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KIMIĀ

KIMIĀ, "alchemy." As a medieval science, alchemy must be carefully distinguished from modern chemistry. Externally, the purpose of alchemy was the conversion of base metals like lead into silver or gold by means of long and complicated operations leading to the production of a mysterious substance, the "philosopher's stone," able to operate the transmutation. The idea is that all metals belong to the same species and evolve slowly in the earth from the state of lead to pure gold, and that the "philosopher's stone" can artificially foster this evolution. Given these considerations therefore, we have to distinguish alchemy from mineralogy, metallurgy, or pharmacology, which have very different aims. Behind the "materialistic" conception of metallic transformation however, many alchemists tried to discover the secret of the spirit's action in Nature and the Universe, the macro-cosmos. By acquiring this divine wisdom of action, they aspired to discover their inner (microcosmic) reality, and transmute themselves (Corbin, 1986, pp. 71-87, 196-208; Nasr, chapter 9).

Alchemy appears as a specific discipline in Alexandria, from around the 1st to 3rd centuries CE. A complex literature, mainly written in Greek and in a very obscure and esoteric style, is the main attestation to the rise of this discipline. It developed first in Egypt, but gained ground in other parts of the Middle East during the Byzantine period. Soon after the Islamic conquests, many Muslim intellectuals and scholars appeared interested in this original science (Sezgin, pp. 14-30; Ullmann, p. 151 ff). Ruska (1923, p. 23 ff) had suggested that the Sasanian medical schools played an important role in the spread of interest in

alchemy.

A huge pseudo-epigraphic literature of alchemical books was composed in Arabic, attributed to mostly Greek authors, historical or apocryphal (Plato, Aristotle, Hermes Trismegistus, Apollonios of Tyana, Zosimus). The names of Persian authors also appear (Jāmāsb, Ostanes, Mani; cf. Sezgin, pp. 51-54, 59-60; Ullmann, pp. 183-86), testifying that alchemy-like operations on metals and other substances were also practiced in Iran. The great number of Persian technical names (*zaybaq* = mercury, *nošāder* = sal-ammoniac) also corroborates the idea of an important Iranian influence. We are still unable however to ascertain precisely whether all these texts are translations or texts written directly in Arabic from a Greek model in the Islamic area, which certainly occurred in several cases (Vereno, 1992, pp. 134-339); nor can we really reconstruct the historical evolution of the rise and development of alchemy in the Islamic world. Several Muslim authors also started writing on alchemy, but we do not know exactly who and when. Even if the texts attributed to ʿAli b. Abi Ṭāleb (q.v.; Corbin, 1986, Pt. I), the Umayyad Prince Ḵāled b. Walid or Jaʿfar al-Ṣādeq (q.v.; Ruska, 1924, I and II) are apocryphal, there is no doubt that alchemy was widely practiced from the 8th century (2nd century A.H.) onwards. It was not only translated from Greek into Arabic, but also Islamicized, re-thought within the frame of Islamic conceptions, references, and symbols. This science was generally called *al-ṣanʿa al-elāhiyya* ‘the divine art’. The name *kimiā* (Gr. *khēmeía,* the art of alloying the metals) seems to have been used at first in a rather pejorative way (meaning something like “trickery”; cf. Sezgin, pp. 3-7).

It is difficult if not impossible to know the extent of the practice of alchemy in medieval Persia. We only have several hints of its importance through a significant amount of technical literature. The huge corpus attributed to Jāber b. Ḥayyān is the pivotal work in this literature, gathering some 2,000 treatises on alchemy and related sciences (astrology, medicine, magic). According to this corpus, Jāber was a disciple of Imam Jaʿfar al-Ṣādeq, but, as Paul Kraus pointed out, the great number of anachronisms (e.g. quotations from Greek texts translated at later dates; hints at later historical events), and contradictory data, suggest a more recent date. The treatises were probably composed in Iraq by a school of Shiʿite alchemists during the 9th and 10th centuries (Kraus, 1943, *Introduction*). The most original theory in the huge material exposed by the Jaberian corpus is his endeavor to build up a global science including all “natural sciences.” He bases his theory on a precise

