943–2006), in gratitude, admiration, and affection for an eminent Arabist, a truly humanistic scholar, and a teacher in the best sense!*



## Prolegomena: A Brief Account of Earlier Approaches to Coptic Alchemical Manuscripts

A legend transmitted in the *Kitāb al-fihrist* of Abū al-Faraj Muḥammad ibn Ishāq al-Nadīm tells the story of the first translation of alchemical writings into Arabic, focusing on the figure of the Umayyad prince Khālid ibn Yazīd ibn Mu‘āwiya, “who used to be called the *ḥakīm* of the Marwān family. Being noble-minded and deeply enamoured of the sciences, particularly the alchemical arts, he ordered a number of Greek philosophers living in the town of Miṣr,

\* During my work on Coptic alchemical texts, I enjoyed the aid of a number of colleagues. It is a pleasant duty to express my gratitude to Susanne Beck, Charles Burnett, Stephen Emmel, Bink Hallum, Thomas Hofmeier, Wilferd Madelung, James Montgomery, Peter Nagel, Holger Preißler †, Fuat Sezgin, Emilie Savage-Smith, Petra Sijpesteijn, and Manfred Ullmann for their advice. A number of lectures helped me to develop and improve my thoughts on the topic as a whole, and on particular aspects of it. The talk presented at the 3rd conference of the International Society for Arabic Papyrology in Alexandria (March 2006) was the first occasion to receive questions and comments from a larger audience. I am grateful to John Baines who granted me the opportunity to speak to a small but illustrious audience at the Oxford Oriental Institute in September 2006, and to Joachim Quack for inviting me to speak to the Deutsch-Ägyptische Gesellschaft at Heidelberg in December 2006. Finally,

who understood Arabic perfectly, to come to him and translate their books on the art of alchemy from the Greek and Egyptian languages into Arabic. This was the first translation from one language into another under Islam.<sup>1</sup>

Julius Ruska, the famous German historian of sciences, commented on the "Egyptian language" that "Man wird *qibṭī* hier im Sinne von altägyptisch, nicht koptisch zu verstehen haben."<sup>2</sup> The way of conceptualizing ancient Egyptian wisdom in the early and even earliest alchemical tradition<sup>3</sup> seems to make this meaning of *qibṭī* most probable indeed. Would Ruska have maintained this view, however, had he known of the existence of Coptic alchemical manuscripts?

As early as 1885, the German Egyptologist Ludwig Stern edited the manuscript known today as British Library Oriental Manuscript 3669(1), a Coptic

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I would like to express my esteem for a number of hardy students of Coptic—Susanne Beck, Daniela Colomo, Franziska Dorman, Kathleen Händel, Susann Harder, Maïke Ludwig, Franziska Naether, Katrin Scholz, and Susanne Töpfer—who volunteered to read Coptic alchemical texts with me. Last but not least I am indebted to my colleague and friend Eitan Grossman who improved the English of this article.

After this paper was written several relevant publications appeared. The type of alchemy as attested by the Coptic manuscripts is discussed in T.S. Richter, What kind of alchemy is attested by tenth-century Coptic manuscripts?, in *Journal of the society for the history of alchemy and chemistry* 56 (2009), 23–35. The Greek and Egyptian scientific context of alchemical writing is dealt with in T.S. Richter, Naturoffenbarung und Erkenntnisritual. Diskurs und Praxis spätantiker Naturwissenschaft am Beispiel der Alchemie, in H. Knuf, C. Leitz and D. von Recklinghausen (eds.), *Honi soit qui mal y pense. Studien zum pharaonischen, griechisch-römischen und spätantiken Ägypten zu Ehren von Heinz-Josef Thissen*, Leuven, Paris and Walpole, MA, 2010, 585–605. The intellectual background of our manuscripts in terms of scribal habits will be dealt with in T.S. Richter, A scribe, his bag of tricks, what it was for and where he got it. Scribal registers, skills and techniques in the Bodl. mss. Copt. (P) a. 2 & 3, in J. Cromwell and E. Grossman (eds.), *Beyond free variation. Scribal repertoires in Egypt from the old kingdom to the early Islamic period. Conference University College, Oxford September 14th–16th 2009* (forthcoming).

<sup>1</sup> Ibn al-Nadīm, *Kitāb al-Fihrist* 242.

<sup>2</sup> Ruska, *Arabische Alchemisten* 9, n. 3; cf. also 3 Ullmann, Khālid ibn Yazīd. Linden, *The alchemy reader* 71, favours the meaning 'Coptic': "Under his (i.e. Khālid's), direction, Arabian translations of Greek and Coptic treatises were completed."

<sup>3</sup> One need only remember the Greek and Arabic hermetic tradition, cf. Festugière, *La révélation*, Faivre, *The eternal Hermes*, Fowden, *The Egyptian Hermes*, Plessner, *Hermes Trismegistos*, Ruska, *Tabula Smaragdina*; Sezgin, *Geschichte des arabischen* 31–44, Vereno, *Studien zum ältesten* 32–35, and the importance of figures such as Petesis, Isis and Kleopatra in pseudepigraphic texts of the *Corpus Chymicum Graecum* and the Arabic alchemical literature, cf. Mertens, *Une scène d'initiation* and Mertens, *Pourquoi Isis*, Quack, *Die Spur*, Richter, *Miscellanea magica*, Sezgin, *Geschichte des arabischen* 44 and 70; Ullmann, *Die Natur- und Geheimwissenschaften* 179–183.

alchemical treatise on parchment.<sup>4</sup> While Stern developed academic interests far removed from Egyptology, and therefore did not deliver a translation, the text remained scarcely noticed by Coptologists or by other scholars for the next 120 years.<sup>5</sup> To my knowledge, there is just one work directly dealing with the manuscript, MacCoull's 1988 study.<sup>6</sup> In the field of the history of science, there is an exceptional note in Halleux's *Les textes alchimiques* commenting on the same detail of the Khālid ibn Yazīd legend, the translation from Coptic into Arabic:<sup>7</sup> "Cette tradition a été mise en doute par Ruska ..., mais la voie égyptienne n'est pas pour autant impossible, car il existe des traités coptes." "Voir, par exemple, le traité publié par L. Stern." As Halleux could not know, this text does not provide evidence for the possibility of translations from Coptic to Arabic—in fact, it does quite the opposite, as we will see.

Since 1890 an assemblage of three alchemical papyri has been kept in the Bodleian Library, known only to a few outstanding British Coptologists, such as Walter Crum,<sup>8</sup> Paul Kahle Jr., and Sarah Clackson. Again, it was Leslie MacCoull who in 1988 first publicised the existence of these manuscripts and provided some preliminary information about their contents.<sup>9</sup> As for myself, I came to know of them only after Sarah Clackson's premature death in 2003. Sarah, having been informed about my interest in Arabic words borrowed into Coptic, transferred to me her materials on British Library Or. Ms. 13885, an eleventh-century monastery account book full of lexical borrowings from Arabic.<sup>10</sup> Even more surprising, her bequest also contained copies of Walter Crum's and Paul Kahle's transcriptions of Bodl. MSS. Copt. (P) a. 1, 2 and 3. As I prepared to

4 Fragment eines koptischen 102–119.

5 Stern moved in 1886 from Egyptology to Celtic studies (Dawson, Uphill and Bierbrier, *Who was who* 404). In 1897, Ludwig Stern and Kuno Meyer founded the *Zeitschrift für celtische Philologie*, where he also received an obituary (Meyer, Ludwig Christian Stern). See also Magen, Ludwig Stern.

6 Apart from bibliographical items such as Crum's entries on Or. Ms. 3669(1) = n° 374 in *Catalogue of the Coptic manuscripts in the British Museum* 175, and on Cairo catalogue général 8028 in *Coptic monuments* 12, or occasional quotations in commentaries and comprehensive coptological bibliographies.

7 Halleux, *Les textes alchimiques* 65 and n. 40.

8 Crum mentioned the Bodleian mss. in the entry on Or. Ms. 3669(1) = no. 374 of his *Catalogue of the Coptic manuscripts in the British Museum*, 175, n. 1, cf. below, and he utilised them for his Coptic dictionary, where they are referred to as Bodl. MSS. (P) a 1, 2, and 3.

9 MacCoull, Coptic alchemy, who had knowledge of at least two of the three Bodleian manuscripts, quoted by her as A(2)P and A(3)P.

10 The edition of this manuscript, based on Sarah Clackson's work, is under preparation by Georg Schmelz and myself.

include this new wealth of Arabic words into my glossary and pondered the meaning of single lexical items, I could not help but think more and more about the texts themselves and their significance. Thus a plain Coptic papyrologist was *nolens-volens* won over to alchemy.

My intention here is to give an overview of the small but important Coptic alchemical dossier, its nature, significance, and the related problems it presents that have yet to be resolved. As a first step the Coptic manuscripts themselves will be introduced, then I shall focus on aspects of their setting within the *Geistesgeschichte* and of their transmission within the scientific tradition of early Islamic Egypt.

## 1 The Coptic Dossier of Texts Relating to Alchemy

The Coptic alchemical dossier, as far as is known to me at present, consists of no more than six textual items altogether,<sup>11</sup> being quite different in length and character. Two of them, although somehow related to alchemy, are not alchemical texts in a proper sense: P.Berlin P 8316, because it is not really alchemical; and Cairo Catalogue Général 8028, because it is not really a text (and perhaps not properly alchemical as well).

<sup>11</sup> I have not yet identified the whereabouts of the two manuscripts referred to by Chassinat, *Le manuscrit magique*, 15 as “deux autres [sc. papyrus] de même nature [sc., alchimique] en ma possession” and again, “les fragments alchimiques que j’ai acquis, il y a quelques quarante ans, à Louxor.” I also do not yet know the alchemical papyrus brought from el-Meshaikh, the ancient site of Lepidotonpolis, by Urbain Bouriant, according to the account given by Chassinat, Un papyrus 1–2: “Après plusieurs semaines de pourparlers et de marchandages durant lesquels sa patience fut soumise à de dures épreuves, Bouriant entra en possession du précieux manuscrit [sc. the Coptic medical papyrus of the Institut français d’archéologie orientale (IFAO)] et des restes d’un feuillet des papyrus portant sur chacune de ses faces des recettes d’alchimie, qui avaient été recueillis avec lui.” I recently suggested that this item could be identical with the medical papyrus Louvre AF 12530: Richter, *Neue koptische medizinische*, 167–168. Also Crum, *Catalogue of the Coptic manuscripts in the British Museum* 175, n. 1 ad no. 374, mentioned “other ‘alchemistic’ texts” such as “Zoega no. cclxxviii, Acad. des Inscr., *Comptes rend.* for 1887, 374 (Bouriant), Berlin Aeg. Urk. Kopt. nos. 21, 25; also Bodleian Papyri a1, a2, a3 and several papyri in the IFAO at Cairo”; however, he subsumed clearly medical texts (Zoega, Bouriant, *BKU* 1 25) under that category. So too did Tito Orlandi, *Corpus dei Manoscritti Copti Letterari* (<http://cmcl.let.uniroma1.it>), *Clavis Patrum Copticorum* 0014, who claimed six manuscripts apart from BL MS. Or. 3669(1) for *alchimia*, although their character and scope seem to be rather medical and/or magical: 1. Berlin Papyrus Collection P 8117–8117 = *BKU* 1 26, from

**P.Berlin P 8316**,<sup>12</sup> a manuscript belonging to the Berlin assemblage of mainly magical Coptic papyri,<sup>13</sup> provides a recipe for purple-dye<sup>14</sup> under the seal of strictest secrecy:

**Ex. 1** P.Berlin P 8316, verso 16–18: <sup>16</sup> ... πικσαλλυ αγω φρακ <sup>17</sup> ραβες̄ εκβι μαχ επιμαγ <sup>18</sup> χενερωμε νεγ ραυ ‘... and you shall wrap it and cover it when you take it to the water, so that nobody can see it.’

