CHEMICAL ARTS AND RELIGION IN ANTIQUITY. AN INTRODUCTION

Noemi Borrelli
Università di Bologna
noemi.borrelli@unibo.it

Matteo Martelli
Università di Bologna
matteo.martelli@unibo.it

Gods no longer inhabit the natural world that constitues the object of inquiry for contemporary natural scientists. Their commitment in leaving supernatural entities out of any scientific discourse is often described as methodological naturalism, an expression that was first introduced by the American philosopher and theologian Edgar S. Brightman in 1936.[1] This attitude and methodology seem to inform every branch of contemporary science, from astronomy and physics to biology and chemistry. From a history of science perspective, however, naturalism – being it method-

1. The expression was coined in his presidential address to the American Philosophical Association, which was published the year after in the journal *The Philosophical Review* (Brightman, 1937). See Harrison, 2019, p. 2 and Kim, 2022.

https://doi.org/10.20318/*arys*.2022.7262 - *Arys*, 20, 2022 [15-25] issn 1575-166x

ological or ontological – remains a complex and debated category.[2] Chemistry is a case in point, since its relationship with religion changed according to the historical context taken into account: as recently pointed out by John H. Brooke, chemistry could either dismantle religious beliefs or be "on the side of angels".[3]

Alchemy, in particular, shows an intimate combination with religion throughout its history. Medieval and early modern practitioners reflected religious values and beliefs in their writings on alchemy, an "art" that was primarily described as a gift of God (*donum Dei*). Religious writers, on the other hand, often drew on alchemical ideas and practices to explain and adorn theological truths with suggestive metaphors.[4] This holds true for the earliest phases of alchemy as well, when this discipline took shape by inheriting and repackaging a wide set of chemical arts – *e.g.*, dyeing procedures, metalworking, glassmaking, perfume-making – that were firmly rooted in the technological lore of different Mediterranean civilisations. All these arts were interwoven with and informed by different ways of thinking about gods and supernatural entities, which developed and travelled between Babylonia and Athens, Alexandria and Byzantium. This special issue of ARYS is a collection of articles that investigate the first known steps of chemical arts in antiquity and how such technical traditions were shaped by and bound to the religious contexts in which they flourished and were transmitted.

What the concept of *chymeia* – the ancient term from which modern "chemistry" or "alchemy" derive – stood for in these times is hard to define. According to the very own words of the Graeco-Egyptian alchemist Zosimus of Panopolis (3rd-4th cent. CE), it already begot debates among early philosophers and alchemists. Alchemy, Zosimus explains, must not only deal with how silver can be dyed gold, but it must also include a wider spectrum of practices that could produce a variety of chromatic transformations.[5] This debate did not take place in a vacuum, but it was firmly rooted in a rich technical and artisanal tradition, let alone in dense ritual and religious settings, which alchemy inherited and reshaped when it made its first steps in Graeco-Roman Egypt. Zosimus, indeed, first introduced the term *chymeia* in the framework of a wider discussion on the revelation and circulation of this art: the first alchemical book, he claims, was revealed by the fallen angels and then commented on by Egyptian priests, who somehow misunderstood its original contents. This

2. See, for instance, Harrison, 2019 and 2020 (with further bibliography).

3. See Brooke, 2019.

4. See Principe, 2013, pp. 190-206; Nummedal, 2013 (introduction to a special issue of the journal *Ambix* fully devoted to alchemy and religion in Christian Europe).

5. See Martelli, 2014, pp. 9-20.

narrative – which combines biblical (although apocryphal) and Hermetic elements – exemplifies the highly syncretic nature of ancient alchemical texts, which often drew on writings belonging to different religions and philosophies. Other narratives stretched the chronological and geographical boundaries of *chymeia* by insisting on its Pharaonic or Persian origins. Its secrets, indeed, had been encoded in Hieroglyphic inscriptions[6] or in tablets written in "Persian characters", a detail that might be reminiscent of ancient cuneiform script.[7] The historical accuracy of these stories remains difficult to assess and requires constant revision in light of the acquisitions of new sources and fresh insights into the available material. In the long run, it appears that inputs coming from different traditions stratified on one another, creating complex narratives on the origin of this ancient knowledge.

