

**Michael Psellus:
a discussion about the substance of matter
and alchemy's techniques
in eleventh-century Byzantium¹**

Gianna Katsiampoura

IHR/NHRF, Greece

The purpose of this presentation is, through the analysis of the content of two Byzantine texts written by Michael Psellos, to make an explanatory approach to the natural philosophy and alchemical practices within the epistemological context of the period. Michael Psellos is chosen because, on one hand, he was, as we will see, one of the scholars who attached particular importance to the study of the natural world, also as a subject for teaching. He was a scholar in the imperial court, monk for a while, head of the Imperial School of Philosophy under Constantine IX Monomachos (1042-1055) with the rank of the supreme philosopher, “polyhistor” on account of his multiplicity of interests. On the other hand, he lived in the 11th c., when the interest in the natural

¹ This presentation was part (of Symposium S054. Alchemy: the relationship between working and knowing from late antiquity to the seventeenth century), in [24th International Congress of History of Science, Technology and Medicine](#), Manchester 2013, <http://www.ichstm2013.com/programme/full-programme-abstracts.pdf>

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world essentially made its appearance² and probably was associated with a more general secularization of Byzantine thought.

Work by Psellos allows us to see the legitimate Byzantine view about natural philosophy and its relation with alchemy as a philosophical subject about the transmutation of matter. The main question is, according to Psellos, in which philosophical principles the transmutation of matter based, within the context of the Medieval epistemological model, where discourse on the natural world was ambiguous, often unclear, and lacking the support of experimental verification.

It should be noted here that this presentation is part of a wider researching program in progress about natural philosophy and alchemy in Byzantium.

The texts

Psellos in his work *Διδασκαλία παντοδαπή* (published as *Omnifaria Doctrina*)³ he attempted to bring together in its chapters the hitherto scattered and fragmentary knowledge of the natural world. This text was written circa 1256, and Michael Psellos dedicated it to Michael Doukas, who was his student and the future Byzantine emperor Michael VII. In 201 small chapters Psellos tried to explain a lot of themes about divine, soul, virtue, nature, cosmogony, astronomy, physiology and natural

² Kazhdan A.P., Wharton Epstein Ann, *Change in the Byzantine Culture in the Eleventh and Twelfth centuries*, University of California Press, Berkeley-Los Angeles-London 1985

³ Westerink L.G. (ed.), *Michael Psellus, De Omnifaria Doctrina*, J.L. Beijers N.V., Utrecht 1948.

phenomena. The *Διδασκαλία παντοδαπή* was widespread, it has survived in a lot of manuscripts and, inter alia, Michael Glykas, in 12th century, copied a part of it in his work in the form of Hexaimeron (*Βίβλος Χρονική*),⁴ a popular work for not educated people.⁵ On the other hand, some Psellos' contemporary historiographers, like Zonaras or Skylitzes' Continuatus continue to accuse him for this work, of traditional Christian perspective.⁶

The text *Περί χρυσοποιίας (On gold making)*⁷ is a letter by Psellos to the Patriarch Michael Kerullarios or to John Xiphilinos, in which the writer, still relatively young, discusses the production of gold, outlining a number of possible methods. In his letter, Psellos for a start insists that the basic principle for approaching the natural world, as previously indicated, is that of attempting to discover the reasons for material world. In this framework, he explains that he searches the reasons for the transformation of material things in changes of proportion of the four basic elements that comprise them, as is indeed appropriate for the natural sciences, in his opinion. And to prove the soundness of this interpretation of transformations in things, he cites the example of the roots of an oak tree, which has been transformed into stone. He explains this phenomenon through change in proportions of the four elements that comprise it as a result of the action of a lightning bolt that has

⁴ Μιχαήλ Γλυκάς, *Βίβλος Χρονική*, Bekker, Bonne 1836.

⁵ Μαυρομάτη-Κατσουγιαννοπούλου Σ. (1994), «Η Εξαήμερος του Μιχαήλ Γλυκά: μια εκλαϊκευτική πραγματεία του 12^{ου} αιώνα», *Βυζαντινά* 17, σ. 7-59

⁶ Ljubarskij J.N. (2004), *Η προσωπικότητα και το έργο του Μιχαήλ Ψελλού*, εκδόσεις Κανάκη,

⁷ Bidez J., «Michel Psellus, L'Épître sur la Chrysopée», *Catalogue des Manuscrits Alchimiques Grecs*, vol. VI, Bruxelles 1928.

minimized the presence of the elements of water and air. According to Psellos, then, things mutate for physical reasons and not on account of “monstrous or other unmentionable factors”.