Its content and aim vividly recall those of Papyrus Leiden I 397 and Papyrus Holmiensis:<sup>15</sup> two Greek papyri written around 300 C.E., which are usually

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the Fayyūm, paper, medico-magical recipes, the most alchemy-like one, P.8116a, 15–23, is said to have been communicated by a wise man (αγροφωσ<sup>sic</sup> χλας χε) and deals with the way of finding “the diamond-stone ... being applicable to a number of tricks” (πῶνι μαλνωεσ [ { Arabic al-mās] ... εφπετ ερογν ρεγμεωι ητεχν[η]μα); 2. P 5530 (parchment, according to Beltz, Katalog 108, III 11: “Doppelblatt aus einem Codex, nach der Schrift etwa 6. Jahrh. ... Medizinischer Text.”); 3. P 15913 (papyrus, according to Beltz, Katalog 92, I 528: “Blatt aus einem Codex. Sammlung von Rezepten.”); 4. P 15918 (papyrus, according to Beltz, Katalog 92, I 529: “Blatt aus einem Codex. Arzneibuch.”); all of Beltz’s attributions having turned out to be wrong, cf. Richter, *Neue koptische medizinische*, 156, n 16); 5. *P.Ryl.Copt.* 412 paper, actually belonging to the Fayyumic parchment quire *P.Lond.Copt.* I 527), providing the same characteristic mélange of magical and medico-magical recipes as P.Berlin P 8116–8117 which it remarkably resembles in other respects as well, cf. Crum, *Catalogue of the Coptic manuscripts in the collection 187*, n. 5: “A difference in dialect alone prevents me connecting it also with Berlin, Kopt. Urk., No. 26 (P. 8116, 8119), which is identical in script and measurements”; 6. Naples, Biblioteca Nazionale “Vittorio Emanuele III,” 14.06–07 (not seen). In any case, the aim of all these recipes is to cause an impact on the state and behaviour, not of matter and substances, but on those of people. Although there are affinities between magic and alchemy even (or especially) in the manuscript tradition (see Halleux, *Les alchimistes grecs* 5–6, Richter, *Miscellanea magica*, and below, n. 34), both kinds of practice should be distinguished as techniques in their own right. Cf. Vereno, *Studien zum ältesten* 11–12 against their essential identity as supposed by earlier historians of the sciences such as von Lippmann, *Entstehung* 275–282.

12 Papyrus, H. 42 cm × B. 9 cm; palaeographically datable to the seventh or eighth century; edited by Erman in *BKV* I 21.

13 Cf. Erman, *Ein koptischer*.

14 As to the affinity between dyeing and alchemy, see below; cf. also Pfister, *Teinture and MacCoull*, Coptic alchemy who certainly over-emphasised the connection of the Bodleian manuscripts to dyeing craft and dye-stuff trade (101): “As will be seen, much of what was disguised with occult-sounding language as ‘alchemy’ was in fact simple craft technology-trade secrets.”

15 Ed. Halleux, *Les alchimistes grecs*; cf. also Berthelot and Ruelle, *Collection*; Caffaro and

regarded as the earliest extant manuscripts dealing with alchemy, although they are concerned, in quite similar ways, with merely technical aspects of the art—the production, imitation and even forgery of costly materials, such as gold, silver, precious stones, pearls, and purple.<sup>16</sup>

Cairo Catalogue Général 8028,<sup>17</sup> a single leaf of paper, supposedly from the town of Akhmīm in Upper Egypt, provides a short list of eight Arabic names of ingredients transcribed into Bohairic<sup>18</sup> (i.e. Lower Egyptian) Coptic:

Ex. 2 (Entire text)  $\sigma\eta\lambda\epsilon\kappa\omicron\upsilon\ \eta \cdot \cdot \sigma\omicron\gamma\eta\chi\omicron\upsilon\gamma\epsilon\upsilon\epsilon\chi\text{cix?} \ \epsilon\sigma\pi\eta\tau\epsilon\chi \cdot \cdot \alpha\lambda\mu\alpha\gamma\rho\alpha \cdot \cdot \alpha\sigma\sigma\epsilon\eta\chi\alpha\rho \cdot \cdot \alpha\sigma\epsilon\rho\eta\eta\delta \cdot \cdot \alpha\lambda\lambda\iota\eta\epsilon\kappa \cdot \cdot \alpha\lambda\mu\iota\tau\epsilon\lambda \llbracket \rho\alpha\sigma\sigma\eta\eta\chi\alpha\rho \rrbracket$  'syriac red (*συρικόν*)<sup>19</sup> or cinnabar (*zunjufr*)—white lead (*isbīdāj*)—red chalk (*al-maghra*)—verdigris (*al-zinjār*)—(red or yellow) orpiment (*al-zirnīkh*)—lapis lazuli (*al-līnakh/al-līnaj*)—ink (*al-midād*)—verdigris (*deleted: al-zinjār*)'

As was noted by Crum, this compilation of inorganic substances could have served alchemical purposes of some kind.<sup>20</sup> Indeed, as each of these substances was common dye stuff and together they cover a good deal of the palette, we may even have nothing but the shopping list of a dyer or painter.<sup>21</sup>

So in a way, P.Berlin P 8316 and Cairo Cat.Gén. 8028 are on the margins of our dossier, while its core consists of the aforementioned alchemical manuscripts

Falanga, *Il papiro di Leida*; Caley, *The Leyden papyrus and Caley, The Stockholm papyrus*; Halleux, *Les textes alchimiques* and Halleux, *Indices chemicorum*; Letrouit, *La chronologie*.

16 The operating instructions of *P.Leid.* I 397 and *P.Hobn.* are ennobled, as it were, by the occurrence of parallels in the properly alchemical treatise of Pseudo-Demokritos, *Physika kai mystika* (although overlaid here by an additional symbolic layer); cf. Halleux, *Les alchimistes grecs* 72–75, and Vereno, *Studien zum ältesten* 8. A new edition of Pseudo-Democritus is now available: Martelli, *The Four books*.

17 Leaf of paper, H. 17 cm × B. 12 cm, ed. Crum, *Catalogue général* 12–13, n° 8028.

18 This dialectal tendency, rather amazing with regard to the assumed provenance of the text, is indicated not only by the occurrence of the letter  $\delta$ , but also by the use of  $\chi$  for rendering Arabic  $\text{ج}$  (ج) where transcriptions of Arabic words based on Sahidic phonology and orthography generally have  $\sigma$ , cf. Richter, *Coptic* 497.

19 The common written form in Greek pigment lists is  $\sigma\eta\tau\iota\kappa\omicron\upsilon$ , cf. Mitthof, *Pigmente* 291.

20 Crum, *Catalogue général* 13: "Contents: Apparently Arabic alchemistic terms transcribed."

21 Strikingly similar lists of dye stuffs in Greek have been edited and discussed by Fritz Mitthof, *Liste von Pigmenten* and Mitthof, *Pigmente* (providing an exhaustive bibliography on 299–304); cf. also Halleux, *Pigments et colorants*.

of London and Oxford, four extensive treatises written in Sahidic (Upper Egyptian) Coptic.

**British Library Oriental Ms. 3669(1)**<sup>22</sup> comprises 20 pages, forming a single quire, a *quinternion*, of a palimpsest parchment codex.<sup>23</sup> The beginning and the end of the text are missing, and its first surviving pages are partly damaged, but at least 10 pages are fully preserved. There is no pagination, but the page order was originally fixed by the remains of the codex's original binding.<sup>24</sup> Ludwig Stern estimated the age of the manuscript to be five or six centuries,<sup>25</sup> which would mean the thirteenth or even fourteenth centuries, but this seems to be considerably too late a dating. The handwriting, even if not very careful and therefore difficult to date (cf. Figure 10.1), does not indicate a time later than the tenth or eleventh century; likewise, the language of the text, a non-archaic late Sahidic, recalls tenth and eleventh-century Coptic texts.<sup>26</sup> BL MS. Or. 3669(1) was acquired by the German Egyptologist August Eisenlohr at Söhāg in Upper Egypt,<sup>27</sup> the famous site of Shenoute's monastery near the town of Akhmīm. But

22 H. 16 cm × B. 12 cm; ed. by Ludwig Stern, *Fragment eines koptischen 102–119*; described by W.E. Crum in *P.Lond.Copt.* I, 374, p. 175, collated by myself in September 2006.

23 Traces of the earlier writing, a bimodular bookhand, are regularly visible on the flesh-sides (cf. Figure 10.1), but nothing distinctive enough for identifying the erased text can be read as yet.

24 Cf. Stern, *Fragment eines koptischen 103*: "... da sie noch in der ursprünglichen Heftung hängen."; W.E. Crum *ad P.Lond.Copt.* I, 374, p. 175: "threaded together in book form by a small parchment thong." Today the page fragments are fixed in frames of Japanese paper and (together with the parchment fragment Or. ms. 3669[3] obviously not belonging to 3669[1]) have been re-bound in a hardbacked booklet. According to a pencil note at the half-title, this may have happened in October 1907. The correctness of the present page order can still be understood by conclusive codicological features.

25 Stern, *Fragment eines koptischen 103*: "Die Handschrift, welche immerhin 5–6 Jahrhunderte alt sein mag ..."

26 Unexpected confirmation of my own impressions came from a handwritten acquisition catalogue in the British Library Oriental Manuscripts Reading Room, the *List of Oriental manuscripts, 1879–1889, Or. 2091–4046*. The entry on Or. 3669(1) among the 1889 acquisitions runs as follows (232): "Vellum fragment of an alchemical treatise in Coptic (see Stern, *Zeitschrift für Ägyptische Sprache* 102–119). A smaller Coptic fragment [i.e., probably, Or. 3669(3)]. 10th cent." The authority the librarian may have been drawing upon is Crum, who classified the handwriting of BL MS. Or. 3669(1) in *P.Lond.Copt.* I, 374, p. 175 in terms of the palaeographical typology according to the plates in Zoëga, *Catalogus*: "The text ... is written in a small, uneven, sloping hand of Zoëga's 9th class."

27 Cf. Stern, *Fragment eines koptischen 102*; for Eisenlohr, cf. Dawson, Uphill and Bierbrier, *Who was who* 139.

if Sōhāg's being the site of the manuscript's purchase does not automatically make it—or even its environs—the site of its discovery, at least it *could* have been found there.

**Bodleian mss. Copt. (P) a. 1, 2 and 3** were purchased, according to information available in the Bodleian Library Oriental Reading Room card catalogue of "Manuscripts: Donors and Vendors," in 1890 from "The Rev[erend] G[reville] J[ohn] Chester," a widely interested traveler, amateur archaeologist and collector of antiquities,<sup>28</sup> who provided a number of British collections with objects of amazing diversity. In the case of the Coptic Bodleian manuscripts (P) a. 1–3, Chester's source remains unknown; wherever it was, there is no doubt that all three manuscripts were found and sold together, because they are as similar to each other as they are different from other Coptic texts. We also know that other Coptic papyri likewise kept in the Bodleian Library were bought by Rev. Chester near Sōhāg.<sup>29</sup> Based on information given by Chassinat, *Le manuscrit magique*, Leslie MacCoull, Coptic Alchemy quoted the opinion of Crum that the Bodleian manuscripts had been brought from el-Meshaikh, a site near the modern village of Girga. However, this argument is clearly erroneous and must be put aside.<sup>30</sup> Even more striking as an argument than such fragmentary bits

<sup>28</sup> Cf. Dawson, Uphill and Bierbrier, *Who was who* 96–97.

