

Some Considerations Concerning the Alchemy of the *De anima in arte alchemiae* of Pseudo-Avicenna

SÉBASTIEN MOUREAU

Aspirant du F.S.R. — FNRS/University of Louvain

This article explains some essential features of the alchemical doctrine of the *De anima in arte alchemiae*, a treatise written in Spain during the twelfth century (in Arabic, but only the Latin translation remains), and wrongly attributed to Avicenna. It shows that pseudo-Avicenna uses alchemical principles and elixir theory directly inspired by Jabirian texts, and classification of materials influenced by al-Rāzī. The alchemy of pseudo-Avicenna is entirely based on operations on the four elements: the alchemist has to reduce hair, blood or eggs to their elements, and isolate one of their essential properties (warmth, coldness, moisture and dryness), so that he can change the proportion of essential properties of the body he wants to transmute into gold or silver. The preparation made from hair, blood or eggs (the isolated property) is what he calls the elixir.

Among the medieval Latin alchemical works that have come down to us under the name of Avicenna, the *De anima in arte alchemiae* occupies an important place. This text happens to be a significant text in the history of alchemy, as much for the ideas that it introduces into the West as for its influence on medieval thought through authors such as Vincent of Beauvais and Roger Bacon. This article aims to underline for the reader some essential features of the alchemical doctrine in *De anima in arte alchemiae*. It is appropriate, however, first to summarise some material facts concerning the text. This description will be very brief, as the details will appear in a forthcoming article.

The *De anima in arte alchemiae*, falsely attributed to Avicenna, is, in all probability, the Latin translation (made in the time around 1226 or 1235)¹ of an alchemical text composed in the twelfth century in Spain. Internal evidence within the text (of which

¹ These two specific dates are given to us by two colophons that we find in two manuscripts of the *De anima in arte alchemiae*.

Ruska made the first assessment, which has since been taken up by many researchers²) is quite clear on this matter. It was edited in 1572 by Mino Celsi at Basel, and published by Pietro Perna alongside the works of Geber, in a collection entitled *Artis chemicae principes, Avicenna atque Geber*.³

Before beginning to describe some of the alchemical doctrines of pseudo-Avicenna, I will give a quick summary of the text. It is divided into eleven parts: a *porta* and ten *dictiones*.⁴

Prologue and table of contents (nine unnumbered pages, and 1–4).⁵

“Porta elementorum” (4–23). This is a theoretical text on physical preliminaries: the four elements, their properties, and the composition of materials. According to pseudo-Avicenna, this chapter contains the key to understanding the whole text.

Dictio 1: “Alchimia an sit”⁶ (“Does alchemy exist?”; 24–90). After a series of arguments proving the existence of this science (ranging from physical–philosophical speculations to arguments from authority), the author digresses to discuss five alchemists (cited later), and describes several elements of their doctrine. He ends this dictio with a discussion proving that the Philosophers’ Stone is at the same time animal (*vitalis*), vegetal (*herbalis*), and natural (*naturalis*), corresponding respectively to blood, hair, and eggs.

Dictio 2: “quid sit Alchimia” (“What is alchemy?”; 91–100). After several examples of alchemical operations, the author offers his definition of alchemy: improving the natures of things by operating on the elements.

Dictio 3: “quomodo potest fieri Alchimia” (“How can alchemy be performed?”; 100–3). Pseudo-Avicenna explains in a very brief way the six great operations necessary for the alchemical operation.

Dictio 4: “cur est Alchimia” (“Why does alchemy exist?”; 104–8). After a brief justification of the need to prepare the body, the author replies to three major questions concerning the usefulness of alchemical operations: what purpose is served by the spirits?; what purpose does the stone serve?; and what purpose does the elixir serve?

² See, among others: Julius Ruska, “Die Alchemie des Avicenna,” *Isis* 21 (1934): 13–51; Julius Ruska, “Zum Avicennatext des Cod. Vadianus 300,” *Sudhoffs Archiv* 27 (1934): 499–510; Georges C. Anawati, “Avicenne et l’alchimie,” in *Oriente e Occidente nel Medioevo: filosofia e scienze, Convegno internazionale 9–15 aprile 1969* (Rome: Accademia Nazionale dei Lincei, 1971), 285–346; and Georges C. Anawati, “L’alchimie arabe,” in *Histoire des sciences arabes, III: Technologie, alchimie et sciences de la vie*, ed. Roshdi Rashed (Paris: Le Seuil, 1997), 111–41.