knowledge of proportions between the Elements, called the ‘Science of Balances,’ *ʿelm al-mizān* (Kraus, 1942, Part V). The idea is that all substances in our universe are made up of different proportions of Fire (hot and dry), Water (cold and wet), Air (hot and wet) and Earth (cold and dry; see HUMORALISM). Therefore, if the alchemist (or physician, or pharmacist) succeeds in finding the proportions of Heat, Dryness, Cold and Humidity in substances, he also becomes able to transform them, to heal sick bodies and transmute lead into gold. The Jaberian corpus exposed a series of mathematical proportions directing the substances; the noblest of all was the “Balance of Letters,” built on the idea that the name contains the secret of the structure of what it refers to. The ultimate purpose of the Jaberian authors, however, was to obtain the highest knowledge, the key to being, the deepest secret possessed by the Imam (Corbin, 1986, Part III; Lory, 1989, Part II).

Not all alchemists were working in that Gnostic direction. The great physician Moḥammad b. Zakariyā Rāzi (d. 925) wrote also some thirteen treatises on alchemy or perhaps even more, including his famous *Book of Secrets* (*Ketāb al-asrār*). His distinctly factual descriptions of operations, devoid of any Gnostic or mystic elements, evoke the style of modern chemistry; but Rāzi was also a firm believer in the transmutation of metals (for his bibliography, see Sezgin, pp. 275-82; Ullmann, pp. 210-12).

The Shiʿite Ebn Omayl (10th century) also wrote important treatises in a style replete with allegorical symbols and images, some of which also contained alchemical poems. His main treatise, *Ketāb al-mā al-waraqi wa’l-arż al-najmiyya (*The book of silver water and astral earth), was translated into Latin in the 12th century, as were other alchemical texts in Arabic, namely several treatises by Jāber (Geber) and Rāzi (Rhazes).

Moʿayyad-al-Din Ṭoḡrāʾi Eṣfahāni (d. 1121) should also be mentioned among the greatest representatives of classical *kimiā*. He was a senior official at the court of the Seljuks (Saljuqs), and a well-known author and poet. He wrote major treatises on alchemy, like the *Mafātiḥ al-raḥma wa-maṣābiḥ al-ḥekma*, quoting a number of previous Greek and Islamic authors (Ullmann, pp. 229-31).

Lastly, we must mention Aydamer Jaldaki (d. 1342; cf. Ullmann, pp. 237-42; Corbin 1986, Part II), author of a monumental opus on esotericism in general, and alchemy in particular. He claimed to have studied alchemical books for seventeen years. He commented on several well-known texts of Greek or

Islamic alchemical authors; and his *Ketāb al-borhān fi asrār ʿelm al-mizān* is an unequalled encyclopedia of the sciences of his time, mainly the esoteric ones: astrology, magic, and especially alchemy. Although his works remain practically unknown until now, he must have been one of the most outstanding intellectual personalities of his time.

