

AMBIX, Vol. 56 No. 1, March, 2009, 23–35

What Kind of Alchemy is Attested by Tenth-Century Coptic Manuscripts?

TONIO SEBASTIAN RICHTER

University of Leipzig

This article places the four extant Coptic alchemical manuscripts within the context of the tradition of Coptic scientific texts. One of the manuscripts is a palimpsest written over an erased literary text, apparently in the tenth century. The other three all come from the same library, and are unlikely to be later than the mid-tenth century. Their vocabulary, form and contents are analysed, and the wonderful “machine of the sages” is introduced. It is shown that the texts most likely depend on Arabic alchemical texts, because of the number of Arabic words left in transliteration, and their style. In this case, they are the earliest witnesses to Arabic alchemy.

The Coptic textual evidence for late antique and early Arabic alchemy is little known, even among specialists in Coptic literature. The true significance of this transmission can only be assessed when critical editions of the Coptic texts have been prepared. But in the course of preparing these editions,¹ I have already given a first overview of the situation, dealing with physical and palaeographical properties and with the content of the most important Coptic manuscripts — among them MSS British Library, Oriental 3669(1) and Oxford, Bodleian Library, Copt. a.1, a.2, and a.3.² In this paper, I would like to concentrate on the character of the alchemical tradition to which these Coptic texts belong. In doing so, I intend, on the one hand, to publicise the existence of these hitherto unnoticed sources of early alchemy, offering some observations and preliminary conclusions, and, on the other hand, to raise issues and ask questions that the specialised readership of this journal may be able to answer.

Since Coptic and Coptology are not very familiar to most people, I shall start with a brief general introduction, and quickly sketch the broader background of what I shall then focus on.

¹ Having completed the first, philological, stage of the work (establishing a critical edition and making a first, rough translation), I am now embarking on the more complex issues of interpretation and commentary.

² Tonio Sebastian 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. Acts of the 3rd Conference of the International Society for Arabic Papyrology, Alexandria, 23–26 March 2006*, ed. Petra M. Sijpesteijn and Lennart Sundelin (Leiden: Brill, in press).

A short account of what Coptic was, and what it was used for

Coptic is the last stage of the old Egyptian language, and the first and only one whose writing system was no longer based on hieroglyphs but rather on Greek letters, to which were added a number of additional alphabetic signs taken from Demotic, an Egyptian cursive. Coptic, as a written language, came into being around 300 CE and remained in use for roughly one thousand years.³ After the fourteenth century, Coptic continued to be read as part of the liturgy of the Monophysite church of Egypt, but texts were no longer composed in the language, which had been dying out from the eleventh century onwards.⁴ In terms of sociolinguistics, Coptic had always been a functionally restricted linguistic code. Although it was not exactly a “low” variety, in contrast first to Greek and later to Arabic, it nevertheless was a medium clearly limited to a certain milieu and, thus, to a restricted number of functional domains. These domains normally did not include scientific writing. Apart from a few compilations of medical recipes,⁵ we have almost nothing in Coptic that could be claimed to belong to scientific literature up until the tenth century CE.

Late Coptic scientific texts

Only from the latest period of Coptic literature, when Arabic was on the point of taking over completely in the Coptic-speaking community of Egypt, do we have any manuscripts dealing with scientific subjects: these include astronomy,⁶ mathematics,⁷ medicine,⁸ and last, but not least, alchemy. These manuscripts form a very small but somewhat distinctive corpus within the Coptic textual universe. One peculiarity of all these texts is their shared intellectual background in Arabic science — a background immediately obvious from their terminology, which is enriched by lexical borrowing from Arabic.

Within this group, alchemy forms a fairly well-attested subcorpus of at least four manuscripts, all of which were brought to Europe, and eventually to England, in the 1880s and 1890s, and since then have been noticed by the occasional Coptic philologist. All but one, however, has remained unedited, and up to now none of them has been translated or properly studied.⁹

³ Tonio Sebastian Richter, “Greek, Coptic, and the ‘Language of the *Hijra*’. Rise and Decline of the Coptic Language in Late Antique and Medieval Egypt,” in *From Hellenism to Islam: Cultural and Linguistic Change in the Roman Near East*, ed. H. Cotton, R. Hoyland and D. J. Wasserstein (Cambridge: Cambridge University Press, 2009), 398–443.

⁴ See Arietta Papaconstantinou, “‘They shall speak the Arabic language and take pride in it’: Reconsidering the fate of Coptic after the Arab conquest,” *Le Museón* 120 (2007): 273–99; and Richter, “Greek, Coptic, and the ‘Language of the *Hijra*’”.

⁵ These are compiled and translated by Walter C. Till, *Die Arzneikunde der Kopten* (Berlin: Akademie-Verlag, 1951).

⁶ See Pierre Bouriant, “Fragment d’un manuscrit copte de basse époque ayant contenu les principes astronomiques des Arabes,” *Journal Asiatique*, 10th series, IV (1904): 117–23.

⁷ See James Drescher, “A Coptic Calculation Manual,” *Bulletin de la Société d’archéologie Copte* 13 (1948/1949): 137–60.

⁸ See Émile Chassinat, “Un papyrus médical copte,” *Mémoires publiés par les membres de l’Institut français d’archéologie orientale du Caire* 32 (Cairo: Institut français d’archéologie orientale, 1921).

⁹ The only exception is an overview by Leslie S. B. MacCoull, “Coptic Alchemy and Craft Technology in Early Islamic Egypt: the Papyrological Evidence,” in *The Medieval Mediterranean. Cross Cultural Contacts*, Medieval Studies at Minnesota 3, ed. Marilyn J. S. Chiat (St. Cloud, Minnesota: North Star Press of St. Cloud, Inc., 1988), 101–4.