This knowledge and its foundational myths were preserved in Byzantine manuscripts transmitting anthologies of texts that rank among the earliest writings on alchemy according to modern scholars, from humanists to contemporary philologists and historians of science. In his *Pandectae*, for instance, Conrad Gessner included these Byzantine collections among the books listed under the rubric (XIII 9): *De chymia, quam aliqui alchemiam, alij chemiam, chymisticam, alchymiam, et arte sacram vel magnam appellant*.[8] The reference to the "sacred art" (*ars sacra*) is not coincidental. This expression, indeed, occurs far more frequently than the term *chymeia* in late-antique and Byzantine sources. In the *pinax* (roughly a table of contents)[9] that opens our earliest Byzantine alchemical manuscript, *Marcianus* gr. 299 (10th-11th cent.), most titles refer to the main subject covered by the listed treatises as *hiera kai theia technē* (ἱερὰ καὶ θεία τέχνη), that is, "sacred and divine art": from the first work in the *pinax*, namely Stephanus of Alexandria's first lesson (*praxis*) to Zosimus of Panopolis's *Chapters to Theosebeia*.[10]

As the following articles will highlight, in certain cultic contexts, chemical arts were soon loaded with additional values that transcended their immediate artisanal nature, by virtue of which the allure of "sacred and divine art" was easily bestowed

6. See, for instance, Zosimus of Panopolis's *Final Account* in Festugière, 1986, pp. 278 (French translation) and 365 (Greek text).

7. See Martelli & Rumor, 2014, pp. 44-45.

8. *Pandectarum sive Partitionum universalium Conradi Gesneri Tigurini, medici & philosophiae professoris, libri xxi* (Zurich: Christophorus Froschoverus, 1538), p. 174. See Matton, 1995, p. 317.

9. The *pinax* records 52 titles, including texts originally transcribed in quires that went lost after a later rebounding of the manuscript. On the relationship between the *pinax* and the actual contents of the manuscript, see Saffrey, 1995.

10. See Roberts, 2022.

upon them. The material transformations achieved with technical dexterity intertwined with concepts of purity and moral rectitude, thoughts on the sublimation of the soul from the matter, and complex cosmological and astral considerations. The theoretical foundation of these arts adjusted concurrently with changes in the systems of beliefs, which were often but not exclusively sponsored by political agendas.

The articles here collected aim at providing a possible picture of what were the mechanisms that justified and, in some cases, regulated the complex relationships between ancient chemical arts and religion in distinct, yet contiguous geographical areas. The project brought together specialists working on diverse textual and technical traditions, who explored the topic from different perspectives and tested their hypothesis during an online workshop sponsored by the ERC project *Alchemy in the Making: From Ancient Babylonia via Graeco-Roman Egypt into the Byzantine, Syriac, and Arabic Traditions* (grant agreement no. 724914) and hosted by the University of Bologna in October 2021. This collection of essays is indeed the result of this choral journey.

The thematic unity of this volume is achieved by analysing the codification of alchemical works *vis-à-vis* their religious and cultic background, and the use of recurrent stock themes, a convenient way that helps at creating bridges across different traditions. The variety of approaches and the integration of diverse data point at challenging the long-held historiographical misconception that wanted to simplistically reduce alchemy to a purely spiritual endeavour or religious exercise.[11] The essays rather reason on the different ways in which ancient chemical arts interacted with religion, identifying common narratives, proposing thematic and argumentative parallels, and highlighting adjustments across space and time due to local cultural and religious inputs. To offer a balanced discussion, the special issue evenly covers the main issues of how technologies and rituals influenced one another, and how ancient alchemists encoded religious ideas and beliefs in their technical writings. Furthermore, the case studies here considered equally draw from historical, textual, lexical, iconographic, and technological data, and they offer a wide coverage of the geographic setting that experienced an early interest in chemical arts, embracing Egypt, Assyria, Babylonia, Greece, and Byzantium, from as early as 1200 BCE to as late as the 8th century CE.

