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*SCIENTIFIC COSMOPOLITANISM
AND LOCAL CULTURES:
RELIGIONS, IDEOLOGIES, SOCIETIES*

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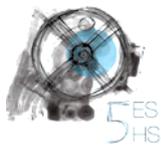
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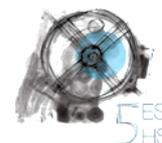


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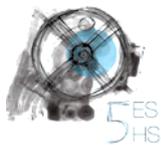
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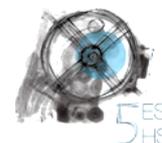
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Byzantine and post-Byzantine Alchemy: a Research Project in Progress

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Our project, under the title *“Digital archive concerning alchemy in Byzantium and in Greek-speaking communities of the Ottoman Empire”*, has begun on April 2012, as collaboration of the National Hellenic Research Foundation, the University of Athens and the University of Ioannina.

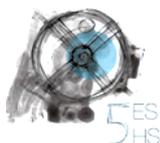
Objectives

The research project aims to address a significant gap in the current historiography of sciences, by exploring and carefully mapping a large, unsurveyed territory: that of Byzantine and post-Byzantine alchemy. The principal objective of DACALBO project is to reconstruct the history of alchemy in the Medieval and Early Modern Greek-speaking world, through the creation of a comprehensive, open access, digitized, and searchable archive of texts relevant to alchemy, written in Medieval or Modern Greek, from the period of Byzantium to the 18th century. More specifically the project aims to:

- a) Identify, collect, digitize, and classify all surviving manuscript primary sources relevant to the study of alchemy during the periods of Byzantium and of the Ottoman Empire.
- b) Identify, collect, digitize and classify the printed primary sources that are found to be relevant to alchemy. Thus, texts or passages extracted from texts, whose content is alchemical or at least refers explicitly or implicitly to alchemical practices, will be articulated in a coherent corpus of texts, so as the penetration of alchemical knowledge in different disciplines or arts to be illustrated.
- c) Collecting and classifying the secondary bibliography.
- d) Create prosopographical entries for every identifiable author, so as to map the actors of the history of alchemy, their roles in this history and the subjective positions pertaining to these roles.
- e) Evaluate, on the basis of the collected primary sources, the modifications or even transformations which Byzantine alchemical tradition has undergone through the passage of time, and to ascertain its relations with Hellenistic, Arabic, or (after the 10th century) Latin alchemy.
- f) Determine what twists in the development of alchemy have taken place after its introduction in the cultural context of Greek-speaking communities under Ottoman domination, from the 15th to the 18th century.

Additional objectives of our project are the following:

- i) The enrichment of the history of Byzantium, drawing lines of connection between the historiography of Byzantine alchemy and that of the natural sciences in South-Eastern Europe.
- ii) The production of a historical material that is both profitable in terms of educational applications and suitable for activities tending to promote public awareness of the different



temporalities that having been merged in the history of science and render the written monuments of this history tokens of a common cultural legacy.

State of the Art

a) Greek alchemy

The first written documents of alchemy can be traced back in the 3rd century AD. From the 1st to the 4th centuries, alchemical practice develops itself into an art of metallic transmutation and two distinct alchemical “schools” seem to emerge: the one, represented by Ostances, is still based on the practical knowledge of craftsmen, blacksmiths and dyers, although a shift is apparent from chrysis (giving to a base metal the appearance of gold) to chrysopoeia (transforming a base metal to gold); the other, represented by Zosimos and Maria the Jewess, assumes a religious, Gnostic orientation, putting the emphasis on the elaboration of distillation techniques. The period of Byzantium marks a turning point, not only because there are many commentators of the ancient alchemical texts, but also due to the attempts of Byzantine scholars, during the 10th century, to collect these texts and to articulate them in a coherent corpus; the surviving manuscript copies of which comprise to our days, the main evidence for the emergence and the historical development of Greek alchemy. The sources which contain the presently known ancient Greek alchemical texts are certain ancient papyri and the Medieval and late-Medieval manuscripts that have been discovered up to now.

The oldest surviving written alchemical monuments are 3 papyri deposited in the Museum of Antiquities at Leyden and dated to about 3rd century AD. They are known as Leyden Papyri V, W, and X respectively, and they are part of a collection acquired in Egypt by the Chevalier d’Anastasi, at the beginning of the 19th century. Another primary source of this kind is Papyrus Graecus Holmiensis, also part of Johann d’Anastasi’s collection, which is preserved in Stockholm. The scribe of this papyrus is the same as that of Leyden Papyrus X.

The first to publish the Stockholm Papyrus was Otto Lagercrantz in 1913, presenting the Greek text with critical commentaries and translating it into German (Lagercrantz 1913). The Leyden Papyri V, W, and X were published for the first time in 1885 by Conradus Leemans in a critical edition with a Latin translation (Lemmans 1885).