<sup>29</sup> Such as Bodl. Mss. Copt. (P) a. 4, edited by Crum, *Coptic manuscripts* appendix, 77–82, which was brought from Sheikh Hammad near Sōhāg, although its dialect is Fayyumic and its content is an account listing persons from villages in the Fayyūm.

<sup>30</sup> MacCoull, Coptic alchemy 101, wrote that Crum "apparently ... was of the opinion that they [sc. Bodl. Mss. Copt (P) a. 1–3], like the medical papyrus ... now at the French Institute in Cairo, were found at el-Meshaikh (Lepidotonpolis) near Girga, across the Nile just south of Akhmim," referring to Chassinat, *Le manuscrit magique* 15. The passage in question runs as follows: "Le papyrus médical de l'Institut français a été découvert près du village d'El-Méshaikh (Lepidotonpolis), à quelques kilomètres au sud-est de Girga. Les fragments alchimiques que j'ai acquis, il y a quelques quarante ans, à Louxor, m'ont été donnés comme provenant de la même trouvaille. Celle-ci, au dire du marchand, comprenait plusieurs autres pièces encore, de dimensions plus grandes. Je n'ai pu les acheter en raison de leur prix élevé, ni les voir, leur propriétaire refusant de me les montrer si je ne lui versais préalablement la somme qu'il en demandait. Je pense qu'il s'agit des trois papyrus conservés maintenant à Oxford, et dont je dois la connaissance à l'amabilité de M. Crum." However, Crum certainly knew the true circumstances of the acquaintance of Bodl. Mss. Copt (P) a. 1–3 from Rev. Chester in 1890, and the same circumstances disprove Chassinat's assumption that the manuscripts withheld by his purchaser were identical with the Bodleian manuscripts, since these were already resident in Oxford when Chassinat arrived in Egypt for the first time in 1895 (cf. Dawson, Uphill and Bierbrier,

of external evidence is the actual resemblance of Bodleian MSS. Copt. (P) a. 1–3 and the Papyrus Médical Copte of the Institut français d'archéologie orientale (IFAO) in terms of layout and palaeography,<sup>31</sup> which could indeed point to a shared milieu for all of the manuscripts, if not necessarily to their shared provenance in the same find. However, taking into account all of the evidence for the provenance of Bodleian manuscripts (P) a. 1–3, BL MS. Or. 3669(1) and Catalogue général 8028, I cannot help but at least raise the *possibility* that all of these Coptic texts belong to a single assemblage, originating from the same place of discovery. But even if this is not the case, the accumulation of alchemical writings from a narrowly limited *area* remains remarkable.<sup>32</sup> This consideration leads me to a brief remark about the importance of the town of Panopolis/Akhmīm and its surroundings as a likely site of alchemical practice in the late antique and early Islamic period.

#### *An 'Alchemy Valley' around Panopolis/Akhmīm?*

The aforementioned fourth-century Papyri Leiden I 397 and Holmiensis originally belonged to the famous d'Anastasi collection purchased in 1828, which means that they originally formed part of the huge papyrus assemblage discovered at Thebes (some 120 km away from Akhmīm) that has yielded the vast majority of all extant Greek, Demotic, and Old-Coptic magical manuscripts.<sup>33</sup> Living at the time these manuscripts were composed, the Egyptian Zosimos, who reached his prime around 300 CE, is considered to be the earliest non-pseudepigraphic author of alchemical writings. Zosimos is usually referred to as ὁ Πανοπλίτης in the alchemical tradition,<sup>34</sup> and Mertens has adopted this

*Who was who* 95–96). A different argument for the shared provenance of Bodl. MSS. Copt. (P) a. 1–3 and P.Méd.IFAO is made by Richter, *Neue koptische medizinische* 167–168.

31 Especially the unusual format of the papyrus scrolls, written *transversa charta*—in the case of the medical papyrus a strip of 248 cm in length and 27 cm in width, in the case of the Bodleian manuscripts a. 2 and 3, strips of ca. 70 and ca. 80 cm in length by ca. 25 cm in width.

32 As is also true of the still-missing alchemical manuscripts from el-Meshaikh, cf. above, n. 11.

33 Cf. Halleux, *Les alchimistes grecs* 5–6. Preisendanz commented on n° xiii (P.Leiden J 395) (*Papyri* 86): “Gleiche H[an]d in P.Leid. J 397, P.Holm,” cf. also Halleux, *Les alchimistes grecs* 12: “Il ne nous a pas été possible de vérifier cette hypothèse qui révélerait dans la personne du scribe une curieuse connexion des préoccupations alchimiques avec la magie.” On the circumstances of this find and the history of the d'Anastasi papyri, cf. Tait, *Theban magic and Dieleman, Priests* 11–20.

34 Cf. Mertens, *Alchemy* 165 and Mertens, *Zosime de Panopolis* XII–XIX.

as reliable biographical information, against the witness of the *Suda*.<sup>35</sup> The continuation, perhaps even concentration, of this hub of alchemical activity in and around the Upper Egyptian urban centre of Akhmīm into early Islamic times is indicated by the number of Arabic alchemists whose lives were somehow related to it in the literary biographical tradition.<sup>36</sup> These include Dhū l-Nūn, a mystic and alchemist who spent his entire life in Akhmīm (796–861);<sup>37</sup> ‘Uthmān ibn Suwayd Ḥarī al-Ikhmīmī (al-Nadīm, *Fihrist* 358; *floruit* around 900);<sup>38</sup> a nameless disciple of Jābir ibn Ḥayyān called al-Ikhmīmī (al-Nadīm, *Fihrist* 355–23, probably not identical with the preceding person);<sup>39</sup> Abū ‘Abd Allāh Muḥammad ibn Umayl (ca. 900–960);<sup>40</sup> and Buṭrus al-Ḥakīm al-Ikhmīmī (living in the ninth century or later).<sup>41</sup> Indeed, there might be a relationship between the broad stream of evidence for alchemical thought and practice in Panopolis/Akhmīm on the one hand, and the town’s importance as a centre of textile production and, accordingly, of dyeing, as was emphasised by MacCoull,<sup>42</sup> on the other. If ‘honest’ alchemy was essentially a way of purifying and improving one’s soul, it was hardly capable of making one a living. Alchemical efforts therefore are usually found in symbiotic connection with professions more appropriate for gaining a livelihood, be it the occupation of a physician as in the—perhaps typical—case of the famous Abū Bakr Muḥammad ibn Zakariyya al-Rāzī (d. 925 CE), or in a trade such as dyeing, in some respects a close neighbour of the alchemical arts.

35 Mertens, *Zosime de Panopolis* 166.

36 Cf. Abt, Madelung and Hofmeier, *Muḥammad Ibn-Umail* xiii–xiv; Plessner, *Vorsokratische* 130–131.

37 Abt, Madelung and Hofmeier, *Muḥammad Ibn-Umail* xiv.

38 Abt, Madelung and Hofmeier, *Muḥammad Ibn-Umail* xiv.

39 Ullmann, *Die Natur- und Geheimwissenschaften* 217.

40 Abt, Madelung and Hofmeier, *Muḥammad Ibn-Umail* xiv.

41 Sezgin, *Geschichte* 274, and Ullmann, *Die Natur- und Geheimwissenschaften* 235.

42 MacCoull, *Coptic Alchemy* 101: “From burials at Akhmim ... have come a great many of what art historians generically term Coptic textiles. Both Greek and Arabic papyri attest to the presence of weaving and dyeing facilities in the city and its surrounding area ... Panopolis had gained the reputation of a continuing center of ‘arcane philosophy,’ i.e., craft technology, which combined with surviving Christianity and a memory of Hellenistic philosophy.” The importance of that branch of trade is already mentioned by Strabo XVII 1.41, and was still valid in Abbasid, Tulunid and Fatimid times, cf. Frantz-Murphy 1981, A new interpretation. From the wealth of papyrological evidence, I only cite the bilingual archive of the purple-dye trader Aurelius Pachymios (Wessely, *Neue griechische* 122–139).

TABLE 1 *Synopsis: Correspondences between Bodl. Mss. Copt. (P) a. 1 and 3*

MS. a. 1	MS. a. 3
pag. 1 (Crum <i>g</i> )	(   <i>verso</i> , 1–14)
pag. 2 (Crum <i>a</i> )	<i>recto</i> , 1–12
pag. 3 (Crum <i>f</i> )	<i>recto</i> , 13–24
pag. 4 (Crum <i>b</i> )	<i>recto</i> , 24–35
pag. 5 (Crum <i>e</i> )	<i>recto</i> , 35–49
pag. 6 (Crum <i>c</i> )	<i>recto</i> , 50–64
pag. 7 (Crum <i>d</i> )	<i>recto</i> , 64–78
pag. 8 ( <i>vacat</i> )	<i>verso</i> , 1–14

Unlike BL MS. Or. 3669(1), the Bodleian MSS. Copt. (P) a. 1, 2 and 3<sup>43</sup> are written on papyrus. Bodl. MS. Copt. (P) a. 1 currently consists of four papyrus leaves of  $9\frac{1}{4}$  by  $9\frac{3}{4}$  inches, placed under glass in one large frame according to the direction of the fibres (see figure 10.2). Two of them, pages *e*(r°)/*c*(v°) and *d*(r°)/*vacat*(v°), are still joined together:

**Frame, obverse:**

page *a* (—)                      page *b* (—)    page *c* (—) = *conjunction* = page *d* (—)

**Frame, reverse:**

*vacat* (|) = *conjunction* = page *e* (|)    page *f* (|)    page *g* (|)

**Figure 10.2. Bodl. MS. Copt. (P) a. 1 as arranged in the frame**

The original page order, albeit disarranged in the frame, can easily be reconstructed by comparison with the parallel text as attested in Bodl. MS. Copt. (P) a. 3 (see Table 1).

The original 'quire' was made up, somewhat strangely from a codicological point of view, of two single leaves (pages 1/2 and 3/4) and one folded double leaf (pages 5/6+7/8) laid next to each other piece by piece.

43 Using the transcriptions of this unpublished mss. in Crum's notebook 83 (Bodl. MSS. Copt-

Bodl. MS. Copt. (P) a. 1 is written in a sloping hand likewise far from usual book writing as from business hands (cf. Figure 10.2). It can hardly be dated earlier than the ninth century but surely not later than the tenth century, because papyrus in Egypt fell rapidly into disuse after the mid-tenth century.