Alchemy as an applied and mystical science was studied up to the 19th and even the 20th centuries. Ḥosayn Wāʿeẓ-e Kāšefi (d. 1505) had a very high opinion of its importance as a religious discipline. In his *Asrār-e qāsemi*, he indicates that *kimiā* is the noblest of all occult sciences (i.e. astrology and various kinds of magic) because of its spiritual dimension. He mentions, along with Jāber, Toḡrāʾi and several other famous authors, Jalāl-al-Din Rumi and his son Solṭān Walad among the important alchemists in Islam. This clearly illustrates how close this science was to mysticism (Lory, 2003, p. 538). It also appears as a living discipline in the huge corpus of works by Shaikhi (see SHAIKHISM) scholars. Šayḵ Aḥmad Aḥsāʾi (q.v.), in his *Jawāmiʿ al-kalām*, while explaining the transformation of the human body into a spiritual and immortal resurrection body, refers to the transformation of silica and potash into glass, of glass into crystal and of crystal into diamond, and to the alchemical transmutation of tin into pure silver (Corbin 1979, pp. 121f, 225f). A fine indication of the remains of alchemy can also be found in Moẓaffar-ʿAli Šāh's (d. 1800) *Nur al-anwār*. He was a renowned physician from the city of Kermān who joined the Neʿmat-Allāhi order and composed interesting alchemical texts written in *maṯnawi*form in which he explains the main tenets of the discipline. Everything on earth is a manifestation of God's spirit, thus everything belongs to *kimiā*. For him, Alchemy explains birth, death, and resurrection, the outer dimension of prophecy (*nobowwat*) and inner dimension of *welāyat*. The key concept here is the union of opposites (spirit/substance, male/female, hot/cold, etc.) The "philosopher's stone" is the very union of opposites, and not a particular substance (Lory, 1998).

We notice that for most authors—with the notable exception of Rāzi—alchemy represents a complete conception of the universe, of relations between earthly beings and the cosmos. This complete *Weltanschaung* relies on other esoteric disciplines like astrology and numerology that play a major role in the understanding of alchemical theories. These theories are actually plural: there is not one unified alchemical way of operation. Jāber expounds his theory of Balances in some texts, but expresses in other texts his view with the help of the Mercury/Sulphur theory (Kraus, 1942, p.1ff). According to this idea, the

cold and wet (Mercury) has to be combined with the hot and dry (Sulphur) to obtain the elixir and gold. Our knowledge of all these ideas, however, remains partial up to now. We must remember that we depend exclusively on the written texts, whereas the alchemical tradition appears to have been essentially an oral one, a master initiating a disciple to the material work at the furnace. Moreover, many of the extant treatises were composed by scholars who often resided at the court of princes, while most alchemists appear to have been technicians, pharmacologists (like Jāber), or physicians (like Rāzi); they probably always worked in a very discrete manner.

The different substances used by the alchemists are also known to us, though in a rather imprecise way. Useful lists of these substances are given by Rāzi in his *Ketāb al-asrār* and his *Madḵal al-taʿlimi*. But the real nature of the substances he describes is not always easy to determine. Most alchemists used a lot of coded terminology (*Decknamen*) to hide the exact nature of the substances. This seems to have been part of the esoteric attitude of most of them. Many of these code-names are difficult to recognize; we are fortunate enough to have ancient dictionaries extant to explain them. Others are very common, for example the names of the planets referring to metals: Sun = gold, Moon = silver, Jupiter = tin, Saturn = lead, etc. The use of these *Decknamen* is not as frequent in the Arabic-Persian alchemical literature as in the European texts (Siggel, 1951; Ullmann, 1972, pp. 266-70). It is however sufficient to obfuscate our understanding of many passages describing alchemical operations. On a deeper level, we have to bear in mind that alchemy is not just another description of the world we know, but a radically different one. While the natural sciences describe the essence of beings and their accidents, alchemy describes processes. Alchemy relates to dynamic events, not static facts. And that makes its texts very hard to understand. An alchemist may use the word *ruḥ* ‘spirit’, to indicate a gas, but may also use it for a liquid or even a solid. This means that this solid or liquid is in the process of becoming gaseous. A precise substance-let us say ammoniac-may be indicated by different names, according to the dynamics of the exact operation described.