Several themes characterize the volume, though each article may deal with more than a single theme at the same time. Identifying where and how the craftmanship involved in chemical treatments met religious practices proved to be a very productive research path. Recent studies have stressed the ritual uses of minerals and

11. On the origins and developments of this approach, see Principe, 2013, pp. 83-106.

"chemicals" in the "laboratories" of ancient Egyptian and Mesopotamian temples.[12] Here, artisans and cultic personnel routinely interacted with each other in their quest of creating divine hypostases, an endeavour that called upon both technical expertise and ritual exactness. A divine statue needed to be manufactured as well as to be born,[13] two actions that although intimately connected were substantially different. For both the Egyptian and the Mesopotamian cultic traditions, the juncture between these two complementary foci was the ceremony of the *Opening of the Mouth*. As discussed for both traditions (Escolano-Poveda, Borrelli & Escobar), this complex ritual rested upon an intricate system of beliefs, which connected multiple levels of existence through allegories and analogies, binding together celestial bodies, deities, human beings, and the material world. As it turned out in the essays, these procedures often took place in laboratories or workshops – known as the *House of Life* in Egypt (Blanco Cesteros, Escolano-Poveda) or as the *bīt mummi* or *bīt kūri* in Mesopotamia (Borrelli & Escobar) – annexed to the temple precincts, where craftsmen, scribes, and priests operated simultaneously. These historical encounters provide a first avenue for an intimate combination of religious beliefs with artisanal practices. This bond is further strengthened in Graeco-Egyptian and Byzantine texts, which frame the alchemical art in complex narratives reasoning on its divine origins and nature (Blanco Cesteros, Dufault, Merianos). These narratives also mirror soteriological and eschatological tensions, which could emerge in visions, dreams, and myths packed with vivid metallurgical images (Escolano-Poveda, Dufault, Morrone). Chemical arts, indeed, fired the imagination of ancient thinkers, from early Greek philosophers and physicians to Gnostic, Hermetic and Christian writers.[14] Cosmological accounts often used an (al)chemical vocabulary, which shaped, for instance, both the description of the creation of souls in the Hermetic treatise *Korē Kosmou* and the cosmogony in the Coptic *Paraphrase of Shem*.[15] Likewise, Thespesius's vision in Plutarch's theological dialogue *De sera numinis vendicta* makes use of various metallurgical images to depict the punishments of vicious souls in the afterlife (Morrone). Religious texts, on the other hand, often provided key elements for alchemical narratives, which could draw on a variety of sources: from Biblical canonical and apocryphal writings – such as the *Book of Enoch* (Blanco Cesteros) and the Old and New Testament (Merianos) – to

12. See already Aufrère, 1991, and various sections in Beretta, 2022 (*passim*).

13. See Dick, 1999, p. xi, and Hurowitz, 2003.

14. See Aufrère, Cale & Martelli, 2022, pp. 132-134. On the use of alchemical metaphors in the early Christian literature, see also Tommasi Moreschini, 2007.

15. See respectively Festugière, 1967 and Burns, 2015.

Hermetic and Gnostic treatises (Blanco Cesteros, Dufault). Alchemy was conceptualized as a gift granted by supernatural entities, being them biblical angels, demons or the Christian God. The recipients of their revelation varied according to the different religious and cultural ideas embedded in the alchemical sources: from the Egyptian goddess Isis (Blanco Cesteros) to Byzantine alchemists, such as Christianos (Merianos) and Stephanus (Carlotta). According to the latter, a correct understanding of the revealed art and of the earliest sources that explained it could lead to fully appreciate God's power and his creation (Carlotta). In a way, Byzantine texts fully christianized the same preoccupations that already occupied Egyptian and Babylonian artisans, scribes, and priests operating in the same templar environment: manipulating natural substances and reaching the divine.

As it can be appreciated in Noemi Borrelli's and Eduardo Escobar's comparative study on ritual crafting in the cuneiform tradition (*Crafting Purity in Assyro-Babylonian Procedures. Time, Space, and the Material World),* the manufacturing of divine objects required a great deal of expertise, ranging from metalworking to glassmaking and leather dyeing, which often aimed at chromatic transformation. However, handling the divine was a major undertaking, and therefore these artisanal procedures could not be performed on the spur of the moment but had to be carefully planned as both for timing and for the appropriateness of the personnel and the material involved. Crafting divine objects implied crafting their purity. The uncorrupted status was achieved, practically, through elaborate rituals and, theoretically, through analogies and plays on the written word. By comparing cuneiform procedural text traditions, three themes have been identified: the appropriate time for the manufacturing procedure, the purified workspace where it took place, and the pure material that was used. This narrative of purity was created drawing from hemerologies, induction rituals, and theological premises establishing the divine nature of the manipulated elements. Temple ateliers were thus key for priests and artisans to rely on each other and exchange their knowledge at different levels.