Bodl. MSS. Copt. (P) a. 2 and 3 strikingly resemble each other not only in measurements<sup>44</sup> and layout, but in their handwriting—to an extent that it is not unlikely to assume that the same scribe was responsible for both. Both manuscripts are written in a sort of semi-uncial, clearly dependent on the contemporary bimodular Coptic book hand (the type otherwise called Alexandrian majuscule, narrow style, or *unciale copte*), which permits us to date these manuscripts with some confidence to the ninth or tenth century (cf. Figure 10.2). Both of them are written *transversa charta* in lines running parallel to the *kollaseis* (bonds) of the papyrus leaves, a manner otherwise attested, apart from documentary texts, in Papyrus Médical Copte 1FAO (cf. above, n. 31). Finally, both pieces had been re-used and their recto sides are covered in Arabic letters from an earlier text.<sup>45</sup>

After providing some information on the appearance and physical coherence of the Coptic alchemical dossier, a few words about its contents can now be added. To start with, perhaps the most striking fact: we have four manuscripts, but only three texts. As has already been mentioned briefly, Bodl. MSS. Copt. (P) a. 1 and 3 are witnesses of the same text (see table 1). While all four Coptic alchemical treatises are plain compilations of alchemical recipes, more or less free of theoretical reflections and philosophical considerations, the literary form of Bodl. MSS. Copt. (P) a. 1 and 3 is shaped by an overriding narrative idea. The text is presented as a record drawn up by a disciple who had observed his teacher at work and written down what “the master” (πκαε) —as he always

(P) a.1, 2, and 3) and Kahle's notebook 33 (Bodl. MSS. Copt. (P) a.1 and 3), I had the opportunity to collate the texts in September 2004 and September 2006.

44 Bodl. MS. Copt. (P) a. 2 measures 81 cm in length by 25 cm in width, Bodl. MS. Copt. (P) a. 3 measures 82 cm in length by 25.5 cm in width.

45 Petra Sijpesteijn was kind enough to have a look at these texts and was able to identify them as *P.Bodl.Arab.* 1 (= verso of Bodl. MS. Copt. (P) a. 3) and 2 (= verso of Bodl. MS. Copt. (P) a. 2), edited by Margoliouth in 1893, who only made a laconic note on the Coptic texts (7): “The Coptic documents written on the back of both Papyri and partly within the lines of Papyrus 1 have, I understand, no connexion with these letters.” Apparently *P.Bodl.Arab.* 1 is cut off at the lower part and *P.Bodl.Arab.* 2 at the upper part. In the case of Bodl. MSS. Copt. (P) a. 3, the last 14 lines of the Coptic alchemical text were placed on the |-side, using the interlinear space between the first lines of *P.Bodl.Arab.* 1.

calls him—did and said. The paragraphs of the text of Bodl. MSS. Copt. (P) a. 1 and 3 are marked by opening phrases referring to this narrative framework, such as “I saw the master,” “I heard the master,” “this is what the master let me know” and, most frequently, “the master spoke” (πεξε πσαε). Thus, the voice we hear telling us recipes is that of the master, but always quoted by a distinct ‘homodiëgetic’<sup>46</sup> narrator, his pupil. See for instance ex. 3:

**Ex. 3** Bodl. MS. Copt. (P) a. 1, pag. a, 1–7 || Bodl. MS. Copt. (P) a. 3, r<sup>o</sup>, 1–6: <sup>1</sup> CN<sup>o</sup> πεξε πσαε δε χι α ριπρη MN OYΩI <sup>2</sup> ναλλμογλγαμ θνοφ καλωσ καλωσ καλωσ <sup>3</sup> τααγ εγτοεισ εκκαρεε μαρσ εγκαπ <sup>4</sup> καασ εσαωε εεραI ρηνογκα-  
ραειε <sup>5</sup> εφροβσ εφσοθ εφλαληγ ηκαε ησοφοσ <sup>6</sup> εφρηνογκαωετ εφκερα ησοτ  
εκπισε <sup>7</sup> μμοφ ηξ ηροογ νατογωη ριπεωσωπ <sup>8</sup> ωαντεφρωγωνε ηογωτ  
‘The master spoke: Take 1 of “the Sun” [i.e., gold] and one unit (*lit.* mea-  
sure) of ointment (*al-mulgham*), grind it very, very well, fill it into a  
stretchy bag, tie it to a string, let it hang down in a covered, drilled  
retort(?), smeared with “clay of the sages” [i.e., laboratory cement],  
leaving it in a gentle fire of dung, while you cook it 7 days (without  
nights) upon its broth, until it becomes one single stone.’

While it is amazing enough to have two copies of this text, it is even more significant to see that both copies differ from each other at several textual levels. While morphology and orthography of Bodl. MS. Copt. (P) a. 1 come near to the standard of common literary (i.e., biblical) Sahidic, some spellings of Bodl. MS. Copt. (P) a. 3 bear dialectal features pointing to its Upper Egyptian origin. Both texts have entire phrases as well as single expressions of their own. And even the general textual arrangement differs slightly but significantly (see table 1): the *initial* paragraph of Bodl. MS. Copt. (P) a. 1, “I saw the master as he sublimated, etc.” (see ex. 4) forms just the *epilogue* of the text transmitted in Bodl. MS. Copt. (P) a. 3:

**Ex. 4** Bodl. MS. Copt. (P) a. 1, pag. g, 1–6 || Bodl. MS. Copt. (P) a. 3 v<sup>o</sup>, 1–  
5: <sup>1</sup> αιναγ επσαε ηταφσαειδ ηπασσαηπακ ηξ ησοπ <sup>2</sup> > ηηησωσ πασσαρ-  
ηηω [η]αλλασβαρ εφτωσ <sup>3</sup> ημοφ ηηεε ηαλλω[η]σ αφαρηη ημοφ ηδ ησοπ  
<sup>4</sup> > ηηησωσ αφσαειδ ημοφ ριπαηηηαθερ ηδ ησοπ <sup>5</sup> > ηηησωσ παλχηπιθε  
[ηδ]αλλασβαρ αφτααφ εφσογ <sup>6</sup> ηαρεσ αφογαθω ριαφωριπη αφααφ ηογωνε “I  
saw the master as he sublimated (*ša‘ada*) the quicksilver (*al-zaybaq*) 7  
times,—thereafter the yellow (*al-asfar*) arsenic (*al-zirnikh*) [i.e., orpi-

46 In terms of Gérard Genette, *Narrative discourse*.

ment], soaking it in oil of aloe, he heated (*aḥmama*) it four times—thereafter he sublimated (*ṣaʿada*) it on the refined gold (*al-naḍīr*) four times—thereafter the yellow (*al-aṣfar*) sulfur (*al-kibrīt*), he put it in a ladle (σωμάριτρον), he melted it on *al-sharik* (? ‘the partner’), he made it a stone.”

So what we actually have are not just two copies of one text but copies of two *recensions* of one text.

Further more, the text of Bodl. MSS. Copt. (P) a. 1 and 3 makes use of so-called *Decknamen*, substitute names, which are likewise attested in Arabic alchemical texts,<sup>47</sup> such as:

- Ex. 5 Bodl. MS. Copt. (P) a. 1 a. 12: ⲙⲟⲟϥ ⲛⲁⲥⲉⲥⲉⲥ ‘glass (*al-zujāj*) water’: cf. Siggel, *Decknamen* 51: *mā’ al-zujāj* ‘glass water’ as substitute name of Hg.
- Ex. 6 Bodl. MS. Copt. (P) a. 1 g. 9: ⲡⲗⲗⲁⲙⲏⲣ ‘D (silver-) [*symbol*: crescent] yeast (*al-khamūr*): cf. Siggel, *Decknamen* 39: *khamūr al-dhahab* ‘gold yeast’ and *khamūra* ‘yeast’ as substitute names of Hg.

Finally, it is worth mentioning that the final paragraph of Bodl. MS. Copt. (P) a. 1 (= the penultimate of Bodl. MS. Copt. (P) a. 3) seems to point to another text. This paragraph deals with the ⲙⲉⲕⲁⲛⲏ ⲛⲏⲥⲟⲫⲟⲥ, the “machine of the sages,” a means or contrivance serving to decompose every substance (or at least, every metal).<sup>48</sup> This “machine,” however, needs what in Coptic is called a ⲛⲁⲗⲣⲉ, a “recipe” or “ingredient,” in order to work, and it is this recipe that the master gives to his disciple in the text. The ending of the paragraph sounds like a to-be-continued, when the disciple says, “If God puts it into the heart of the master, then he will let me know—the machine”. Is this an intertextual reference to another alchemical text providing the continuation of the procedure? I shall return to the issue later in the article.

**Bodl. MS. Copt. (P) a. 2**, comprising 72 lines altogether, is the shortest and in some ways, the plainest (which does not mean easiest to understand) of the Coptic alchemical treatises, a mere sequence of recipes structured by simple

47 Cf. Siggel, *Decknamen*; Ullmann, *Die Natur- und Geheimwissenschaften* 266–270.

48 The very result which was expected of a piece of equipment called *menstruum universale* in early modern western alchemy.

initial phrases such as  $\chi\iota$   $\nu\alpha\kappa$ , “take” or  $\alpha\lambda\lambda\omicron\varsigma$ , “another one” (sc. recipe of the same purpose), cf. ex. 7:

**Ex. 7** Bodl. MS. Copt. (P) a.2, lines 1–6: <sup>1</sup>  $\chi\iota$   $\nu\alpha\kappa$  □  $\nu\beta\alpha\rho\omega\theta$   $\epsilon\lambda\rho\eta\gamma$   $\mu\mu\omicron\gamma$   $\nu\eta\rho\mu\omicron\gamma$   $\epsilon\iota\alpha\omega\alpha\rho\eta\rho\epsilon$   $\epsilon\iota\omega\gamma\epsilon\iota$   $\mu\mu\omicron\gamma$   $\nu\omicron\gamma$ [ $\omicron\gamma\omega\eta$ ] <sup>2</sup>  $\epsilon\upsilon\tau\gamma$   $\epsilon\beta\omicron\lambda$   $\chi\epsilon\rho\chi\omega\rho\epsilon\gamma$   $\epsilon\beta\omicron\lambda$  ·  $\chi\iota$   $\mu\iota$   $\lambda$   $\gamma$   $\nu\eta\rho\tau\gamma$   $\mu\eta$   $\mu\iota$   $\lambda$   $\alpha$   $\nu\epsilon\rho\alpha\tau$   $\omicron\gamma\omega\theta\omicron\gamma$   $\mu\eta\mu\eta\epsilon\gamma$ · <sup>3</sup>  $\epsilon\rho\eta\gamma$  ...  $\nu\eta\rho\tau\gamma$   $\nu\omicron\gamma\pi\alpha\omega\omega\iota$   $\nu\eta\rho\tau\gamma$   $\alpha\gamma\omega$  [ $\omicron\gamma$ ]  $\omega\iota$   $\theta$   $\omicron\gamma\alpha\theta$   $\alpha\pi\iota$  □  $\tau\alpha\gamma$   $\epsilon\rho\omicron\gamma\eta$  <sup>4</sup>  $\epsilon\pi\epsilon\rho\mu\omicron\gamma$   $\kappa\alpha\tau\alpha$   $\sigma\omicron\pi$   $\bar{\nu}\omega\alpha\kappa\alpha\rho\eta\mu\iota$   $\mu\mu\omicron\gamma$   $\tau\alpha\gamma$   $\epsilon\rho\omicron\gamma\eta$   $\epsilon\pi\epsilon\rho\mu\omicron\gamma$   $\omega\alpha\upsilon\tau\epsilon\kappa\alpha\gamma$  <sup>5</sup>  $\nu\rho$   $\epsilon\gamma$  ·  $\alpha\kappa$   $\omicron\gamma\omega\theta$   $\alpha\alpha\gamma$   $\eta$   $\alpha$   $\nu\alpha\mu\omicron\gamma$  ·  $\kappa\alpha$  . . .  $\alpha\lambda\lambda\alpha$   $\epsilon\kappa\omega\alpha\mu\alpha\gamma$  . . .  $\eta$  . . .  $\omega\alpha\gamma\kappa\mu\omicron\mu$   $\nu\omicron\gamma\kappa\omicron\gamma\iota$  “Take a (plate) [*symbol*: *πέταλον*] of copper, cover (*lahafa*) it with salt and *al-shahīra* (i.e., a vitriol), roast (*shawā*) it one night, take it away, beat it. Take 1<sup>1</sup>/<sub>2</sub> mil(iarēsion) of it and 1 mil(iarēsion) silver, melt them with each other, ... in it, a half-measure of it and [one] measure of (gold) [*symbol*: gold]. Melt(?) the (plate) [*symbol*: *πέταλον*], put it into the salt, (namely) from time to time when you heat (*ahmama*) it, put it into the salt until you make it a (plate) [*symbol*: *πέταλον*] which ... . Melt it, make it one. It is very(?) beautiful(?). But if you make it a ..., it will become black shortly.”