Principles about matter, substance and transmutation

The more important point in *Διδασκαλία παντοδαπή*, in my opinion, from an alchemical view is, according Psellos, the relation between making and understanding. Psellos, talking about divine and human mind, writes that the making is located in understanding such as the understanding is located in making.⁸ This principle in the epistemic level is very serious for the scientific discussion in Byzantium as well as in the whole Middle Ages, when the scientific observation of nature, precise description of what is observed and, the most important, experiment in accordance with a strict methodology were unknown. As we can see, the making, the basis of alchemical process, is legitimated by Psellos in a philosophical context.

The first sentence of *Χρυσοποιία* is exactly about the relationship between philosophers and practical art of alchemy (εμπύριος και βάνουσος).⁹ Psellos claims that the alchemy, which is accused as manual and crude according to the ancient Greek tradition of demarcation of sciences and arts, must become a philosophical discipline. His proposal is that the philosopher has to study the alchemical practices and techniques, which are valuable for scientific

⁸ Και η ποίησις εν τω νοείν και η νόησις εν τω ποιείν, 28.10-11

⁹ 1.4-10

knowledge. So, according to Psellos, the alchemical practices and techniques become scientific activity, not occult or magic.

The second serious point in *Omnifaria Doctrina* is Psellos' perception of Creation and functioning of the natural world. As he writes, God is the creator and the first cause, but after him in the natural world we could find a lot of causes, which explain the creation and function of bodies.¹⁰ So, this dogmatic principle allows the changes of natural bodies, as well as human action and intervention. The scholar, supporting the relative autonomy of the laws of nature, legitimates the human effort to change the natural bodies on the basis of natural laws.

Respectively, in *Χρυσοποιία*, Psellos on the basis of the principle that the cause of transformations in things must be sought in nature, he goes on to present and analyze the methods for producing gold. At no point in text, are there to be found references to the divine will. Presentation and interpretation of the issues is transparently secular. The basic interpretative device, i.e. the relationship between cause and effect, claims universal validity insofar as hermeneutic approaches to the natural world are concerned.

Another point which relates Psellos' philosophy with alchemy is his notion about matter and things. In his opinion, according to *Omnifaria Doctrina*, on Earth, all material things are altering and changing, as he writes in various paragraphs.¹¹ Material bodies could change

¹⁰ Ἀρχή των ὄντων πρώτη μεν και υπεράρχιος ο Θεός, μετά δε θεόν πολλαί αρχαί των φυσικών πραγμάτων εισί, §83.2-3.

¹¹ Πράγματα αλλοίωτα και μεταβλητά, 17.4.

quantitatively and qualitatively.¹² On the other hand, matter is the main basis of the four elements (earth, water, fire, air), which we can keep in mind if we remove from them the qualitative characteristics. Nevertheless, this pure form of matter doesn't exist in the natural world.

On the above basis of the principle that the cause of transformations in things must be sought in nature, as well as bodies could be changed quantitatively and qualitatively, Psellos in *Χρυσσοποιία* goes on to present and analyze the methods for producing gold, emphasizing that for himself the question of transmutation of stones is of equal interest. As he writes, the alchemical art processes matter.¹³ However, he limits the discussion on the one hand to methods for production of gold, on the other to directions for doubling of its existing quantity, improvement of its quality, and heightening of its lustre.

The last crucial point in *Omnifaria Doctrina* is the issue about mixing and constitution of bodies.¹⁴ The argument for this process is related with alchemical process, so we can find here another relationship between philosophical view of matter and alchemy. In *Χρυσσοποιία*, we can find a lot of examples for the aforementioned mixing.

Conclusions

In summary, I want to emphasize a crucial point, the aforementioned relation between knowledge and practice. Psellos considers alchemical practice and technique scientific process, a radical view in the traditional

¹² See §86

¹³ Τας ύλας μετακινεῖν καὶ τὰς φύσεις μεταποιεῖν, 1.6-7.

¹⁴ Περί μίξεως καὶ κράσεως, § 90.

epistemological context. He believes that alchemical practice is a way to know the natural world.

This is a very important change of the epistemological status of alchemy in Byzantine scientific thought and maybe is related with the collections of alchemical works after the 11th century.