The article written by Marina Escolano-Poveda (*Zosimos Aigyptiakos. Identifying the Imagery of the "Visions" and Locating Zosimos of Panopolis in His Egyptian Context*) shows how the allegorical language used by Zosimus of Panopolis in his descriptions of alchemical procedures draws indeed from the Graeco-Egyptian temple practices of which he had first-hand experience. This innovative approach that scrutinizes Zosimus's works through an Egyptological lens allows us to identify the original religious substratum of his "Visions", which goes back to the mysteries of Osiris. Scenes of dismemberments, rebirthing, and burning, allusions to the lunar cycle, ascension paths, and colour-codes, all concur to create Zosimus's narrative of transmutation. Many of these motifs find a tangible

echo in the iconographic apparatus of the Osirian chapels at Dendera and in the very own architectural features of this temple, which likely represent the closest parallel to the temple of Min at Akhmim frequented by Zosimus. Here, Zosimus might have had the chance to observe and learn the rituals enacted by the Egyptian priests, regardless of the fact that he himself was not a priest. The initiated temple personnel were distinguished from the mere artisans, and yet even the uninitiated must have been bound to a cautionary level of secrecy due to their engagement with divine matter. A situation that fits the Mesopotamian temple tradition as well (Borrelli & Escobar). This is indeed the atmosphere that Zosimus came to know, that influenced his own writings, and that he eventually criticized.

In fact, as discussed in Olivier Dufault's article (*Was Zosimus of Panopolis Christian?*), Zosimus did not drawn on such motifs without building upon them new meanings deriving from his own faith. Regardless of the original religious connotations of his allegorical discourse, Zosimus used what Dufault labelled as "assimilative interpretation", a process leading to the reshaping of older traditions to fit a new theological scenario. In Zosimus's dreams, the metallurgic allegories, the sword-bearing character that cuts the flesh, and the dismemberment of the body – images that heavily relied on Egyptian antecedents – can be easily read as hints on how to transform matter into pneuma. Zosimus thus might have purposely chosen those elements of the Egyptian religion that bore resemblances to his Christian ideas and acknowledged to them a certain degree of truth, although these beliefs were found wanting once tested against Christian wisdom. Dissecting these allegories, Dufault shows how some of Zosimus's alchemical reasonings were imbued with soteriological messages that betray him as Christian and highlight the influence that classic Gnostic treatises exercised upon him. Zosimus's Christology might have been in dissonance with the main theological interpretation of the time, a possibility that might explain the apparent conundrum on the alleged secrecy of alchemical knowledge found in his works.

Along with Zosimus's alchemical dreams, other ancient "visions" were shaped by metallurgical allegories. In this regard, Daniele Morrone's article (*Quenching Greedy Souls in Metal Lakes. A Metallurgical Image in Thespesius's Vision of the Afterlife*) provides an in-depth analysis of the eschatological myth that concludes Plutarch's theological dialogue *On the Delays of the Divine Vengeance* (*De sera numinis vendicta*). The vividness of Plutarch's description of the afterlife and the physical features of the punished souls only outwardly contrast with Plutarch's platonic stance. This vividness rather serves rhetorical purposes and is instrumental in fully displaying the different layers of meaning introduced by the rich metallurgical imaginary. A rigorous hermeneutical approach guides Morrone's close reading of the myth, which is interpreted in the framework of Plutarch's philosophical corpus. This allows the

author to contextualize and explain many artisanal details embedded in Thespesius's visions, from the famous image of the metal lakes to the stains of the greedy souls. Their immersions in the gold, lead, and iron lakes - Morrone argues - do not point to processes of purification or transmutation. Rather than being perfected, the souls are thus exposed with their real vices. This interpretation moves away from earlier alchemical readings of the passage (discussed in the paper). Morrone, on the other hand, does not exclude that Plutarch could have merged Platonic and Aristotelian elements with suggestions derived from the same syncretic Egyptian tradition that inspired Zosimus's *Visions* as well as other early alchemical writings.