What did the work of the alchemists look like when searching for the philosopher’s stone? Actually, we have many descriptions of the technical items and devices. Important explanations are to be found in the two works of Rāzi mentioned above. He describes the different kinds of vessels, pots, and crucibles that were used at his time. The most important is the distillatory device, because most of the time the alchemical operations were based on long

and repeated distillations with the aim of refining the subtle elements from the rest. Rāzi describes his elements: the lower vessel (*qarʿ*) lying on the fire, the alembic, the receptive vessel (*qābila*), and many other details, the installation of the device being generally more complicated (see also Ullmann, 1972, pp. 261-65). Indeed, the alchemists believed they could obtain gold and silver by means of throwing small quantities of the "philosopher's stone" on melted lead for example, this "stone" working on the metals like yeast in the fabrication of bread, or medicine in the healing of the body of "sick" metals. The question of alchemy was thus the preparation of this stone, also called "supreme elixir." The most common way to obtain this "supreme elixir" was to take a proportion of a special matter, the *material prima*, which was actually never really identified, and to separate each Element. A threefold distillation is necessary (Kraus, 1942, p. 5f). The first, easily distillated matter is identified with "Fire." The second, a more vaporous distillate, is called "Air" or "Oil." The third is a liquid identified with "Water"; and the solid remaining at the bottom of the apparatus is the "Earth." Each of these four Elements is then taken separately and "purified," that is to say submitted to several kinds of "washings" in water, and also cleansed through processes of heating. These operations are supposed to sweep away all the impurities that do not belong to the exact nature of the Element. Then, the four Elements are joined together, "married" two by two. The substance resulting by the melting of the four Elements obtains a pure red color; its consistence is that of wax. It is the philosopher's stone. The more its components are purified, the more it is efficient and, when thrown upon melted metals, can transmute in bigger quantities. It seems however that the operations aiming at metallic transmutations could also be based on the equilibration of metals (lead being made hotter and damper to become gold), without the intermediary of the philosopher's stone.

The theories of alchemy were, however, very controversial, mainly on the question of the possibility of transmutation, of the passage from one species to another. Was this not an absurd challenge against the cosmic rules ordered by God? In his *Šefāʾ*, Ebn Sinā (d. 1037; see AVICENNA) in particular considered the idea of transmutation of substances as philosophical nonsense. According to him, the alchemist may change the accidents (color, consistence) of a species-a metal-but not its very substance. The alchemical treatises attributed to Ebn Sinā resulted in some controversy, but the general consensus is that they are apocryphal (Sezgin, pp. 7-9; Ullmann, pp. 222-24). However, several thinkers and alchemists defended the idea of the transmutation. Among the

most famous of them was Fārābi (q.v.; d. 950) who wrote a philosophical explanation of the nobility of alchemical science, arguing that metals are one in species and that transmutation was difficult, but not impossible. The difficulties in the way of research stimulated the searcher's thought, and enabled him to comprehend many sciences. Tuğrāʾi's *Ḥaqāʾeq al-esteššhād* is also an outstanding apology for alchemy, directed especially against Avicenna's arguments about the stability of substances. Faḵr-al-Din Rāzi, the celebrated theologian (d. 1209), in his *Mabāḥeṯ mašreqiyya* defended the possibility of transmutations, the earth being for him like a womb in which metals are growing and ripening (for the whole controversy, see Sezgin, pp. 6-11; and Ullmann, pp. 249-55). This is a crucial point, giving rise to the questions: what is essence/what is accident? What is matter, what is spirit? What does the word 'being' finally mean? We notice that the whole debate is mainly a theoretical one, and that verification of whether alchemical operations actually succeeded or not is not the main point.

It is also important to note a prevailing and popular hostility toward alchemy. Many people, including political leaders, suspected the alchemists of being forgers; an assumption often justified because of the real threat of trickery in the coloring of the metals and forging their weight to give the appearance of silver or gold, thereby producing false coins.

We must not forget, however, that if some alchemists endeavored to concoct the philosopher's stone, others searched for more simple elixirs. Their purpose was often more medical. And some progress could be made, thanks to their research, towards what was to become "chemistry." All these ideas, devices, and operations were transmitted to Europe through translations from Arabic into Latin in the 11th to 12th centuries onward. These works proved very popular and alchemy spread all over Western Europe, eventually contributing to and heralding the emergence of modern chemistry and pharmacology.

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