Four tenth-century Coptic alchemical manuscripts

Alchemy replacing a literary text: the palimpsest MS British Library, Oriental 3669(1)

MS British Library, Oriental (MS BL Or.) 3669(1), the only manuscript that has been edited so far, is a parchment quire of ten folios, or twenty pages. Ludwig Stern, an outstanding Jewish–German scholar, provided an edition of the text in 1885,¹⁰ shortly before he abandoned Egyptology, and turned to Celtic studies.¹¹ His edition, which is accompanied by neither a translation nor a commentary, was virtually incomprehensible to any scholar except Stern himself, given the unusual vocabulary, which cannot be found in any Coptic dictionary.

While the provenance of MS BL Or. 3669(1) is not precisely known, we do know that the manuscript was acquired in the town of Sôhâg in Upper Egypt, a fact interesting for at least two reasons. First, this town is close to the so-called White Monastery, which, during the later fourth and the first half of the fifth centuries CE, was under the direction of its famous abbot Shenoute; as is well known, its scriptorium continued to prosper into the ninth and tenth centuries.¹² Second, the town of Akhmîm (ancient Panopolis), famous in both late antique and early Arabic alchemy, is located on the opposite bank of the Nile.

An examination of the manuscript in situ in the autumn of 2007 provided some evidence to narrow down the date. The alchemical text is a palimpsest, written on top of an incompletely erased earlier text. The latter (which has not yet been identified) was written in a type of script called *schmaler Stil* or “bimodular uncial,” as distinct from the “classical” Coptic literary script, the so-called “biblical” or “unimodular” uncial. This style of script is a typical bookhand found in ninth- to eleventh-century Coptic literary manuscripts. The later text, the alchemical treatise, although not written in this or any bookhand script, still points to a professional scribe educated in the same scriptorium tradition: it is written in a complementary writing style, a sloping uncial called *Subskriptionsstil*¹³ or *Auszeichnungsschrift*, according to its function.¹⁴ This kind of script was primarily used to add, and simultaneously to highlight, paratextual passages such as headings and scribal colophons, within literary manuscripts otherwise written in biblical or bimodular uncial. In a secondary application, texts felt by their writers not to form part of “literature” proper, while not being day-to-day documents, but rather considered a third

¹⁰ Ludwig Stern, “Fragment eines koptischen Tractates über Alchimie,” *Zeitschrift für Ägyptische Sprache und Altertumskunde* 23 (1885): 102–19. A description of the manuscript is given by Walter E. Crum, *Catalogue of the Coptic Mss. in the British Museum* (London: British Museum, 1905), 175.

¹¹ See Warren R. Dawson, Eric P. Uphill and Morris L. Bierbrier, *Who Was Who in Egyptology* (London: The Egypt Exploration Society, 1995³), 404.

¹² See: Tito Orlandi, “The Library of the Monastery of Saint Shenoute,” in *Perspectives on Panopolis. An Egyptian Town from Alexander the Great to the Arab Conquest*, *Papyrologica Lugduno-Batava* 31, ed. Arne Egberts, Brian P. Muhs and Jacques van der Vliet (Leiden: Brill, 2002), 211–31; and Stephen Emmel, *Shenoute’s Literary Corpus*, *Corpus Scriptorum Christianorum Orientalium* 599, subsidiary vol. 11 (Leuven: Peeters, 2004), vol. 1, 18–24.

¹³ Viktor Stegemann, *Koptische Paläographie* (Heidelberg: Selbstverlag F. Bilabel, 1936), 19–22.

¹⁴ Herbert Hunger, “Minuskel- und Auszeichnungsschriften im 10.–12. Jahrhundert,” in *La paléographie grecque et byzantine*, ed. G. Cavallo (Paris: Éditions du CNRS, 1977), 201–20.

“paraliterary” kind,¹⁵ were written in this writing style in their entirety, as is the case for the alchemical text in MS BL Or. 3669(1). Palaeographical comparison of its hand with specimens of *Auszeichnungsschrift* from dated Coptic manuscripts suggests that our text should be dated to the tenth century CE.¹⁶

From a laboratory bookshelf: MSS Oxford, Bodleian Library, Copt. a.1, a.2, and a.3

The other three Coptic alchemical manuscripts are currently kept in the Bodleian library, Oxford. Their acquisition by the much-travelled hunter of antiquities, the Reverend Greville John Chester,¹⁷ suggests that they too may have originated in the environs of Sôhâg.¹⁸ What can be said with certainty is that all three papyrus manuscripts must have been found in *one* place; in other words, they may have been on the same bookshelf. MS Bodleian (Bodl.) Copt. a.1 is a small quire made of four leaves of papyrus. Their original order, which is not quite obvious in their present arrangement in a wooden frame, can easily be reconstructed by comparison with the same text as extant in MS Bodl. Copt. a.3. The latter, on the other hand, shares significant features of its physical and palaeographical appearance with MS Bodl. Copt. a.2. Both manuscripts are written *transversa charta*, that is to say, in one single vertical column, on papyrus strips of 80 × 25 cm, and are most likely written by the same hand, except for a few lines at the bottom of MS Bodl. Copt. a.3, which have been added by another hand (see p. 31).

The scribal hand of MSS Bodl. Copt. a.2 and a.3 is clearly influenced by the aforementioned bimodular uncial type, while the writing style of MS Bodl. Copt. a.1 depends on the *Auszeichnungsschrift* type.