One of the most intriguing products of this syncretism is the so-called *Letter of Isis*, the focus of Miriam Blanco Cesteros's essay (*(De)Constructing an Authoritative Narrative. The Case of* The Letter of Isis), which addresses the role of initiations and the call for secrecy found in Graeco-Egyptian alchemy. The literary masterpiece about the origin of alchemical knowledge, the *Letter of Isis*, is investigated by identifying tropes used by the first alchemists to create the narrative of sacred art and to grant authority to their writings. These included the revelation of an esoteric knowledge from a divine source to an initiated acolyte. The *Letter of Isis* taps into images that have clear Greek, Hebrew, and Egyptian backgrounds. Among these, one can recall the oath sworn by Isis to seal her initiation, whose parallels with older and coeval traditions are numerous and fruitfully discussed by the author. Here, the oath imagery builds upon known themes such as the opposition between light and darkness, the four elements, a colour-code system to address the transformation process, the descent from the heights of heaven to the depth of the earth, and the journey to the Netherworld. These themes, that appear in older cultural contexts as well, such as the temple of Dendera (Escolano-Poveda), the Mesopotamian rituals (Borrelli & Escobar), and even the Greek philosophical tradition (Morrone), found their fortune also in the later alchemical lore, where they were reinterpreted in view of new beliefs (Dufault, Merianos).

The divine origin of the alchemical knowledge and the prerequisite of virtue that the philosopher-alchemist had to possess to gain access to the divine wisdom are also the focus of Gerasimos Meranios's discussion on Christianos (*The Christianity of the Philosopher Christianos. Ethics and Mathematics in Alchemical Methodology*). The moral rectitude is the compass pointing at the genuine knowledge, separating the true alchemist from the false ones. Yet, entangled with the righteous moral conduct, there is the pursue of an alchemical methodology based on Neoplatonic mathematics. In his discourse, Christianos explains the mathematical principles at the base of the alchemical procedures tapping into well-known tropes, such as the egg as the image of the world and its four elements. On this analogy, he developed a taxonomy

of the alchemical substances and procedures by using an arithmetical and geometrical language. Christianos's interest in mathematics is not detached from his beliefs and his alchemical speculation: this interest points at proving the unity of the divine work as well as at offering a valid path to participate to the divine knowledge.

The gradual Christianization of ancient alchemical ideas and tropes characterized the Byzantine period, as shown in Vincenzo Carlotta's essay on Stephanus (*Introducing Greek Alchemy to Christianity. Inclusion and Exclusion of Religious Elements in Stephanus's* Lessons). In his *Lessons*, the author known as Stephanus explains the theory behind the alchemical practice, whose goal was to transform and purify substances acting upon their elementary components. Opening his discourse with prayers to God, however, Stephanus betrays his interest in reclaiming alchemy as a Christian discipline and its legitimacy as a field of study. In fact, the synthetic procedure at the core of the alchemical practice, *i.e.* creating one substance from many ingredients, mirrors the idea of overcoming the multiplicity of the material world to reach the unity of the divine.

Acknowledgements

This publication is part of the research project *Alchemy in the Making. From Ancient Babylonia via Graeco-Roman Egypt into the Byzantine, Syriac, and Arabic Traditions*, acronym *AlchemEast*. The *AlchemEast* project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement no. 724914).

We would like to thank the editorial board of ARYS, *Antigüedad. Religiones y Sociedaded*, for having kindly accepted to host this special issue on their Journal and Valentino Gasparini for his invaluable support during the editing of the volume. We would also like to express our gratitude to the colleagues who acted as "blind" reviewers on the articles, whose suggestions and comments contributed at improving the quality of our work. Special thanks go to Professor Lawrence Principe who kindly accepted to revise many papers included in this volume.

Bibliography

Aufrère, Sydney H. (1991). *L'univers minéral dans la pensée égyptienne*, 2 vols. Cairo: Institut Français d'Archéologie Orientale.