As a recurrent finishing clause it has the formula  $\omicron\gamma\alpha\omega\kappa\iota\mu\omicron\mu$   $\nu\epsilon$ . This could be understood either in a special, technical sense, “this is a proof,” or, more likely, as a general recommendation “it is proved,” as is an often-attested conclusion in recipes in magic, medicine and cookery.

**BL MS. Or. 3669(1)** provides the most extensive and elaborate Coptic alchemical text. Its style is rich in imagery; alchemical metaphors and *Decknamen* are excessively used making it even more difficult to understand what’s going on, such as:

**Ex. 8** BL MS. Or. 3669(1), fol. IVB 8:  $\mu\eta\mu\mu\omicron\gamma$   $\epsilon\sigma\iota\mu\omicron\varsigma$ [ $\lambda\omega$ ] ‘bat urine’: cf. Siggel, *Decknamen* 43, *shīdarj* ‘bat excrements’ as substitute name of Hg; cf. *ibid.*, 36 with *bawl* “urine.”

**Ex. 9** BL MS. Or. 3669(1), fol. VA 18:  $\tau\omicron\sigma\iota\mu\pi\iota\sigma\epsilon$   $\mu\pi\rho\alpha\lambda\eta\tau$  “the way of cooking the bird”: cf. Siggel, *Decknamen* 44f.: with *ṭayr*, “bird.”

**Ex. 10** BL MS. Or. 3669(1), fol. VIII A, 19:  $\alpha\lambda\lambda\omega\lambda\epsilon$  ‘pearl (*al-lu’lu*)’: cf. Siggel, *Decknamen* 49: *lu’lu’ raṭīb* ‘liquid pearl’ as substitute name of Hg; cf. *ibid.*, 51: *marjān* ‘pearl’ as substitute name of Sf.

**Ex. 11** BL MS. Or. 3669(1), fol. VIII B, 12:  $\alpha\lambda\kappa\iota\eta$  ‘slave’: cf. Siggel, *Decknamen* 45: several substitute names with ‘*abd*, ‘slave’, ‘servant’ *ibid.*, 37: *jāriya* ‘female slave’ (= Fe), and *ibid.*, 38: *khādīm* ‘servant’ (= Fe).

The recurrent concluding formula of its recipes is ἀφελος ἐβολ, “it is finished.” Compare ex. 12:

Ex. 12 BL MS. Or. 3669(1), fol. VIIa, 9–21: <sup>9</sup> χι νακ νι νφι νραλητ: <sup>10</sup> ω ι: νφι νασσερνηε νκοκος <sup>11</sup> ελτογ ερωφ: φατεφμογ καλος: <sup>12</sup> ταρογ ρινεγερηγ: σ[οπ] ς [ν]φι <sup>13</sup> νκαίρε: σακτογ τααγ [εγαλακα] <sup>14</sup> ταε εσογαν: ροβκ κεογα [εξοφ:]: <sup>15</sup> χαεφ ενομε νσοφος: σ[αετε εαροογ?] <sup>16</sup> φαντογρολ εεραι: σοπογ[φι] <sup>17</sup> ριοοφ: σατφ ελχο ρ νφι νκασι <sup>18</sup> τηρεν: αλλα σαββι νπκασι <sup>19</sup> τηρε: νφωρπ ει περοτε: μπες <sup>20</sup> ταφονε: πκερωφ ναχοκ <sup>21</sup> εβολ καλοος ἀφελ[οκ] ἐβολ. “Take 10 units of the ‘bird’ and (*wa-*) 10 units of red arsenic (*al-zirmikh*) [i.e., realgar], ‘torture’ them until they ‘die’ well; mingle them with each other, take six units of ‘throat,’ grind them, put them into an open glass, put another one on it, smear it with ‘clay of the sages’ [i.e., laboratory cement], heat beneath it until they ‘fly up.’ Take one [unit] of it, spread it over 100 units of tin—but clean (*ṣaffā*) the tin with laurel(?)—milk!—your work will succeed well. It is finished.”

As might be expected, the aim of all recipes in these treatises is the extraction of gold, silver, a kind of gold even better than common gold, and certain artificial substances wanted for laboratory work, such as ομε νσοφος, “clay of the sages,” which is an artificial cement used for insulating laboratory vessels, and the elixir, the ultimate catalyst, which is referred to as αλχημια ‘alchemy’ in BL MS. Or. 3669(1),<sup>49</sup> when it says:

Ex. 13 BL MS. Or. 3669(1), fol. IIb, 16–22: <sup>16</sup> [...] φαντογβολ εβολ <sup>17</sup> ελχιν πκοετ: κααγ φαντογκβω <sup>18</sup> φητογ ειμε εε ογηρ ριοογε τηρογ: <sup>19</sup> ταλοογ επικοετ νκεσοπ: <sup>20</sup> † εεραι [ε]χ[ο]ογ νογφι αλματκαλ: <sup>21</sup> εναλχημια: εκφανααφ ν <sup>22</sup> πεκμτο εμβολ νγιμε εε αφερσαν: “[...] until they dissolve on the fire; let them, until they cool down, measure them to know how much is in them altogether. Put them on the fire a second time, add one *mithqāl* [-measure] of *al-kīmiyā*’ [i.e., the elixir] to them. If you do it in front of yourself, then you will know: it has become beautiful.”

49 For this meaning, cf. Dozy, *Supplément* 514b: “*kīmiyā* désignait dans l’origine la substance qui transmue les métaux, la pierre philosophale ...; c’est le synonyme de *iksīr* ... . La science (l’alchimie) s’appelait *ṣana’at al-kīmiyā* (= *ṣan’at al-iksīr*), *’ilm ṣan’at kīmiyā*, *’ilm al-kīmiyā*, et enfin *al-kīmiyā* tout court.” Stern, *Fragment eines koptischen* 102 was wrong when he thought the ομε νσοφος “clay of the sages” to be the elixir.

## 2 The Setting of the Coptic Alchemical Dossier: Greek and Arabic Alchemy in Late Antiquity and Early Islamic Times

In late antiquity two hitherto independent traditions were merged into a new alloy, to invoke an apt metaphor. Bits of technological knowledge from the realms of specialised crafts, such as goldsmithing,<sup>50</sup> metal-working,<sup>51</sup> glass-making<sup>52</sup> and dyeing<sup>53</sup>—so-called *sub-scientific traditions* according to Høyrup<sup>54</sup>—joined with the scientific knowledge of Greek philosophical thought in the tradition of Empedocles, Plato and Aristotle. This novel and promising alliance of practice and theory, epitomised by the alchemical laboratory equipped with an increasing inventory of tools, vessels and furnaces,<sup>55</sup> had even a third dimension: a gnostic hope of salvation through self-improvement.<sup>56</sup> Processes such as distillation and sublimation were equated with purification and the ascent of the soul, while the earthly body, due to its heavy, solid state of matter, had to be left behind and overcome. Accordingly, in the alchemical terminology metals are called τὰ σώματα, *al-ajsād*, “bodies,” while substances such as quicksilver, sulphur, and Sal ammoniac are designated τὰ πνεύματα, *al-arwāh*, “spirits.”<sup>57</sup>

Apart from the aforementioned (semi-)alchemical papyri at Leiden and Stockholm, the Greek alchemical tradition partly survived in a Byzantine compilation, the so-called *Corpus Alchymicum Graecum*, attested in a considerable number of manuscripts.<sup>58</sup> The oldest parts of that corpus, pseudepigraphic treatises and dialogues, are assumed to have been composed in the first cen-

50 Depauw, *New light*.

51 Cf. Reiter, *Die Metalle*; Tylecote, *A history*.

52 Cf. Nicholson, *Egyptian*; Stern and Schlick-Nolte, *Early glass*.

53 Cf. Pfister, *Teinture et alchimie* and Germer, *Die Textilfärberei*.

54 Høyrup, *Integration/non-integration*.

55 Cf. Mertens, *Alchemy CXIII–CLXIX on the appareillage de Zosime*; cf. also Ganzenmüller, *Liber Florum Geberti*; Humphrey, Oleson and Sherwood, *Greek and Roman*; for pictures and reconstructions, cf. Sezgin, *Wissenschaft* 109–153. For the excavation of an alchemical laboratory in 1882 at Dronkah south of Assiut see Maspero, *Études de mythologie* 1, 206–209, and Stern, *Fragment eines koptischen* 102. Regrettably, I could not find any information on the whereabouts of this unique archaeological evidence.

56 Cf. Eliade, *Die hellenistische*, Hofmeier, *Alchemie*; Merkur, *A study*; Stolzenberg, *Unpropitious tinctures*; Wilson, *Pythagorean theory* and Wilson, *Distilling*.

57 Cf. Macuch, *Greek technical terms*; Ullmann, *Die Natur- und Geheimwissenschaften* 148f.

58 Cf. Berthelot and Ruelle, *Collection*; Halleux, *Les textes alchimiques*; Rehm, *Zur Überlieferung*.

TABLE 2 Greek and Coptic Alchemical Manuscripts

Greek Papyri (Halleux 1981)		Coptic Papyrus and Parchment MSS.				Corpus Alchymicum Graecum (Berthelot 1888)		
P.Leid. X (inv. I 397)	P.Holm.	P.Berlin P.8316	P.Bodl. MSS. a. 1, 2 & 3	BL MS. Or. 3669(1)	Cod.Marc. 299	Cod.Par. 2325	Cod.Par. 2327	
iii <sup>d</sup> / ivth c. C.E.		viith / viiith c.		ixth / xth c.	xth/xith c.	xith c.	xiii <sup>th</sup> c. xvth c.	

turies CE;<sup>59</sup> however, the manuscripts themselves are considerably later (see table 2). By far the earliest is a codex from the eleventh century kept in San Marco in Venice, followed by two manuscripts in Paris from the thirteenth and fifteenth centuries.<sup>60</sup>

However, when it comes to identifying a *Vorlage* of the Coptic texts, Greek compositions can generally be left out of consideration, since all the four Coptic alchemical treatises are so obviously influenced by Arabic models.<sup>61</sup> A good deal of alchemical ingredients (cf. e.g. ex. 14–34) and laboratory tools (cf. e.g. ex. 35–39) have Arabic names:

Ex. 14 αλκαλακανθ < *al-qalqand* < χαλκανθος Siggel, *Arabisch-Deutsches* 86a: “(green) vitriol, Cu-vitriol.”

Ex. 15 αλκελι < *al-qili* Siggel, *Arabisch-Deutsches* 86a: “potash, saltpetre.”

Ex. 16 αλμαγνησια < *al-maghniṣiyā* < μαγνήσια Sezgin 2003, 189; Siggel, *Arabisch-Deutsches* 88a; LSJ 1071b: “manganese minerals.”