³ Avicenna (pseudo-), *De anima in arte alchemiae*, in *Artis Chemicae Principes, Avicenna atque Geber*, ed. Mino Celsi (Basel: Pietro Perna, 1572), 9 pp. sine numero + 1–471 (= DAIAA). The other treatises of the compendium are: the *De investigatione perfectionis Gebri* (473–97), the *Summa perfectionis Gebri* (497–708), the *De inventione veritatis Gebri* (709–35), and the *Liber Fornacum Gebri* (736–67).

⁴ The term *porta* reflects the word *bāb*, which in Arabic means not only door, but also chapter. The word *dictio* is used to designate the ten sections of the *De anima in arte alchemiae*; this word presumably is translated from the Arabic *maqāla*.

⁵ The pagination used throughout this article is that of the edition of Celsi, 1572. Our divisions into *dictiones* do not perfectly conform to those of Celsi, in which part of dictio 8 is incorporated into dictio 9, and the division between dictio 9 and dictio 10 is not absolutely clear.

⁶ The titles that I give here are those found in the table of contents of the edition of Celsi; however, they correspond to the contents of the text and are found in certain manuscripts.

⁷ The “cur” here has a final sense; it corresponds to *utilitates magisterii*.

- Dictio 5: “de nominatione lapidum et eorum natura, et eorum quae ingrediuntur in magisteriis” (“The naming and the nature of the stones and those things which enter into the masteries”; 108–61). This fifth part of the work contains a classification of the substances according to pseudo-Avicenna, as well as his observations concerning each one of them.
- Dictio 6: “in operibus corporum et animarum, ante quam operetur de alexire” (“On the operations on bodies and souls, before the elixir is operated on”; 162–394). The sixth dictio takes up almost half the work, and details the operations necessary for preparing the bodies, spirits, and salts. One can therefore find here an impressive quantity of recipes and the details of the different procedures used by the alchemists.
- Dictio 7: “in alexiriis” (“On the elixirs”; 394–438). Pseudo-Avicenna details in this dictio the production of elixirs from what he sees as the three principal substances: blood (*petra vitalis*), eggs (*petra naturalis*), and hair (*petra herbalis*).
- Dictio 8: “in fermento” (“On the ferment”; 439–61). The author describes here the preparation of the ferment for the operation on the red and the operation on the white.
- Dictio 9: “de complectione magisterii et sponsalitii” (“On the achievement of the mastery and of the wedding”; 462–66). This dictio is almost entirely composed of recipes, those of the alchemical wedding of the operation of the red and the operation of the white.
- Dictio 10: “in ponderibus” (“On weights”; 466–68). This last dictio purports to tell us about weights. In fact, while pseudo-Avicenna offers a very brief and obscure explanation on weights, without going into detail, he prefers to encourage his son to write a book on weights.

One can see from this résumé that the text is composed, like many medieval texts, of a *theorica* and a *practica*, blending subtly physical speculations with the operations in the laboratory. The theoretical part, starting with the “Porta elementorum,” covers the first five dictiones: it includes the definition, the description and the defence of alchemy, according to pseudo-Avicenna. The second part, composed for the most part of recipes, extends from the sixth dictio to the tenth dictio.

The four elements

Pseudo-Avicenna bases the whole of his alchemy on the very widespread Aristotelian theory of the four elements and their properties. Each element is characterised by two of the four essential properties or natures: fire is hot and dry, air is hot and moist, water is cold and moist, and earth is cold and dry. Every body in the world is composed of these four elements, which can change from one into another: boiling water changes into air, air changes into fire in the flame (because, without air, the flame dies), earth changes into air through the dust that emanates from it, etc. Pseudo-Avicenna thus admits the possibility of transmutation at the level of the elements, yet he somewhat modifies the theory that he takes up. For he adds to the four basic properties three others, which he calls “hidden properties” (*proprietates absconditae*):⁸

⁸ One should beware of possible confusion between “hidden (*absconditae*) properties” and the system of manifest/hidden properties that I shall explain below.

lightness (*levitas*), heaviness (*ponderositas*), and the capacity to dissolve more or less quickly (*solutio*).

Everything in the world is composed of four elements. Each element in turn is composed of two natures (each nature makes up half of the element: fire, for example, is composed of half heat and half dryness). If one knows the proportion of the elements present in something, one can easily calculate the proportion of the natures, and so define the qualities of the thing in question. Everything is, in fact, at the same time hot, cold, moist, and dry, but the quantities of these properties vary and some dominate over others.⁹ The different proportions of the elements are called *diversitates* by pseudo-Avicenna, and can be compared with the medical system of human temperaments (the ratios of the four humours). According to him, there exist 145 *diversitates*.