Aufrère, Sydney H., Cale, Johnson & Martelli, Matteo (2022). Culture and Science. Gods, Myths and Religions. In Beretta, 2022, pp. 113-138.

Beretta, Marco (ed.) (2022). *A Cultural History of Chemistry in Antiquity*. London & New York: Bloomsbury.

Brightman, Edgar S. (1937). An Empirical Approach to God. *The Philosophical Review*, 46.3, pp. 147-169.

Brooke, John H. (2019). Chemistry with and without God. In Harrison & Roberts, 2019, pp. 111-129.

Burns, Dylan M. (2015). Μιξεώς τινι τέχνῃ κρείττονι. Alchemical Methaphor in the *Paraphrase of Shem* (NHC VII,1). *Aries. Journal for the Study of Western Esotericism*, 15, pp. 81-108.

Dick, Michael B. (ed.) (1999). *Born in Heaven, Made on Earth. The Making of the Cult Image in the Ancient Near East*. Winona Lake, IN: Eisenbrauns.

Dupré, Sven (ed.) (2014). *Laboratories of Art. Alchemy and Art Technology from Antiquity to the 18th Century*. London & New York: Springer.

Festugière, Andrè-Jean (1967). La création des âmes dans la Kore Kosmou. In *Hermétisme et mystique païenne*. Paris: Aubier-Montaigne, pp. 230-248.

Festugière, Andrè-Jean (1986). *La révélation d' Hermès Trismégiste. I. L'astrologie et les sciences occultes*. Paris: Les Belles Lettres.

Geller, Marc & Geus, Klaus (eds.) (2014). *Esoteric Knowledge in Antiquity*. Berlin: Max-Planck-Institut für Wissenschaftsgeschichte.

Harrison, Peter (2019). Introduction. In Harrison & Roberts, 2019, pp. 1-18.

Harrison, Peter (2020). Naturalism and the Success of Science. *Religious Studies*, 56, pp. 274-291.

Harrison, Peter & Roberts, Jon H. (eds.) (2019). *Science without God? Rethinking the History of Scientific Naturalism*. Oxford: Oxford University Press.

Hurowitz, Victor A. (2003). The Mesopotamian God Image, from Womb to Tomb. *Journal of the American Oriental Society*, 123.1, pp. 147-157.

Kahn, Didier & Matton, Sylvain (eds.) (1995). *Alchimie: Art, histoire et mythes. Actes du Ier Colloque international de la Société d' Étude de l' Histoire de l'Alchimie*. Paris & Milano: S.É.H.A-Arché.

Kim, Junghyung (2022). A Qualification of Methodological Naturalism. Brightman and Vries Revisited. *Theology and Science*, 20.2, pp. 166-178.

Martelli, Matteo (2014). The Alchemical Art of Dyeing. The Fourfold Division of Alchemy and the Enochian Tradition. In Dupré, 2014, pp. 1-22.

Martelli, Matteo & Rumor, Maddalena (2014). Near Eastern Origins of Graeco-Egyptian Alchemy. In Geller & Geus, 2014, pp. 37-62.

Matton, Sylvain (1995). L'influence de l'humanisme sur la tradition alchimique. *Micrologus*, 3, pp. 279-345.

Nummedal, Tara. (2013). Alchemy and Religion in Christian Europe. *Ambix,* 60.4, pp. 311-322.

Principe, Lawrence M. (2013). *The Secrets of Alchemy*. Chicago & London: The University of Chicago Press.

Roberts, Alexander M. (2022). Hierotechnicians by Name and their Middle Byzantine Fame. *Journal of Late Antique, Islamic and Byzantine Studies*, 1.1-2, pp. 167-199.

Saffrey, Henri-Dominique (1995). Historique et description du manuscrit alchimique de Venise, *Marcianus Graecus* 299. In Kahn & Matton, 1995, pp. 1-10.

Tommasi Moreschini, Chiara O. (2007). Ricezione e impiego della tradizione alchemica nella cultura patristica: alcuni sondaggi. In *La cultura scientifico-naturalistica nei padri della chiesa. XXXV Incontro di studiosi dell'antichità Cristiana (4-6 maggio 2006)*. Roma: Institutum Patristicum Augustinianum, pp. 447-464.