The palaeography suggests a ninth- to tenth-century date for all three manuscripts; they are unlikely to be later than the mid-tenth century, since papyrus had fallen into disuse in Egypt by that time. This would make our Coptic specimens some of the very earliest manuscripts attesting to Arabic alchemy — and, in fact, to Western alchemy altogether, since the great bulk of Greek and Arabic alchemical manuscripts are considerably more recent.¹⁹

¹⁵ The Austrian Coptologist Walter Till used the term *Kleinliteratur*: Walter C. Till, “Koptische Kleinliteratur,” *Zeitschrift für ägyptische Sprache und Altertumskunde* 77 (1942): 101–11.

¹⁶ A sample of ninth- to tenth-century specimens can be found in Leo Depuydt, *Catalogue of Coptic Manuscripts in the Pierpont Morgan Library*, vol. 2: *Album of Photographic Plates* (Leuven: Peeters, 1993), pl. 48–198 (Headpieces) and pl. 199–296 (Tailpieces). For a narrower comparison, see, for example, the famous *hermeneia* manuscript *Pierpont Morgan M574*, dated 897/8 CE [Depuydt, *Catalogue*, vol. 1, no. 59; vol. 2, pl. 67–69 and 211; and Hans Quecke, *Untersuchungen zum koptischen Stundengebet*, Publications de l’institut orientaliste du Louvain 3 (Louvain: Institut Orientaliste, 1970), 91–96].

¹⁷ See Dawson, Uphill and Bierbrier, *Who Was Who in Egyptology?*, 96–97.

¹⁸ The full argument can be found in Richter, “The Master Spoke.”

¹⁹ After the semi-alchemical papyri from Leiden and Stockholm, written in the third to fourth century CE, the earliest Greek manuscript is the copy of the *Corpus Chemicorum Graecorum* Codex Marcianus graecus 299, dated to the tenth to eleventh century: see Robert Halleux, *Les textes alchimiques. Typologie des sources du moyen âge occidentale*, fasc. 32 (Turnhout: Brepols, 1979). The earliest extant Arabic manuscripts on alchemy, to my knowledge, also date to the eleventh century: see: Fuat Sezgin, ed., *Wissenschaft und Technik im Islam*, vol. 4: 7. *Medizin*, 8. *Alchemie*, 9. *Mineralien* (Frankfurt am Main: Institut für Geschichte der Arabisch-Islamischen Wissenschaften, 2003), 109 (mentioning a manuscript of al-Kindî’s *Kitāb Kīmiyā’ al-‘īr* dated to 405/1014, ed. Garbers 1948); and E.O. von Lippmann, “Ein neues arabisches Manuskript über Alchemie aus der Zeit um 1000,” *Proteus* 1 (1931): 31–35.

Some shared scribal features

From a not precisely palaeographical, but more generally “scribal” point of view, all the four manuscripts have some conspicuous features in common. The scribe of MSS Bodl. Copt. a.2 and a.3 sporadically employed an unusual way of writing numerals, a method of obfuscation²⁰ that is abundantly evident also in MS BL Or. 3669(1), although this manuscript is otherwise unrelated to the Bodleian manuscripts. The scribe of MSS Bodl. Copt. a.2 and a.3 also used, and obviously very much liked, cryptographic spellings of single words, or even parts of words, in which letters are replaced by other letters or special signs of a conventional cipher,²¹ a predilection shared by the scribe of MS Bodl. Copt. a.1. All three Bodleian manuscripts present a small repertoire of symbolic signs of the type called *sêmeia tês epistêmês* (scientific symbols) in the Greek tradition,²² namely the two signs symbolising gold and silver, whose shapes are more or less similar to those known from Greek manuscripts.²³ The scribe of MSS Bodl. Copt. a.2 and a.3 additionally used the symbol of a plain square, whose meaning — as in the Greek *sêmeia tês epistêmês* lists, which define this sign as *petalon* (leaf of metal)²⁴ — was “sheet metal,” as can be proven: at one place, the parallel text as attested by MS Bodl. Copt. a.1 has, instead of the symbol, the Coptic word *pokf*, likewise meaning “thin sheet” or “plate.”²⁵ A fourth sign of this type looks like a monogram composed of Greek letters, and is as yet unexplained.

The terminology of the Coptic texts relating to alchemy

All four Coptic manuscripts display a large number of Arabic loanwords, covering a good deal of alchemical terminology in the narrower sense (see the Appendix): designations of tools²⁶ and ingredients,²⁷ as well as nominal and verbal terms related

²⁰ The same type of hybrid presentation of numerals has been detected in the famous, recently published, Codex Tchacos, described by Rodolphe Kasser, *The Gospel of Judas. Critical Edition* (Washington, DC: National Geographic, 2007), 66: “Une particularité frappante des textes du Codex Tchacos est leur manière, qu’on pourrait qualifier de désinvolte, de noter les nombres, non seulement par leur nom complet ou par le chiffre correspondant, ‘à la grecque’, mais aussi, assez souvent, par une formule hybride, surtout si tel graphème du chiffre se trouve, par hasard, être identique ou similaire à tel graphème du nom du nombre. Exemple ‘quatre’, chiffre 4, nome 4000, graphie hybride 4λ.”

²¹ For this kind of cryptography, attested in Coptic gnostic writings from the Nag Hammadi codices, in Coptic epigraphy, in scribal colophons and in magical texts, see: Jean Dorese, “Cryptography,” in *The Coptic Encyclopedia* (New York: Macmillan Publishing Company), vol. 8, 65–69; and Frederik Wisse, “Language Mysticism in the Nag Hammadi Texts and in Early Coptic Monasticism,” *Enchoria* 9 (1979): 101–20.