59 The model developed by Halleux, *Les textes alchimiques* 61–64 and Letrouit, La chronologie and adopted by Mertens, *Alchemy* distinguishes three chronological layers within the corpus: *1st stratum* (1st–3rd centuries CE)—pseudepigraphic writings (Moses, Isis, Cleopatra, Agathodaimōn, Thot, Hermes, Joseph, Maria the Jewess, Democritus, Zarathustra, Ostanos, Chymes etc.), partly quoted and presupposed by Zosimos, perhaps the earliest among them *Physika kai mystika* of Pseudo-Democritus; *2nd stratum* (ca. 300 CE)—the writings of Zosimos of Panopolis; *3rd stratum* (ca. 4th–7th centuries CE)—commenting writings (e.g. Synesios, Olympiodor, Stephanos).

60 Cf. Halleux, *Les textes alchimiques* 60–61.

61 Already Chassinat, *Un papyrus médical VIII* noticed à propos the influences of Arabic science on the Papyrus Médical Copte IFAO: “Elle se retrouve encore, et cela sans exception, dans les quelques écrits alchimiques que nous connaissons.”

- Ex. 17 ἀμμακνήτης < *al-miqnātīs* < μαγνήτης (λίθος), LSJ 1071b; Sezgin, *Wissenschaft* 181: "magnetite."
- Ex. 18 ἀμαρῶακ < *al-martak* Siggel, *Arabisch-Deutsches* 88: "litharge."
- Ex. 19 ἀμαρκαδιθε < *al-marqashūthā* Siggel, *Arabisch-Deutsches* 88a; Sezgin, *Wissenschaft* 179; Goltz, *Studien* 267f.: "metallic sulphides."
- Ex. 20 ἀμοϋλγαμ < *al-mulgham* Siggel, *Arabisch-Deutsches* 88b; Ullmann, *Katalog* 264 s.v. *talghūm, ilghām*: "ointment, alloys of Hg."
- Ex. 21 ἀπαγρακ < *bawraq, bawrūq* Siggel, *Arabisch-Deutsches* 78a; Sezgin, *Wissenschaft* 197: "borax."
- Ex. 22 ἀκιμιε < *al-kīmiya'* Ullmann, *Katalog* 93f., the "elixir," cf. here above, p. 49.
- Ex. 23 ἀκιπριτ, ἀκιπριε < *al-kibrūt* Siggel, *Arabisch-Deutsches* 86a; Sezgin, *Wissenschaft* 200: "sulphur."
- Ex. 24 ἀρατιτ < *al-ḥadīd* Siggel, *Arabisch-Deutsches* 79b: "iron."
- Ex. 25 ἀνοϋα(α)τερ < *al-nūshādir* Siggel, *Arabisch-Deutsches* 89: "salmoliac."
- Ex. 26 ἀσεσ (*al-zāj*) Wahrmund, *Handwörterbuch* I 818; Siggel, *Arabisch-Deutsches* 81a: "vitriol, sulphate of iron or copper."
- Ex. 27 ἀσαβηρε < *al-ṣafiḥa* Siggel, *Arabisch-Deutsches* 98; Ullmann, *Katalog* 60: "metal plates."
- Ex. 28 ἀσερνηε < *al-zirnikh* Siggel, *Arabisch-Deutsches* 81; Sezgin, *Wissenschaft* 202: "arsenic."
- Ex. 29 ἀσινζαρ < *al-zinjār* Siggel, *Arabisch-Deutsches* 81; Goltz, *Studien* 256f.: "verdigris."
- Ex. 30 ἀσινζοϋβρ < *al-zunjifr, al-zinjafir*, Dozy, *Supplément* I 606a; Siggel, *Arabisch-Deutsches* 81b; Sezgin, *Wissenschaft* 195: "cinnabar."
- Ex. 31 ἀσιπακ < *al-zībaq* Dozy, *Supplément* I 616b; Siggel, *Arabisch-Deutsches* 81b; Sezgin, *Wissenschaft* 195: "quicksilver."
- Ex. 32 ἀτταλ(ε)κ < *al-ṭalq* Siggel, *Arabisch-Deutsches* 84a; Sezgin, *Wissenschaft* 197: "glimmer."
- Ex. 33 ἀτταναχαρ < *al-tinkār* Siggel, *Arabisch-Deutsches* 78b: "borax."
- Ex. 34 εδσαρ < *hajar* Dozy, *Supplément* I 250–252; Siggel, *Arabisch-Deutsches* 79a: "stone."
- Ex. 35 ἀκαταε, ἀκιταε < *al-qadaḥ* Siggel, *Arabisch-Deutsches* 99a: "cup, glass."
- Ex. 36 ἀμνῆραλλ < *al-munkhal* Siggel, *Arabisch-Deutsches* 100: "sieve."
- Ex. 37 ἀποϋταακε < *al-būtaqa* Siggel, *Arabisch-Deutsches* 96: "crucible, melting pot."
- Ex. 38 ἀκενοϋν < *al-kānūn* Siggel, *Arabisch-Deutsches* 99: "small oven, stove."
- Ex. 39 ἀλοϋς < *al-kūz* Siggel, *Arabisch-Deutsches* 99: "jug."

And even more revealing, a number of verbal lexemes borrowed from Arabic does occur (ex. 40–44 and fig. 5):<sup>62</sup>

Ex. 40 ἀρμη < *ahmama*: “to heat s.th.”

Ex. 41 εἰσπεῖ < *ajrā*: “to cause to run s.th.”

Ex. 42 ἐλξηκ < *lahafa* Wahrmund, *Handwörterbuch II* 626; Dozy, *Supplément I* 527a: “to wrap, to cover s.th.”

Ex. 43 ἐσακ < *zahaqa* Wahrmund, *Handwörterbuch I* 852: “to grind s.th.”

Ex. 44 ἐτταμ < *addama* Wahrmund, *Handwörterbuch I* 39b: “to join, to add s.th. to s.th. other.”

In the language of alchemy—the art of producing, processing, managing *par excellence*—verbal expressions could receive highly terminological semantic values. Therefore, it is not surprising to find among the Arabic words borrowed into the Coptic texts a number of terms which belong to a set of crucial concepts of alchemy called *tadbīrāt* or *tadābīr*, “managements, proceedings, methods,” such as *dabara* (in Coptic transcription taperi), “to prepare,” the verbal item underlying the term *tadbīr* itself, and the other examples displayed in table 3.

TABLE 3 Arabic alchemical terminology: terms of *tadābīr* ‘procedures’ borrowed into Coptic

Procedure	Arabic term	Word class	Coptic term	Meaning
<i>tadbīr</i> procedure <sup>63</sup>	<i>dabbara</i>	verb	ТАΠΕΡΙ	to prepare, to manage
κάθαρσις <i>al-tasfiya</i>	<i>al-tasfiya</i>	nomen actionis	ΑΘΕΣΟΥΕ	purification, filtering
<i>al-tasfiya</i>	<i>ṣaffā</i>	verb	САҒБИ, САВБИ	to purify, to filter
purification <sup>64</sup>	<i>al-muṣaffī</i>	adjective	ΑΛΜΟΥСАВБИ	purified, filtered
πῆξις	<i>aḡqada</i>	verb	ΑΚΗΤ, ΑΚΤ̄	to fix, to thicken

62 16 out of a total of 21 Arabic verbs borrowed into Coptic so far identified are attested in the corpus of our dossier. As for the strategy of inserting Arabic verbal lexemes into Coptic syntactic structures, cf. Richter, *Coptic* 498–499.

63 Ullmann, *Katalog der arabischen II* 33.

64 Ullmann, *Katalog der arabischen II* 263 s.v. *tasfiya*; Ullmann, *Katalog der arabischen II* 52.

TABLE 3 Arabic alchemical terminology: terms of *tadābīr* 'procedures' borrowed into Coptic (cont.)

Procedure	Arabic term	Word class	Coptic term	Meaning
<i>taʿqīd</i> <i>fixation</i> <sup>65</sup>	<i>al-ʿaqd</i>	<i>nomen</i>	αλα(α)ΚΤ	<i>fixed, thickened</i>
<i>taṣʿīd</i> ,	<i>ṣaʿada</i>	<i>verb</i>	σααΤ, σαειΔ	<i>to distill, to condense, to sublimate, to evaporate</i>
<i>sublimation,</i> <i>destillation</i> <sup>66</sup>	<i>al-muṣaʿad</i>	<i>adjective</i>	αλμογσααΤ, αλμογσαειΔ	<i>distilled, sublimated</i>
ῥπτησις <i>tashwiya</i> <i>calcination</i> <sup>67</sup>	<i>ashwā</i>	<i>verb</i>	ε(ι)ωογει	<i>to calcine, to roast</i>
λύσις <i>taḥlīl</i> <i>dissolution</i> <sup>68</sup>	<i>inhalla</i> <i>maḥlūl</i>	<i>verb</i> <i>adjective</i>	ἠεΔΔ μαελογλ	<i>to dissolve</i> <i>dissolved</i>
<i>mauh</i> <i>to dilute</i> <sup>69</sup>	<i>al-māwī</i>	<i>adjective</i>	αλμογογει	<i>watered down, diluted</i>

However, there are not only lots of lexical borrowings from Arabic, but also some remarkable higher-level linguistic interference phenomena, such as the occurrence of a linkage marker ω, probably to be identified with the Arabic *wa-* (see e.g. ex. 12). Arabic verbs are usually borrowed in their imperative form,<sup>70</sup> the grammatical equivalent of the predominant mode of recipes as a

65 Ullmann, *Die Natur- und Geheimwissenschaften* 263 s.v. *taʿqīd*.

66 Ullmann, *Katalog der arabischen II* 263 s.v. *taṣʿīd*.

67 Ullmann, *Katalog der arabischen II* 57 and Ullmann, *Die Natur- und Geheimwissenschaften* 263 s.v. *tashwiya*.

68 Ullmann, *Die Natur- und Geheimwissenschaften* 262, s.v. *taḥlīl*, *ḥall* (λύσις); Ullmann, *Katalog der arabischen II* 27.

69 Wahrmund, *Handwörterbuch I* 2 956b; Dozy, *Supplément II* 634a.

70 Cf. Richter, Coptic 498. Meanwhile, I am reasonably confident that examples (1) *akēt* and (2) *elhēf* should also be interpreted as Arabic imperative (*aʿqīd*, *alhīf*), rather than infinitive (*iʿqād*, *ilhāf*), forms. This was also suggested to me by my esteemed teacher of

textual genre, however, this might be a linguistic rather than textual feature. Both the quantity and quality of borrowings from Arabic attested in the Coptic alchemical treatises leave no doubt that we have to look for Arabic *Vorlagen*. I believe the most reasonable conclusion to be drawn from this kind of evidence is that all the Coptic alchemical treatises came into being as translations of Arabic texts.<sup>71</sup>

This conclusion seems even more convincing given the fact that not only linguistic features point to Arabic patterns, but also the contents of the texts. The entire Greek tradition, as far as it is known to us, is in quite a different intellectual vein, as it were, being much more mysterious both in content and style.<sup>72</sup> The rather technical, scientific, matter-of-fact nature of our texts, by contrast, seems to have its intellectual native soil, in Arabic alchemy. In the course of the development of Arabic alchemy this quality evolved after the translation movement from Greek into Arabic of the early Abbasid period and is connected with the names of Jābir ibn Ḥayyān and Abū Bakr Muḥammad ibn Zakariyya al-Rāzī.<sup>73</sup> The latter died in 925 CE,<sup>74</sup> while Jābir is now suspected of having been a pseudepigraphic *prosopon* representing the intellectual and religious efforts of an extreme Shi'ite school. The large volume of alchemical literature claiming Jābir's authorship is now assumed to have been composed between the early ninth and the mid-tenth centuries CE.<sup>75</sup> However, the issue is still being debated, and I have to restrict myself to reporting the opinion dominant at present.<sup>76</sup>

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Arabic, Prof. Holger Preissler †.