We can see that the element theory of pseudo-Avicenna is largely inspired by that of the Arabic alchemical corpus attributed to Jābir ibn Ḥayyān,¹⁰ but in a simplified form. The complex theory of the balance is abandoned, the difficulty lies, just as for Jābir, in knowing the ratios of the elements, but pseudo-Avicenna does not describe the system by which one can acquire this information; he merely exhorts his son to know well in which *diversitas* each thing is situated.

The elixirs

The metals, according to the Arabic system widely diffused by the Jabirian corpus that pseudo-Avicenna adopts, are created by the proportional mixture of two principles, sulfur and mercury (pseudo-Avicenna calls this *aurum vivum*, “living gold,” a term that I have not up to now found anywhere else),¹¹ in the bowels of the earth for hundreds of years.¹² These two principles are respectively hot and dry (sulfur) and cold and moist (mercury). What differentiates the metals from each other is the quality of the sulfur and mercury used for their composition, as well as the length of time for which they are cooked in the bowels of the earth. Moreover, the metals contain all four natures: two are exterior and obvious, and the other two are interior and hidden. Thus, mercury is cold and moist outside (*per corpus suum*) and hot and dry inside (*per spiritum suum*).

To operate on the metals, the alchemist has, then, to change the proportion of the natures in the metal that he wishes to transmute into that of gold or silver.

⁹ For instance, we say that mercury is cold and moist, because in it, coldness and moisture outweigh warmth and dryness.

¹⁰ See: Paul Kraus, *Jābir ibn Ḥayyān, contribution à l'histoire des idées scientifiques dans l'Islam*. Volume II, *Jābir et la science grecque* (Cairo: Institut français d'archéologie orientale, 1942), 1–18 and 187–303; and Syed Nomanul Haq, *Names, Natures and Things, The Alchemist Jābir ibn Ḥayyān and His Kitāb al-Aḥjār* (London: Kluwer Academic Publishers, 1994).

¹¹ Vincent of Beauvais and Roger Bacon, who both cite pseudo-Avicenna frequently, are, of course, exceptions. The expression *aurum vivum* sometimes appears in other works, but refers there to gold, not mercury. Martin Ruland, in his dictionary, defines it as mercury, but is probably referring to *De anima in arte alchemiae* for this definition: Martin Ruland, *Lexicon Alchemiae sive Dictionarium Alchemisticum . . .*, (Frankfurt: Zacharias Palthenius, 1612; repr. Hildesheim: Georg Olms, 1987), 95. I use the digital version of the Bibliothèque Nationale de France on the website: <http://gallica.bnf.fr/>.

¹² As I have already said, pseudo-Avicenna, if he takes up the ideas of Jābir, simplifies them correspondingly. He does not speak, for example, of the influence of the planets on the creation of the metals.

This operation is effected by means of elixirs. Again, it is from Jābir ibn Ḥayyān that pseudo-Avicenna takes his system, but in a much more precise way this time — making only a few modifications and simplifications.

Where Jābir uses mineral substances and innovates by introducing organic substances in the creation of elixirs, pseudo-Avicenna only uses organic substances, and, again, he only uses three very specific ones: blood, hair, and eggs.

He considers these matters, respectively, as the animal stone (*petra vitalis*), the vegetal stone (*petra herbalis*), and the natural stone (*petra naturalis*), and by means of these makes the elixirs — the “medicines” of the metals.

This preparation is made by reducing the three substances to their elements by means of distillation. These elements can then be treated: one gets rid of one of the two natures that compose them, and one obtains one nature alone (it must be noted that pseudo-Avicenna is not as clear as Jābir when he talks about the preparation of the elements; he does not openly affirm that one is dealing with a reduction to a single nature). It is then convenient to mix, according to the recipes given by pseudo-Avicenna, the elements extracted and prepared this way, in order to fashion the elixirs. The stages in the production of elixirs are almost entirely identical to those of Jābir (I rely for this statement on the list established by Paul Kraus):¹³

- (1) Astronomical calculation of the best time for collecting the ingredient (blood, hair or eggs).
- (2) Distillation of the ingredient — that is, its division into its four elements.¹⁴
- (3) Preparation of the fire.
- (4) Preparation of the oil¹⁵ or air.
- (5) Preparation of the water.
- (6) Preparation of the earth.
- (7) Mixing of the prepared elements.
- (8) Adding the ferment.¹⁶
- (9) Projecting the elixir onto the prepared metal and spirit.

The classification of the materials

Pseudo-Avicenna does not use the Jabirian corpus exclusively, for he mentions an impressive number of alchemical authors in his text. Since Berthelot, followed by Ruska,¹⁷ has analysed the lists of names, I will not repeat them here. I will limit myself to mentioning the five greatest authorities in the text — the five alchemists to

¹³ Kraus, *Jābir ibn Ḥayyān*, vol. II, 8–9.