²² See: Marcellin Berthelot and Charles Émile Ruelle, *Collection des anciens alchimistes grecs* (Paris: Georges Steinheil, 1883–1888, repr. Osnabrück: Olms, 1967), vol. 1, *Introduction*, pl. I–III, 104–11; and Carlo Oreste Zuretti, *Catalogue des manuscrits alchimiques grecs*, vol. 8: *Alchemistica signa* (Bruxelles: Lamertin, 1932). It might be of some interest that the recently excavated bilingual Greek–Demotic ostraca from Medinet Madi (the ancient town of Narmuthis, in the Fayyûm Oasis) have produced some evidence for the same way of symbolising planets and corresponding metals by signs that closely resemble those known as *sêmeia tês epistêmês*, for a period as early as the late second and early third centuries CE: see Angiolo Menchetti and Rosario Pintaudi, “Ostraka greci e bilingui da Narmuthis,” *Chronique d’Égypte* 82 (2007): 227–80, esp. n. 1, 230–32.

²³ Unlike the figures to be found in the *sêmeia tês epistêmês* lists, the crescent symbolising silver is always open to the left in our manuscripts.

²⁴ See Berthelot and Ruelle, *Collection des anciens alchimistes grecs*, vol. 1, 108–9.

²⁵ Its etymological antecedent *p3k* is already part of Ancient Egyptian metal-working terminology.

²⁶ For example, ἀλκαρα ἡλλαμίε (*alkara n-alamie*, “blind retort”); more examples can be found in the appendix below, and in Richter, “The Master Spoke.”

²⁷ For example: ἀλκελι (*alkeli*, “potash, salpêtre”); ἀληνοῦσῳατῆρ (*annoushater*, “sal ammoniac”); ἀλχημίε (*alchimie*, “catalyst, elixir”); for more examples, see the Appendix and Richter, “The Master Spoke.”

to the basic concepts called *tadābīr* (procedures).²⁸ Also, *Decknamen*, likewise known from Arabic manuscripts, are evident.²⁹

To quantify this: the word index of the four manuscripts contains no less than 130 lexical items from Arabic, mostly words conveying very specific meanings in terms of alchemy, in contrast with no more than forty lexical items borrowed from Greek, among them quite unspecific, long-established parts of Coptic speech, such as *allá* (but), *é* (or), *kalôs* (well, carefully), and the like. MS Bodl. Copt. a.2 even displays a short string of nine Arabic letters, although their meaning has not yet been worked out.³⁰ All verbs borrowed from Arabic, although used as infinitives in the Coptic recipient language, occur in their (Arabic) imperative forms.³¹ Last, but not least, there are sporadic occurrences of a Coptic transcription of what seems to be the Arabic conjunction *wa-*, in passages of MS BL Or. 3669(1), where ingredients are listed side by side.³² My immediate assumption from observations such as these was that our texts were translated from Arabic. More recently, however, I have become a little more cautious, and would like to leave open the possibility of more complex relationships with Arabic texts (see p. 32).³³

Form and content of the Coptic texts relating to alchemy

All of the extant Coptic alchemical texts are more or less compilations of alchemical recipes, structured in a plain, paratactic manner, and rather unambitious in terms of both textual composition and theoretical reflection.

²⁸ For example: $\alpha\kappa\eta\tau$ (*akêt*, “to fix”); $\alpha\lambda\alpha\kappa\tau$ (*alaakt*, “fixed”); $\sigma\alpha\epsilon\iota\lambda$ (*saeid*, “to distil, to evaporate”); $\lambda\lambda\mu\omicron\upsilon\gamma\sigma\alpha\epsilon\iota\lambda$ (*almousaeid*, “distilled, evaporated”). A more fully fledged terminological “paradigm” of *tadābīr* can be found in Richter, “The Master Spoke.”

²⁹ See: Alfred Siggel, *Decknamen in der arabischen alchemischen Literatur* (Berlin: Akademie-Verlag, 1951); and Manfred Ullmann, *Die Natur- und Geheimpwissenschaften im Islam*, Handbuch der Orientalistik 1/6,2 (Leiden: Brill, 1972), 266–70; for Coptic examples, see Richter, “The Master Spoke,” e.g. $\mu\omicron\omicron\upsilon$ $\eta\alpha\sigma\epsilon\sigma\epsilon\sigma$ (MS Bodl. Copt. a.1, a12), “glass (Arabic *az-zuğāğ*) water (Coptic *mooy*)”; cf. Siggel, *Decknamen*, 51: *mā’ az-zuğāğ*, “glass water” as a *Deckname* for mercury; $\eta\alpha\lambda\lambda\alpha\mu\eta\tau$ \mathfrak{D} (MS Bodl. Copt. a.1, g9), “(silver-)[symbol] yeast (Arab. *ḥamīr*)”; cf. Siggel, *Decknamen*, 39: *ḥamīr ad-dabab* “gold yeast” and *ḥamīra* “yeast” as *Decknamen* for mercury. Also, some well-known alchemical metaphors such as “to torture” = “to distil, to sublimate” occur in the Coptic texts.

³⁰ MS Bodl. a.2, line 69, probably to be read, from right to left: ’-q-n-’-n-k-s-t . It is not even clear whether the language is Arabic, or whether the use of Arabic letters rather serves to disguise words of any other language (whether Greek or Coptic) cryptographically.

³¹ For example: $\alpha\kappa\eta\tau$ (*akêt*) < *ʿaqada* form II, “to fix”; $\lambda\sigma\mu\iota$ (*ahmī*) < *ḥamma* form IV, “to heat up”; $\epsilon\iota\theta\omicron\upsilon\gamma\epsilon\iota$ (*ishwi*) < *šawā* form I, “to roast”; $\eta\epsilon\lambda\lambda$ (*nhal*) < *ḥalla* form VII, “to dissolve”; $\tau\alpha\eta\epsilon\tau\iota$ (*taperī*) < *dabara* form II, “to prepare, to process”; see Tonio Sebastian Richter, “Coptic[*, Arabic loanwords in*]”, in *Encyclopaedia of Arabic Language and Linguistics*, vol. 1, ed. Kees Versteegh (Leiden and Boston: Brill, 2006), 495–501, esp. 498.