- 71 This was already Stern's opinion of BL MS. Or. 3669(1); cf. Stern, *Fragment eines koptischen 102*: "ein recht ansehnliches Fragment ... welches, wie ich darthun werde, aus dem Arabischen übertragen ist, aber die koptische Literatur gleichwohl in bedeutender Weise bereichert."
- 72 Cf. Eliade, *Die hellenistische*; Gundel, *Alchemie*; Merkur, *A study*; Plessner, *Vorsokratische*; Riess, *Alchemie*; Reitzenstein, *Zur Geschichte*; Vereno, *Studien* 16–21; Viano, *Gli alchimisti and Viano, Alchimie*.
- 73 Garbers and Weyer, *Quellengeschichtliches* 64–71; Hamarneh, *Arabic-Islamic*; Kraus, *Jābir Ibn Ḥayyān* 11 30–42; Landfester, Berger and Priesner, *Chemie/alchemie*; Rex, *Zur Theorie*; Sezgin, *Geschichte* 10–11; Ullmann, *Die Natur- und Geheimpwissenschaften* 148–152; Ullmann, *al-Kimiya*; Vereno, *Studien* 21–31; Weyer, *Alchemie*.
- 74 Partington, *The chemistry*; Sezgin, *Geschichte* 275–282; Ullmann, *Die Natur- und Geheimpwissenschaften* 210–213.
- 75 Kraus, *Der Zusammenbruch*; Kraus, *Jābir Ibn Ḥayyān* 1 xxxvi–xlv; Kraus, *Alchemie* 27–46 and 47–70; cf. Capezzone, *Jabir ibn Ḥayyān*; Plessner, *Jābir ibn Ḥayyān*; Ruska, *Arabische* 428–430; Ullmann, *Die Natur- und Geheimpwissenschaften* 198–208.
- 76 Against Kraus' hypothesis, cf. e.g. Haschmi, *The beginning*; Holmyard, *Alchemisten*; Sezgin, *Das Problem*, Sezgin, *Geschichte* 132–269, and Sezgin, *Wissenschaft* 99–108.

Be this as it may, our Coptic manuscripts, roughly datable to the tenth century and thereby surpassing in age the oldest extant Greek, as well as Arabic, alchemical manuscripts, seem to be renderings of almost contemporary Arabic texts. Certainly it would be desirable to identify these Arabic *Vorlagen*. Due to the striking feature of its unusual narrative frame, the most promising candidate for identification seems to be the text of Bodl. mss. Copt. (P) a. 1 and 3. Unlike the great bulk of Greek as well as Arabic alchemical texts, which are usually presented as a teacher's exchanges with his pupil/son (and reader), this text is structured quite differently. Phrases such as "I saw the master, as he did ..." or "the master said ..." might enable someone familiar with the Arabic tradition to identify the text, if it is known at all. Since the experts I asked were unable to do so,<sup>77</sup> I am strongly inclined to believe that such an Arabic text, if extant at all, has not yet been published which is hardly surprising. Despite the tremendous progress since the days of Marcellin Berthelot's pioneering work *La Chimie au Moyen Age* in 1893, many texts even by such famous authorities as al-Rāzī and Jābir ibn Ḥayyān remain unedited and untranslated.<sup>78</sup>

An important issue related to the narrative framework of the text of Bodl. mss. Copt. (P) a. 1 and 3 is its character in terms of reality vs. fictitiousness. Initially, I had no doubts that the construct of the recording pupil was a literary conceit, and for two reasons I felt inclined to assume the text belonged to the huge corpus of writings composed in the name (or, as in our case, in the attitude) of Jābir ibn Ḥayyān.

First, according to his legendary biography, Jābir was initiated into alchemy by Ja'far al-Šādiq, the sixth Shi'ite imām, and indeed several writings by Jābir do contain references to his master Ja'far.<sup>79</sup> On the other hand, the often-attested

77 So Charles Burnett and Wilferd Madelung in personal communications, Fuat Sezgin in a letter from 28 April 2005, and Manfred Ullmann in a letter from 21 May 2005.

78 Cf. the verdict of Vereno, *Studien* 22: "Das auf Arabisch vorliegende Handschriftenmaterial ist gewaltig. Die beiden Handbücher Fuat Sezgin's (GAS IV; 1971) und Manfred Ullmann's (NGI; 1972) bezeugen dies eindrucksvoll. Doch dieses Handschriftenmaterial ist, von wenigen Ausnahmen abgesehen, weder durch Editionen zuverlässig erschlossen noch lexikalisch bearbeitet. Ein guter Teil ist womöglich noch nicht einmal katalogisiert. Sich einen halbwegs vollständigen Überblick zu verschaffen, ist daher zum gegenwärtigen Zeitpunkt nicht möglich. Trotz einiger hervorragender Arbeiten ist die arabische Alchemie als Ganzes noch als weitgehend unerforscht zu betrachten." Cf. Ullmann, *Die Natur- und Geheimwissenschaften* 150–151.

79 Kraus, *Jābir Ibn Ḥayyān* I xxv–xxvii.

phrasing of these references, *wa-ḥaqqā sayyidī*, “and my Lord confirmed,”<sup>80</sup> refers back to a distant past when Jābir was the disciple of Ja’far from a present in which Jābir himself is teaching. This model is quite different from the narrative frame of Bodl. MSS. Copt. (P) a. 1 and 3, where the entire text is presented as notes kept by the disciple. Second, the authors of the corpus of Jābir’s writings recommended and applied a strategy they called *tabdīd al-‘ilm*, “dispersion of knowledge,” in order to prevent unworthy and unprepared minds from acquiring the entire store of alchemical truth all at once:

Um die Profanierung ihrer geheimen Künste zu verhindern, enthüllen die Autoren des *Corpus Gabirianum* die ganze, ungeteilte Wahrheit nie an einer Stelle. Sie begnügen sich vielmehr mit Andeutungen und verweisen immer wieder auf andere Schriften des Corpus, in denen die übrigen Teile der Wahrheit niedergelegt seien und die man also ergänzend studieren müsse. Nur wer das ganze Corpus kenne, sei im Vollbesitz der Wahrheit. Es ist das Prinzip der “Verstreuung des Wissens” [*tabdīd al-‘ilm*].<sup>81</sup>

I wonder if we do not have here a nice example of “dispersion of the knowledge” in the aforementioned paragraph about the “machine of the sages” with its conspicuous reference to a future time when the master might let his pupil know the machine itself, in contrast to the present when he is feeding him mere snippets of information (cf. ex. 45).<sup>82</sup>

<sup>80</sup> Cf. Kraus, *Jābir Ibn Ḥayyān* I 91, n° (378); 106, n° (553); 113, n. 3 *ad* n° (947); 121, n° (972); 122, n° (974); 125–126, n° (988); 133, n° (1056); 143, n° (1800); 156, n° (2145); 171, n° (2958). Among the writings of Jābir ibn Ḥayyān quoted in the *Kitāb al-Fihrist*, one title of the collection “The 112 books” is called *Kitāb al-Ṣādiq*. Paul Kraus, *Jābir Ibn Ḥayyān* 37 *ad* n° 101, raised the question: “Le titre se rapporte-t-il à Ja’far al-Ṣādiq?” However the text itself is not preserved, or at least, is not available or not yet identified among the extant Arabic manuscripts. A related phenomenon is mentioned by Kraus, *Jābir Ibn Ḥayyān* 65 à propos the *Kitāb Muṣaḥḥahāt iflāṭūn* (*Le livre des Rectifications de Platon*): “Contrairement à la plupart des écrits jābiriens, le k. muṣaḥḥahāt iflāṭūn est conservé dans une rédaction postérieure. Presque dans chaque chapitre l’auteur est introduit à la troisième personne: “Jābir dit”; “Jābir ibn Ḥayyān dit”; “le maître (*ustādh*) Jābir ibn Ḥayyān dit”; une fois même on lit “al-imām Jābir”, expression que ne se trouve que dans des textes tardifs.” But even the “le maître dit” is still different from phrases such as “I saw the master,” even leaving aside other difficulties.

<sup>81</sup> Ullmann, *Die Natur- und Geheimwissenschaften* 4; cf. also Kraus, *Jābir Ibn Ḥayyān* I xxvii–xxx, xxxi–xxxiii.

<sup>82</sup> Another interpretation of this striking passage was proposed by James Montgomery and should not be left out here: he posited an “opt-out clause” anticipating the unavoidable

Ex. 45 Bodl. MS. Copt. (P) a.1 d, line 11–12 || Bodl. MS. Copt. (P) a. 3, r<sup>o</sup> line 76–77: ερεπινογτε ταας επρητ ηπσαρ ηρηταμοι ετημεχανη “God will put it into the heart of the master, and he will let me know the machine (too)!”

On the other hand, the separation of related material in order to limit the circle of initiates seems not such an extraordinary strategy, especially in a secret lore such as alchemy. So the mere fact that this literary technique was also practiced in the *Corpus Fabirianum* would hardly provide sufficient grounds for an attribution.<sup>83</sup>

As to the crucial question of whether or not the ‘recording pupil’ is a literary fiction, I was recently led to quite a different way of explaining the literary form of Bodl. MSS. Copt. (P) a. 1 and 3. Through discussions with experts in Arabic science<sup>84</sup> I learned that similarly organised treatises are attested elsewhere in the fields of early Arabic educational writing, such as in medical and toxicological literature, and more generally, that the transformation of educational matters from oral to written and their migration from the classroom to the institutions of literary transmission are well-evidenced stages in the formation of Arabic scientific literature.<sup>85</sup> So the alternative, non-fictional possibility that our pupil’s records of alchemical experiments executed by his nameless “master” may be traceable back to actual lessons in alchemy in a real laboratory should be born in mind. If so, the original (Arabic) text of Bodl. MSS. Copt. (P) a. 1 and 3 might have left the ‘classroom’ and become literature some time ago, as is indicated by its existence in Coptic translation and even in two Coptic recensions (cf. above).

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failure of many of the experiments: “It may be worth remembering that as these experiments were never successful, the treatises are bound to conclude some epistemological mechanism which acts like an opt-out clause. ‘God will give it into the heart of the master, that he will let me know the machine (too)’ is one such opt-out clause, it seems to me” (letter from 29.09.2006).

83 Cf. Kraus, *Jābir Ibn Ḥayyān* I xxxi–xxxiii on the method of “dispersion of knowledge” elsewhere in antique and mediaeval secret traditions.

84 I am grateful to Emilie Savage-Smith and James Montgomery for sharing their erudition with me.

85 Cf. the studies by Gregor Schoeler on the “lecture note” phenomenon in the early Islamic sciences, now available in Schoeler, *The oral*, the knowledge of which I owe to James Montgomery.