¹⁴ This occurs, as with Jābir, in a cucurbit of glass placed in an oven (Jābir says “a cauldron”) full of ashes.

¹⁵ The designation of air with the word “oil” is already found in Jābir, who indicates by that the thick, gassy substance that is produced by distillation, which he considers to be air. Pseudo-Avicenna, however, also uses the word *oleum* to indicate fire in certain contexts, with a view to making his recipes obscure, as is his wont.

¹⁶ This stage is less clearly defined by pseudo-Avicenna, and his explanations and recipes for the ferment leave some doubts: the ferment seems to have to be joined to the elixir to be able to transmute the body, but is sometimes added directly to the body, separately from the elixir. The stages are, in that case, after the mixture of the prepared elements, the projecting of half the elixir, the projecting of the ferment, and the projecting of the other half of the elixir.

¹⁷ See: Marcellin Berthelot, *Histoire des sciences. La chimie au Moyen Âge* (Paris: Imprimerie nationale, 1893), vol. 1, 300–303; and Ruska, “Die Alchemie des Avicenna,” 32–36.

whom pseudo-Avicenna devotes five chapters of his first dictio. These are probably his main sources.

- (1) “Geber Abenhaen”: Jābir ibn Ḥayyān, who, we have seen, inspired the basic theories of the *De anima in arte alchemiae*.
- (2) “Iahie abindinon”: according to Ruska, his name in Arabic should be Yaḥyā ibn Dhī al-Nūn, an unidentified author who makes one think of the well-known Dhū al-Nūn al Miṣrī.¹⁸
- (3) “Abimazer Alfarabi”: the Latinised name of the celebrated philosopher Abū Naṣr Muḥammad al-Fārābī. Pseudo-Avicenna considers him to be his master, and holds him in high esteem. He devotes considerable space to him in his first dictio. We know only one work on alchemy by al-Fārābī, and this is more of a defence of alchemy than a proper technical treatise.¹⁹ It is, then, difficult to say anything definite about which works of al-Fārābī pseudo-Avicenna had in mind, and it is most likely that pseudo-Avicenna refers to an apocryphal work.
- (4) “Maurienus”: the renowned alchemist Morienus (Maryānūs in Arabic), who, according to legend, taught the prince Khālīd ibn Yazīd alchemy.
- (5) “Abubecar Mahomat Abnebezacharia Arazi”: this must be the physician and philosopher Abū Bakr Muḥammad ibn Zakarīyā’ al-Rāzī.

The two authors whose influence is most noticeable are Jābir and al-Rāzī. In fact, if the principles of the doctrine of pseudo-Avicenna are Jabirian, his classification of materials depends more directly on al-Rāzī.²⁰ This is not, however, according to his original classification, which one can find in the *Sirr al-asrār*, but under a later, more simplified form, which would influence some other texts too, such as the *De aluminibus et salibus*, a Spanish alchemical text attributed to al-Rāzī, which is extremely close to the *De anima in arte alchemiae*.

The materials are divided into five major categories:

- (1) Bodies: these are the materials that are malleable (lit. can be lengthened) and can be worked with a hammer in the fire (*quae possunt elongari cum malleo ad fornacem*): copper, lead, tin, iron, gold, and silver, together with two alloys, “metallum” (which Ruska identifies with *khārṣīnī*, thanks to a title in the table of contents: *de asceni sive metallo*)²¹ and brass (*lato sive auricalcum*).²²

¹⁸ “Iahie Abindinon” reminds one also of the dynasty that reigned in Toledo in the eleventh century: the Banū Dhī al-Nūn, of whom the most famous member, Yaḥyā al-Ma’mūn (reigned 1037–1074), was one of the greatest patrons of his age, and in whose court scholars flourished. See pp. 2–3 of Régis Blachère’s introduction in Ṣā’id al-Andalusī, *Kitāb Ṭabaqāt al-Umam* (*Livre des Catégories des Nations*), ed. Louis Cheikho, translation, introduction and notes by Régis Blachère (Paris: Larose éditeurs, 1935), where one can find many references to this subject.

¹⁹ See Fuat Sezgin, *Geschichte des Arabischen Schrifttums*, vol. 4 (Leiden: Brill, 1971), 288–289. This work is edited in A. Sayılı, “Fārābī’nin Simyanın Lüzumu Hakkındaki Risalesi,” *Türk Tarih Kurumu: Belleten*, 15, no. 57 (1951): 65–79.