³² MS BL Or. 3669(1), VII, lines 10, 11, 18, and 19; VIII, line 21 *passim*; the Coptic form is ω - (*ô*-). It seems rather unlikely that *wa-* was properly “borrowed” from Arabic into Coptic, since typological investigation into the scales of borrowability of function words has shown the resistance of words meaning “and” against borrowing: see Yaron Matras, “Utterance Modifiers and Universals of Grammatical Borrowing,” *Linguistics* 36 (1998): 281–331. In consequence, what we find in the manuscript should be considered as “manuscript interference” (impact of one manuscript on another) rather than linguistic interference or borrowing.

³³ I am indebted to Bink Hallum, who discussed the issue with me in a personal communication and drew my attention to the difficulties of a too simple idea of textual transmission.

There are, however, clear differences between the three texts. Unlike the texts of BL Or. ms. 3669(1) and MS Bodl. Copt. a.2, whose recipes are presented by an (anonymous) authoritative voice (as one might expect in such a text), the text attested twice, in MSS Bodl. Copt a.1 and a.3, displays a more elaborate narrative structure. Its recipes are presented as a pupil's records of what he saw and heard 'the Master' (Coptic *p-sab*)³⁴ doing and saying. The whole text is structured and subdivided into paragraphs by this narrative frame, to which the reader's attention is drawn again and again by introductory phrases such as "I saw the Master, while he . . .," "He informed me . . .," "I heard him looking for . . .," or the phrase most frequently used: "The Master spoke: . . ." Only occasionally do these phrases indicate any more than the narrative context for quoting recipes, such as the pupil's affection for his Master, when he says "This is the vinegar of the sages that the Master — *May God protect him from every evil!* — informed me of: . . .",³⁵ or another time, "This is the gravy³⁶ that the Master informed me of. *He spoke to me, when I humbly entreated him.*"³⁷ On the other hand, our nameless master restricts himself to merely quoting or practising his recipes, so we do not learn anything about him, his attitude towards other concepts, or his relationships with other people partaking in the alchemical discourse. There is only one exception to this: he mentions the opinion of other "wise masters," whose more elaborate procedure he wishes to shorten: "(The Master spoke: . . .) 'If you have dissolved and fixed them three times, it is sufficient! However, the wise Masters used to say: "Wash your mug seven times; thereafter wash it another three times, (only) then it will be perfectly clean and prepared."'"³⁸

Having an observant pupil telling the reader his observations seems far from common. If it was a mere literary fiction, as I originally thought, then it was a literary choice for which some originality could be claimed in the context of alchemical writing. However, experts in Arabic scientific literature to whom I have spoken about this textual feature have indicated the typical development from "classroom" to manuscript tradition in early Islamic sciences,³⁹ and led me to consider at least the possibility of a teaching and learning reality behind the literary presentation of our text.

Conceptual and technological statements

As mentioned before, the Coptic alchemical texts are rather terse in dealing with theoretical, conceptual and technological issues. Only a few statements go slightly

³⁴ On one occasion he is called "the sage" (*p-sophos*): MS Bodl. Copt. a.1, f, line 15; paralleled in MS Bodl. Copt. a.3, line 21.

³⁵ The passage in italics is in MS Bodl. Copt. a.3, line 46, but not in MS Bodl. Copt. a.1, e, lines 13–14.

³⁶ Cf. Greek *zômos* ("soup, sauce" and in alchemical texts "washes"; see Berthelot and Ruelle, *Collection des anciens alchimistes grecs*, vol. 2, 48, lines 4 and 18, 168, line 16, and 169, lines 1–2). I thank Bink Hallum for pointing out this parallel.

³⁷ Variant including the passage spelled in italics: MS Bodl. Copt. a.3, line 7, but not in MS Bodl. Copt. a.1, a, line 9.

³⁸ MS Bodl. Copt. a.1, b, lines 9–15; MS Bodl. Copt. a.3, lines 29–32.

³⁹ I owe these comments to James Montgomery (University of Cambridge) and Emilie Savage-Smith (University of Oxford), who also referred to Gregor Schoeler, *The Oral and the Written in Early Islam*, trans. Uwe Vagelpohl, ed. James E. Montgomery (London: Routledge, 2006).

further than “take this,” “add this,” “heat it up,” etc. For example, at one point in MS Bodl. Copt. a.2, we find a short explanation about what is meant by a “body” (the Greek term *sôma* is used): “Take a body (*sôma*) of copper, add it to gold or silver. A body (*sôma*) is something that is solid.”⁴⁰ Sometimes in MS BL Or. 3669(1), we encounter some more general maxims, such as:

Don’t say: “bronze can’t melt.”⁴¹

Weigh them, in order to know what weight it is, because of the measure of ingredients.⁴²

Add the ingredients in the right order. Don’t add one before the other one has become the way I told you.⁴³

Extract the amount (*lógos*) of the copper and the tin and the lead.⁴⁴

In the same text, there are two instances of what James Montgomery has called an “opt-out clause”⁴⁵ — the kind of phrases explicitly leaving the success of a procedure to God’s discretion:

It will double them, *by God’s will*.⁴⁶

Soak it in *armaarin* for seven days; it will become likewise the same [namely, “the sun,” i.e. gold], *God willing*.⁴⁷