### 3 Conclusion

Although comprising only a small number of manuscripts, the Coptic dossier of alchemical texts is of some importance for the history of science. Apart from semi-alchemical texts such as the Greek papyri of Leiden and Stockholm and the Coptic P.Berlin P. 8316, the Coptic alchemical treatises of London and Oxford, datable to the ninth and/or tenth centuries, are by far the earliest alchemical manuscripts known to us, significantly older than all of the extant manuscripts of the Greek corpus of late antique alchemical writing, the *Corpus Chymicum Graecum*, and older than any Arabic manuscript on alchemy known thus far.<sup>86</sup>

The probable provenance of (at least some of) the Coptic manuscripts in the environs of Akhmīm sheds further light on the importance of that upper Egyptian town as a centre of alchemy in late antique and early Islamic period.

Despite its age, and contrary to what the Khālid ibn Yazīd legend of the *Kitāb al-Fihrist* would indicate, the Coptic alchemical dossier cannot be considered a link between Greek and Arabic alchemical traditions and does not contribute to the issue of possible ancient Egyptian roots of alchemy.<sup>87</sup> The language, contents and literary genre of the Coptic texts prove them to be descendants of the Arabic stock of alchemy, and in particular its more empirical branch. More specifically, there is good reason to believe that they are renderings of almost contemporary, still-unknown Arabic texts.

Seen from the perspective of Coptic literature, the Coptic alchemical dossier belongs to a distinctive group of late Sahidic manuscripts dealing with matters such as medicine,<sup>88</sup> mathematics,<sup>89</sup> astrology,<sup>90</sup> or just alchemy, while referring to taxonomies and technical terminologies of contemporary Arabic science. All these texts bear witness to the intellectual efforts of educated members of the Christian Egyptian society, who were willing and still able to think and write in their native language, to grapple with the new culture. It was only now, on

86 As far as I know, the earliest known Arabic manuscripts on alchemy come from the eleventh century, cf. Sezgin, *Wissenschaft* 109 (a manuscript of al-Kindī's *Kitāb Kīmīyā' al-'itr* dated to 405/1014, ed. Garbers 1948) and von Lippmann, *Entstehung*; the great bulk of manuscripts is, however, much younger.

87 As for this, cf. Bain, *Μελαίνις γή*; Daumas, *L'Alchimie*; Derchain, *L'Atelier*; Fowden, *The Egyptian Hermes* and Lindsay, *The origins*.

88 Chassinat, *Un papyrus médical*; cf. Till, *Die Arzneikunde*.

89 Drescher, *A Coptic*.

90 Bouriant, *Fragment*.

the eve of the linguistic Arabisation of Egypt, that Coptic became a language of sciences—albeit of Arabic sciences! Such efforts might have been stimulated by the same feelings of fascination and the same high esteem underlying the much more famous, and much better investigated, medieval translations of Arabic scientific texts into Latin.<sup>91</sup>

### Postscript (fall 2012)

After having finished the print version of this paper, my ongoing work on the Coptic alchemical texts tremendously profited from two sources. First, grants from the Alexander von Humboldt foundation and the Sarah J. Clackson fund permitted me to stay at Oxford and London for five weeks in fall 2007 and to thoroughly study the manuscripts. The results of this work, some of them most amazing, shall be dealt with elsewhere; they do not contradict, but partly enlarge, enrich and improve the observations communicated above. Second, thanks to discussions with Bink Hallum, in writing and orally during the workshop on medieval alchemy held at the Warburg Institute in London in October 2007, I have become a little bit more cautious against a too straightforward argument for a mere translation of the Coptic treatises from Arabic *Vorlagen*. I have also become more sensitive to the possible complexity of the reception and transmission processes underlying, and eventually resulting in our manuscripts. Taking the aforementioned linguistic observations into account, I still find Ludwig Stern's assumption that texts such as BL. Or 3669(1) might have been somehow translated from Arabic compositions, a very likely and convincing suggestion. But strong as it seems at first glance, this hypothesis has some weak points too. For instance, a concept like the machine of the sages, *mechanē nnsophos* as the text puts it, is linguistically composed of two Greek terms, which needs to be explained if one assumes an Arabic composition simply having been rendered into Coptic. Also certain palaeographic features of the Coptic manuscripts, such as their use of cryptography and of symbols of the *σημεία τῆς ἐπιστήμης* type, rather recall the habits of Greek alchemical manuscripts. So I would no longer exclude the possibility that our texts have been composed in Coptic, by Coptic *authors*, rather than translators, who were familiar with contemporary Arabic and Greek alchemical traditions. But we must not forget a remarkable gap in our knowledge: We do know fairly well,

91 Cf. Agius, *The Arab*; Al-Hassan, *The Arabic*; Burnett, *The astrologer's*; Halleux, *Les textes alchimiques*; Newman, *The summa*; Ryding, *The heritage*.

how translating from Greek into Coptic worked—the kind of rendering attested by the great bulk of Coptic literary texts, but we have simply no idea of what a translation from Arabic into Coptic would look like.

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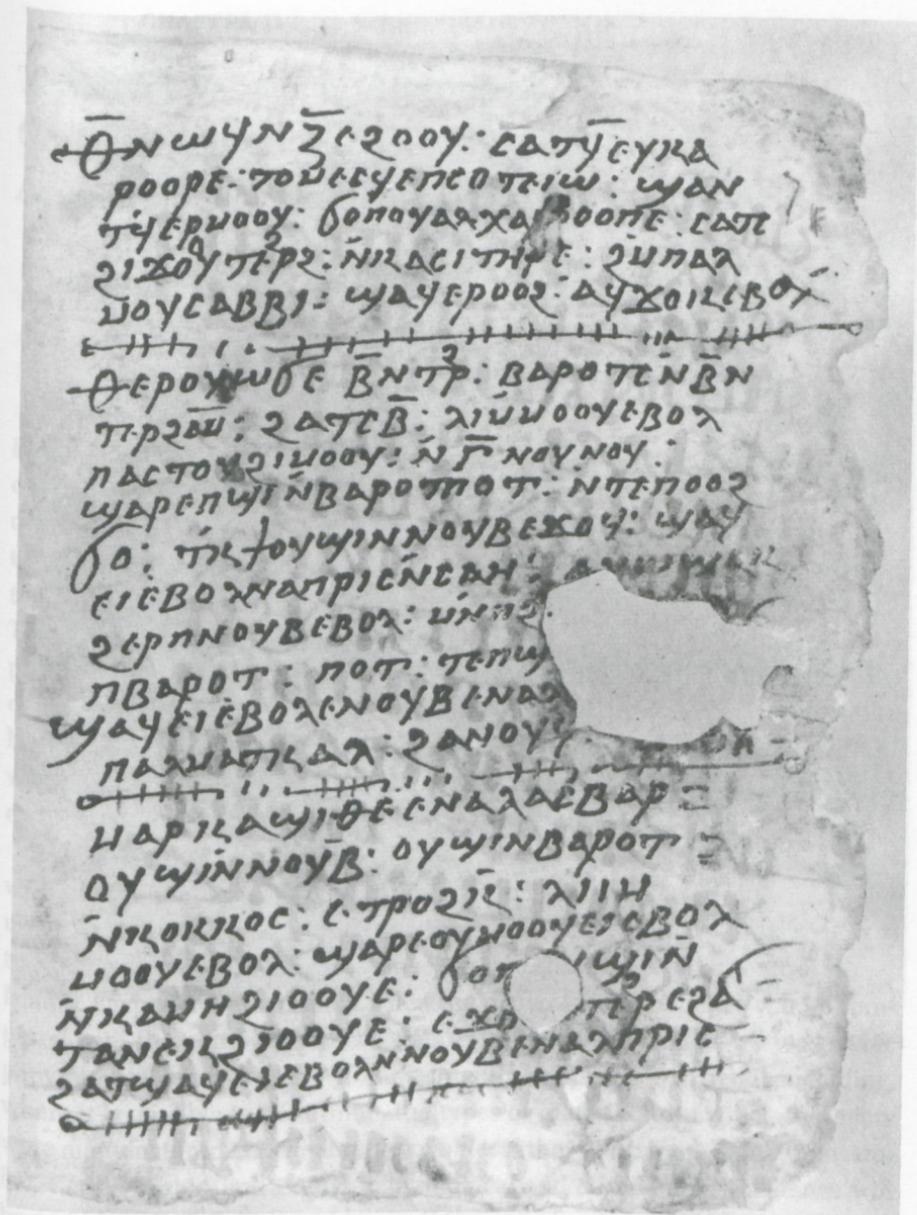


FIGURE 10.1 British Library Oriental MS. 3669(1)

## Archaeological Evidence for Yessels

When one begins to examine vessels from early Islamic Egypt, one is presented with a bewildering array of different forms, types, and materials, scattered

ΠΕΡΕΠΟΛΕ ΖΕΧΙ Ω ΣΙΡΗΝ ΑΠΟΥΟΥ  
 ΚΑΛΜΟΥΛΓΑΛ ΘΝΟΥ ΚΑΛΩΣ ΚΑΛΩΣΚΑΛΩΣ  
 ΤΑΛΟΥ ΕΥΤΡΕΙΣ ΕΚΚΑΡΘΕ ΜΑΡΣ ΕΥΚΑΠ  
 ΚΑΛΣΕΣΑΥΕ ΕΡΡΟΥ ΖΗΟΥΚΑΡΑΙΕ  
 ΕΦΖΟΒΣ ΕΥΘΕΑ ΕΥΛΑΛΗΥ ΗΚΙΧ ΗΣΟΦΟΣ  
 ΕΥΖΗΟΥΚΩΖΤ ΕΥΚΕΡΑ ΗΣΟΤ ΕΚΛΙΣΕ  
 ΜΜΟΥ Η Ζ ΗΡΟΥ ΝΑΤΟΥΧΗΝ ΖΙΠΕΥΘΩΠ  
 ΨΑΝΤΕΥ ΡΟΥΜΠΕ ΗΟΥΥΤ  
 ΠΗΛΕΠΩΝ Η ΤΑΠΣΤ ΤΑΛΩΙ ΕΡΟΥ  
 ΚΡΟΥΑ ΝΑΧ ΜΑΡ ΚΩ ΒΛΗΝΟΥΧΙ ΝΑΧ ΧΙΡΗ  
 ΤΑΛΟΥ ΕΟΥΑΛ ΚΩ ΣΑΕΙΔ ΜΜΟΥ  
 ΖΙΠ ΠΕΥ ΜΟΥ ΝΑΚ ΜΗ Π ΜΟΥ ΗΝΔ ΣΕ ΕΒ Χ  
 ΤΗΡΟΥ ΜΗ Π Ζ Ο Σ Ι Η Κ Ο Κ Ο Σ Μ Η Π Α Σ Σ Η Ν Η Υ  
 Η Κ Ο Κ Ο Σ Μ Η Π Α Χ Η Ρ Η Μ Η Π Α Σ Σ Η Ν Η Ο Υ Β Ρ  
 ΟΥ Δ Κ Α Τ Η Ο Υ Α Τ Α Λ Λ Ε Υ Α Λ Λ Η Ν Θ Ε Ν Ε  
 Η Β Α Μ Π Ε Τ Α Σ Ε Υ Κ Α ΕΥΛΗΚ ΖΗΟΥΛΚΑΝΗ  
 ΚΑΛΟΥΧΗ ΤΟΥ Β Α Ρ Β Ο Λ Τ ΕΥ Ρ Μ Ο Ο Υ

FIGURE 10.2 P.Bodl. MS Copt. (P) a.1, © University of Oxford, Bodleian Library

FIGURE 10.2 P.Bodl. MS Copt. (P) a.1, © University of Oxford, Bodleian Library