²⁰ See, especially, Anawati, *L’alchimie arabe*, 125–127, where one can find many references.

²¹ DAIAA, p. 6 of the table of contents (not paginated). Another passage in the manuscripts gives the word in the form *acerium*: DAIAA, 96.

²² Brass is not always included in the list of pseudo-Avicenna, in the course of the text. Thus, one finds on 96 a list of seven bodies instead of the usual eight.

- (2) The spirits: these refer to the materials that sublime: sulfur, orpiment, sal ammoniac, and mercury.
- (3) The salts: alkali salt, nitre salt, gemma salt, common salt, vitriol, alum, and borax.
- (4) The stones: blood, hair, and eggs.
- (5) The other materials that enter into the magistry: marcassite, lead *alcofolis*, urine, vinegar, glass, linen fabric, and horse manure.

The alchemical work of pseudo-Avicenna

I will now outline the different stages that constitute the alchemical work of pseudo-Avicenna. The different operations are described in dictiones 6–10, where the structure is remarkably clear for an alchemical text.²³

- (1) Preparation of the body: the body, before everything else, has to undergo a preparation, so that “the spirit can be united with it more quickly and easily.”²⁴
 - (a) The first washing (*ablutio minor*).
 - (b) The reduction to quicklime (*calcefactio*).
 - (c) The burying (*inhumatio*).
 - (d) The second washing (*ablutio maior*).
 - (e) The hardening (*induratio*).
 - (f) The ceration or waxing (*inceratio*).
 - (g) The sublimation (*sublimatio*).
 - (h) The dissolution (*solutio*).
- (2) Preparation of the spirits: the spirits have to be prepared to “become as subtle as possible and to enter as fast as they can into the body.”²⁵
- (3) Preparation of the elixir from stones (as explained above): the elixir will allow one, after it has been projected, “to change the nature of the body into another nature.”²⁶
- (4) The preparation of the ferment: the ferment, made from the material that one wishes to obtain during the work (silver or gold), “is put into the elixir to transfer the nature of the body into the nature of the ferment, which is that of the gold or silver.”²⁷ This affirmation is less clear, because pseudo-Avicenna seems sometimes to mix the ferment with the elixir before projecting, and at other times to mix the ferment and the body, and the elixir and the body, separately.
- (5) The alchemical wedding (*sponsalicia*): the last stage of the work, consisting of the mixture of the body, the spirit, and the elixir (with the ferment mixed in).²⁸ As I have already said, the stage of the mixture of the ferment and the

²³ Even if pseudo-Avicenna imposes a clear structure on the whole of his work, he does not hesitate to confuse his reader by deliberately mixing up the names of the substances, to make the reading difficult for the weak-spirited.

²⁴ DAIAA, 105: “Corpus ideo praeparatur, ut spiritus possit cum eo citius coadunari levius.”

²⁵ DAIAA, 102: “ut subtilies in quantum potes: et ut quam citius poterit intret in corporibus.”

²⁶ DAIAA, 108: “Alexir est res quae iactamus super corpus maius, ut mittat rem de sua natura in aliam.”

²⁷ DAIAA, 103: “Levamen est res quam mittunt in alexir, ut reducat corpus maius in eandem materiam de qua est fermentum: sicut sol, sicut luna.”

²⁸ DAIAA, 103: “Sponsalitium est quando miscentur spiritus, et elementa cum fermento et corpore.”

elixir does not seem to be clearly established by pseudo-Avicenna; certain alchemical weddings are, then, the mixture of the body, the spirit, the elixir, and the ferment.

In conclusion, one should note that pseudo-Avicenna was probably one of the ways by which the influence of Jābir reached Western alchemy, as well as being a wide diffuser of many Arabic physical and alchemical ideas. There are still few studies on this author, and his influence in the West has probably been underestimated.

Notes on Contributor

Sébastien Moureau, Aspirant du Fonds de la recherche scientifique (FNRS, Belgium), and Frances Yates Fellow at the Warburg Institute (2008), graduated in Classical philology and Oriental languages and literatures at the University of Louvain. He is currently preparing for his PhD at the University of Louvain, a translation and commentary of the *De anima in arte alchemiae* of pseudo-Avicenna. His article 'Editing the *De anima in arte alchemiae* of pseudo-Avicenna: a method of edition', will appear in the proceedings of the conference entitled *Chymia. Science and Nature in Early Modern Europe (1450-1750). International Conference. El Escorial (Madrid), 7-12 September 2008*. Address: Institut orientaliste — Université Catholique de Louvain, Place Blaise Pascal, 1, 1348 Louvain-la-Neuve, Belgium; E-mail: sebastien.moureau@uclouvain.be.