The “machine of the sages” and its amazing benefits

Certainly the most striking apparatus occurring in our manuscripts is a miraculous time-saving device, an account of which is given in the final paragraphs of MSS Bodl. Copt. a.1 and a.3: the “machine of the sages.” In the version of MS Bodl. Copt. a.1, it runs like this: “The Master spoke: ‘There is a machine of the sages that grinds every *sôma* and dissolves them and liquefies them; but it has to receive an ingredient; and the machine is (made) of iron. If you give it the ingredient, then it [i.e. the machine] becomes soft and dissolves every *sôma* during the course of one single day.’”⁴⁸ This wonderful device, which evidently has the same function as the *menstruum universale* of the later Western alchemical tradition, as I understand it, in the end remains the secret of the Master, who only provides his pupil with the knowledge of the ingredient. The latter has to remain hopeful: “May God give it into the Master’s heart that he will inform me (also) about the machine.”⁴⁹ The corresponding paragraph in MS Bodl. Copt a.3 is strikingly different from its parallel in MS Bodl. Copt a.1. Not only has its place changed from the last to the penultimate paragraph, but it also contains several variants, usually in the form of additions: “The Master told me: ‘There is a machine of the sages in the masters’ possession, that,

⁴⁰ MS Bodl. Copt. a.2, line 36.

⁴¹ MS BL Or. 3669(1), fol. 1r, line 21.

⁴² MS BL Or. 3669(1), fol. 1v, lines 16–18.

⁴³ MS BL Or. 3669(1), fol. 2v, lines 2–4.

⁴⁴ MS BL Or. 3669(1), fol. 2v, lines 4–5.

⁴⁵ Personal communication.

⁴⁶ MS BL Or. 3669(1), fol. 10r, lines 1–3.

⁴⁷ MS BL Or. 3669(1), fol. 4v, lines 3–4.

⁴⁸ MS Bodl. Copt. a.1, d, lines 1–6.

⁴⁹ MS Bodl. Copt. a.1, d, lines 11–12.

together with a little ingredient, can grind and dissolve and liquefy every *sôma* during the course of one single day; its miracle is considerable.’ He also told me: ‘It is (made) of iron, and you will not set it up until you have thrown an ingredient onto the iron and made it nicely soft; otherwise not even the blacksmith can set it up. Anyone who has such (a machine) no longer needs a lot of time for the dissolution of bodies (*sôma*).’⁵⁰ According to this version, the Master’s hesitation to reveal his secret lasts even longer, so that the pupil’s resigned conclusion occurs twice, at two different “stages” of the Master’s step-by-step, but ultimately incomplete, revelation: once, after being told by the Master about the advantages of the machine and its need to receive a further ingredient, he concludes: “If God gives it into the Master’s heart, then he will let us know it (the machine), as well as this ingredient.”⁵¹ On looking at the manuscript in situ, I noticed that the first hand of MS Bodl. Copt. a.3 actually stopped writing here, and that what follows was written, although in a similar writing style, by a different hand: “This ingredient is the *alpish*, the amount of $\frac{1}{6}$ milaresion being sufficient. If you cannot find this one, take the *Ashishtikh*. The Master informed me: ‘It will dissolve every *sôma*.’ He also told me: ‘Measure off a bit of the first one and a bit of the second ingredient, (but) you are not forced to measure. Take one unit or two units or however much you wish to take; they will dissolve every *sôma* immediately.’ If God gives it into the Master’s heart, then he will let me know (also) the machine (itself).”⁵² It is not clear to me what to make of this addition. If we only had MS Bodl. Copt. a.3, we could reasonably believe that the manuscript actually was our pupil’s (the first hand) and his fellow’s (the second hand) working diary. However, the existence of MS Bodl. Copt. a.1 strongly reminds us of the literary, bookish character of that text and its transmission.

What kind of alchemy is the alchemy attested by the tenth-century Coptic manuscripts?

We may finally return to the question that I raised previously: where did the Coptic authors of our texts get their alchemy? And were they, strictly speaking, authors at all, or rather compilers, or translators? Judging from the evidence produced above, there seem to be four possibilities, of unequal likelihood:

- (1) The Coptic texts could be a survival of indigenous traditions of a supposed pre- or extra-Hellenistic Egyptian alchemy.⁵³ Although this has been proposed by Robert Halleux,⁵⁴ it would seem to be extremely unlikely, given the amount of Greek and Arabic terminology in the texts.

⁵⁰ MS Bodl. Copt. a.3, lines 64–72.

⁵¹ MS Bodl. Copt. a.3, lines 72–73.

⁵² MS Bodl. Copt. a.3, lines 73–78.

⁵³ For the issue of Egyptian origins of alchemy, seen from an Egyptological point of view, see: François Daumas, “L’Alchimie a-t-elle une origine égyptienne?”, in *Das römisch-byzantinische Ägypten. Akten des Internationalen Symposiums 26.–30. September 1978 in Trier*. Aegyptiaca Treverensia 2 (Mainz: Philipp von Zabern, 1983), 109–18; and Philippe Derchain, “L’Atelier des Orfèvres à Dendara et les origines de l’alchimie,” *Chronique d’Égypte* 129 (1990): 219–42.

⁵⁴ Halleux, *Les textes alchimiques*, 65 with n. 40: “Cette tradition [sc. from earlier Egyptian to Arabic alchemy, as presupposed in the Hälid ibn Yazid Legend] 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.”

- (2) The Coptic texts could have been translated from Greek originals. This is the case for large parts of Coptic literature, and is thus an a priori assumption for any Coptic literary text that cannot be assigned to one of the few known Coptic-writing authors, or be shown to originate from Egypt. In the case of our texts, however, this assumption would obviously leave many phenomena unexplained, and therefore seems rather unlikely.
- (3) The texts could have been composed in Coptic. This is what Leslie MacCoull, the only scholar who dealt with our texts after Ludwig Stern and before myself, has taken for granted.⁵⁵ To maintain this assumption, one would have to concede that the Coptic-writing scientists who produced the texts were familiar with Greek and, even more so, with Arabic alchemical traditions.
- (4) The texts could have been translated from Arabic into Coptic. This was my own first assumption; it was also Ludwig Stern's explicit opinion of MS BL Or. 3669(1),⁵⁶ and this is what I still consider to be a very likely scenario. The arguments in favour of this possibility are mainly based on the aforementioned linguistic observations: the sheer quantity of Arabic words, their quality (in that they basically cover the whole domain of alchemical terminology in a narrower sense), the assumed manuscript interference resulting in occurrences of the Arabic conjunction *wa-* (and) in a Coptic manuscript, the Arabic letters in MS Bodl. Copt. a.2, etc. It seems further to be supported by the literary and scientific character of the Coptic texts. The empirical, matter-of-fact spirit underlying our plain compilations of recipes seems to fit much better with the branch of Arabic alchemy connected to names such as Jābir and Rāzī⁵⁷ than to the Greek alchemical tradition, with its rather mysterious vein, as presented in the *Corpus Chymicum Graecum*. This argument, however, may be unsound, since there is some indication that the overall mystical tone and nonempirical attitude known from the texts transmitted in this corpus is in fact the result of a selection by the Byzantine compilers.⁵⁸ Moreover, the Arabic hypothesis, strong as it seems at first glance, has its weak points. For instance, the designation of the "machine of the sages" would require an explanation as to how a translation from Arabic into Coptic could end up in an expression composed of two Greek terms (*mêchanê*, *sophos*). Also, some scribal features of the Coptic alchemical manuscripts strongly resemble phenomena known from the Greek alchemical tradition, and from Greek scribal habits, such as the use of *sêmeia tês epistêmês*, as well as the type of cryptography that appears in our texts. However, Arabic

⁵⁵ MacCoull, "Coptic Alchemy and Craft Technology in Early Islamic Egypt."

⁵⁶ Stern, "Fragment eines koptischen Tractates über Alchimie," 102: "ein recht ansehnliches Fragment einer Sammlung von alchimistischen Recepten zur Herstellung des Goldes oder 'der Sonne' und des Silbers oder 'des Mondes', welches, wie ich darthun werde, aus dem Arabischen übertragen ist."

⁵⁷ In an earlier approach to the issue, still reflected in Richter, "'The Master Spoke,'" I actually did consider the possibility of situating the text of MSS Bodl. Copt. a.1 and a.3 within the Arabic *Corpus Gabirianum* [for which still see Paul Kraus, Jābir Ibn Ḥayyān. *Contribution à l'histoire des idées scientifiques dans l'Islam*. Vol. I: *Le corpus des écrits jābiriens*. Vol. II: *Jābir et la science grecque. Mémoires présentés à l'institut d'égypte et publiés sous les auspices de sa Majesté Farouk I^{er}, roi d'égypte*, vols. 45–46 (Cairo: Imprimerie de l'Institut Français d'Archéologie Orientale, 1942/1943; repr. Hildesheim: Olms, 1989)].

⁵⁸ This is one of the significant conclusions arrived at by Bink Hallum in his unpublished Ph.D. thesis *Zosimos Arabus. The reception of Zosimos of Panopolis in the Arabic/Islamic world*: that Zosimos is the author of rather technical alchemical writings that are quite far in style and content from his visionary texts addressed to Theosebeia.

alchemy, especially in its earliest stages, is so closely based on the Greek alchemical tradition that it is likely to be the vehicle for most, if not all, of the aforementioned Greek elements.

The hypothesis of an Arabic origin raises a general problem. Because we have countless specimens, we know very well how translation from Greek into Coptic operated. But, owing to the complete lack of evidence, we do not even know what a translation from Arabic into Coptic should look like.

In the end, there is at least one point that seems quite clear: what the tenth-century Coptic alchemical manuscripts provide evidence for is a process of reception and appropriation of contemporary scientific thought from Greek and Arabic sources, very similar (and roughly parallel) to the much better investigated process of the transmission of knowledge from Arabic to Latin.

Acknowledgements

The present author would like to express his feelings of gratitude to the organisers and participants of the Medieval Alchemy Workshop at the Warburg Institute, autumn 2007, from which he profited tremendously, and he especially thanks Bink Hallum for his valuable comments on a draft of this paper.

Notes on Contributor

Tonio Sebastian Richter is an Oberassistent (senior lecturer) at the Egyptological Institute of the University of Leipzig. He studied Protestant Theology (Diploma 1992), Egyptology and Religious Studies (M.A. 1996) at the University of Leipzig; and gained his PhD in 1999 with a thesis on the language and style of Coptic legal documents (printed as *Rechtssemantik und forensische Rhetorik*, Leipzig 2002; 2nd ed. Wiesbaden: Harrassowitz 2008). He specializes in Coptology; his research interests include Coptic linguistics, papyrology and epigraphy, and topics in the history of Byzantine and early Islamic Egypt, such as the history of law, social and economic history, plurilingualism and language change, pagan and Christian religion, magic, Hermetism, alchemy and late antique sciences. He is co-editor of the *Zeitschrift für Ägyptische Sprache und Altertumskunde* and of the *Archiv für Papyrusforschung*. Address: Universität Leipzig, Ägyptologisches Institut / Ägyptisches Museum -George Steindorff-, Burgstr. 21, 04109 Leipzig, Germany; E-mail: sebricht@rz.uni-leipzig.de.

Appendix

The lexicon of MS Bodl. Copt. a.2 according to meanings and languages

	ARABIC	COPTIC	GREEK
VERBAL EXPRESSIONS	<i>Actions</i>		
	to add (<i>adama</i>) to can (? <i>alaba</i> II) to collect (<i>lamma</i>) or connect (<i>la'ma</i>) or to polish (<i>lama'a</i>) to cover (<i>laḥafa</i>) to heat up (<i>ḥamma</i> IV) to pour (<i>naṭara</i>) to roast (<i>šawā</i> I) to dilute (<i>mauh</i>)	to add (<i>talo</i>) to blow (<i>nife</i>) to burn (<i>tmbo</i>) to bury (in manure of a dove/ horse) (<i>tōms</i>) to cook (<i>pise</i>) to dissolve (<i>tr.</i>) (<i>bōl ebol</i>) to hammer (<i>jehjôh</i>) to grind, to pulverize (<i>sike</i>) to knead, to compose (<i>wōshm</i>) to liquefy (<i>eire mmoou</i>) to make s.th. (<i>eire</i>) a sheet (<i>symbol</i>) to make soft (<i>loklek</i>) to smash, to squash (<i>thno</i>) to smelt (<i>wôth</i>) to spread (<i>site</i>) to stir (<i>tôb</i>) to take (<i>ji, qop</i>) to wash (<i>eiw</i>)	
VERBAL EXPRESSIONS	<i>Reactions</i>		
		to become black (<i>kmom</i>) to become dry (<i>er-shoue</i>) to become like (<i>eine</i>) gold (<i>symbol</i>) to become solid (<i>er-jro</i>) to become a stone (<i>er-ône</i>) to become white (<i>er-alau</i>) to come out (<i>ei ebol</i>) to dissolve (<i>intr.</i>) (<i>bōl ebol</i>) to melt (<i>wôth</i>)	to become one single body (<i>er-ou-σῶμα nwôt</i>) to alter (<i>er-ἀλλαγί?</i>)
<i>Devices, Tools and Vessels</i>			
NOMINAL EXPRESSIONS	<i>atirisik</i> (a kind of tool, probably an Arabic word) blind flask (<i>qar'a amyā</i>) bladder (<i>al-matāna</i> [of cow]) flask (<i>anpoulla</i> Lat. <i>via</i> Gr. or Arab.?) lamp? (<i>al-qandīl</i>) of glass (Copt. <i>abiqein</i>), pot (<i>al-kūz</i>)	fire (<i>kôht</i>) hair sieve (<i>sôlf nsir</i>) cloth (<i>toeis</i>) of silk (Arab. <i>ḥazz</i>) manure (<i>sot</i>) of horse (<i>hto</i>) and dove (<i>grompe</i>)	thing, (εἶδος) <i>kaunia</i> (meaning unknown) flask (<i>anpoulla</i>)

	ARABIC	COPTIC	GREEK
NOMINAL EXPRESSIONS	INGREDIENTS		
	alkali (<i>qaliy</i>)	white (<i>alay</i>), Syriac (Ar. <i>al-šāmī</i>)	asbestos (ἀμίαντος),
	arsenic (<i>zirniḥ</i>)	glass (<i>abeqein</i>)	body (σῶμα)
	ingot (<i>al-sabika</i>)	boiled urine (<i>ish efpose</i>)	copper (χαλκός)
	a borax (<i>bawraq</i>)	copper (<i>barôt</i>), red (Gr. κόκκος),	
	a borax (<i>tinkār</i>)	cypric (Ar. <i>al-qubrusī</i>)	
	a Cu-vitriol (<i>al-qalqand</i>)	gold (<i>nouf</i>), specified as beautiful	
	a Cu-vitriol (<i>ḥalqaṭār</i>)	(<i>saé</i>)	
	a Fe-vitriol (<i>zāḡ</i>)	iron (<i>benipe</i>)	
	a Fe-vitriol? (<i>sūrī</i>)	lead (<i>taht</i>)	
	(boiled)	natron (<i>hosm</i>)	
	filings (<i>burāda</i>) of	oil (<i>neh</i>)	
	needles? (<i>ibar</i>)	oil (<i>neh</i>) of flax-seed (<i>efre-mahe</i>)	
	fine gold? (<i>naḏīr</i>) or:	pothards, specified as old (<i>blje</i>	
	what is spread	<i>napas</i>)	
	(? < <i>niṭār</i>)	salt (<i>hmou</i>)	
	flash (<i>barq</i>) or coward	silver (<i>hat</i>)	
	(<i>barūq</i>) prob. As	vinegar (<i>hêmej</i>)	
	<i>Deckname</i> ?	water (<i>mooy</i>) of alkali (Ar. <i>qaliy</i>)	
	haematite (<i>šādīna</i>)	salt (<i>hmoy</i>)	
	honey (‘ <i>usūl</i>) of clover	water of thorn tree gum (<i>moou</i>	
(<i>raṭba</i>),	<i>nkême nshante</i>)		
honey (‘ <i>usūl</i>) of			
<i>Glycyrrhiza</i> (<i>sūs</i>)			
honey (‘ <i>usūl</i>) of pome-			
granate (<i>rummān</i>) &			
figs (<i>ḥamāt</i>)			
honey (‘ <i>usūl</i>) of sweet			
(<i>ḥuw</i>) pomegranate			
(<i>rummān</i>)			
limestone (<i>nūra</i>)			
marble (<i>ruḥām</i>)			
metallic sulphides			
(<i>al-marqašīta</i>)			
quicksilver (<i>al-zībaq</i>)			
sal ammoniac (<i>al-nūšādīr</i>)			
a vitriol (<i>al-šahary</i>)			