Marcelin Berthelot attempted, in 1906, a new edition of Leyden Papyri (Berthelot 1906). In 1981, Robert Halleux offered a modern critical edition of both Stockholm and Leyden Papyri, along with their French translation. This edition is the first volume of the projected series of twelve, intended to encompass the whole corpus of ancient Greek alchemical texts, under the auspices of the Association Guillaume Budé. Still, there exist many Greek alchemical manuscripts, dating mostly from the 16th century onwards. The latest of them are copies of the earlier. On the whole the number of the presently known surviving manuscripts is about 100, covering the period from the 10th to the 19th century. All these manuscripts are listed in the *Catalogue des manuscrits alchimiques grecs* (CMAG), a project patronized by the Union Académique Internationale. Eight volumes were published in this series between 1924 and 1932, and they contain respectively the manuscripts then preserved in the libraries of Paris (I, 1924), in the libraries of Italy (II, 1927), of England (III, 1924), of Germany, Austria, Denmark, Holland, and Switzerland (IV, 1932), of Spain (V,1, 1928) and in the libraries of Athens (V,2, 1928).

The main Greek alchemical manuscripts (dating from the 10th to the 15th century) are the following four:



- i) Codex Marcianus Graecus 299 (= M), surviving in the San Marco Library in Venice. It dates from the end of the 10th century or from the beginning of the 11th.
- ii) Codex Parisinus Graecus 2325 (= B), surviving in the National Library of France in Paris. It is of the 13th century.
- iii) Codex Parisinus Graecus 2327 (= A), surviving also in the National Library of France. Its assigned date is 1478. The first half of this MS. is a copy of the MS. Parisinus gr. 2325, while the second half have been drawn from another, not yet located and identified, source.
- iv) Codex Laurentianus Graecus 86,16 (= L), surviving in the Laurentian Library in Florence. It is copied in 1492.

All the other known manuscripts seem to derive from these four manuscripts which contain all the surviving Ancient and Early Medieval Greek alchemical texts. Most of these texts were edited and translated into French by Marcelin Berthelot and Charles-Émile Ruelle in 1887-1888 (Berthelot-Ruelle 1887-1888). Omitted from Berthelot's Collection were the alchemical writings of Stephanus of Alexandria that had already been published by J.I. Ideler in 1842 (Ideler 1842).

There are also a few manuscripts of Byzantine origin whose texts can be dated between the 10th and the 13th century. Yet, the methods described in them and the intellectual climate in which they seem to be situated lead us to Medieval Latin rather than to Hellenistic alchemy. Such texts can be found in the recently discovered codices at Holkham Hall (Holkhamieus 290) and at the Vatican (Vaticanus 1134), which now are preserved in the Bodleian Library in Oxford. Here lies open a promising field for further research, since there are also instances where such transmissions of Medieval Latin alchemy to the East are documented. At the beginning of the 14th century, in Southern Italy, a Latin alchemical treatise, ascribed to Arnaldus de Villanova, was translated into Medieval Greek, by an anonymous author. This treatise was first published by C.O. Zuretti in the 7th Volume of *Catalogue des Manuscrits Alchimiques Grecs* (Zuretti 1930). In 2000, it was edited by Andrée Colinet (Colinet 2000).

Albert Severyns, searching in the libraries of Athens for codices where alchemical texts are included, listed the following manuscripts (Severyns 1928, 149-169):

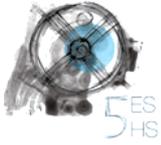
- i) National Library of Greece, 1070, ff. 231, 13th century (from f. 219v, change of hand, 14th century).
- ii) Library of the Parliament, 126, ff. 46, 18th-19th century (f. 44: αωδ' [1804]). It contains, inter alia, alchemical works of Stephanus of Alexandria, Synesius, and Heliodorus.
- iii) Library of the Christian Archaeological Society, 321, pp. 64, 18th-19th century. It contains alchemical works of Stephanus of Alexandria, Maria the Jewess, and Synesius.

Examining, also, several catalogues of libraries outside Athens, Severyns listed two more relevant manuscripts (Severyns 1928, 170):

- i) Library of the Monastery of Vatopedi on Mount Athos, 665, pp. 140, 18th century. It contains writings of Stephanus of Alexandria.
- ii) Library of Zagora, 58, pp. 87, 18th century. It contains writings of Stephanus of Alexandria and of Zosimus.

b) Renaissance alchemy / "Chymistry"

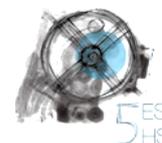
During the last decades, historians as Allen Debus, William Newman, Lawrence Principe, Bruce Moran, and Peter Forshaw have shown that from the Renaissance onwards a field of knowledge concerning chemical phenomena begun to crystallize itself and to be differentiated from traditional chrysopoeia, in the sense that it implies more an



experimental research of how physical bodies are composed or decomposed than a quest for the proper process of metallic transmutation. Following Principe and Newman (Newman-Principe 1998), we may denote this field of knowledge by the term “Chymistry”. Key role in the articulation of chymistry played a kind of occultism which was developed at the end of the 15th century in Florence by Marsiglio Ficino and Giovanni Pico della irandola. What we may call “Renaissance Occultism” is the outcome of piecing together the fragments of many different ancient and medieval traditions. The whole construction, though, is a consistent one, being explicitly formulated not as a renovated esoteric tradition, but as a renovative philosophy, with a new conceptualization of the soul (anima) at its centre. The emergence of this new philosophical tradition marks a turn from the knowledge of the ideal attributes of being to the knowledge of nature in terms of becoming, and thus at the unfolding of the occult life of God, who permeates nature and is regarded as an emanative cause, tending, more and more, to be an immanent cause. Some indicative secondary sources concerning Renaissance Occultism are the following: Kristeller 1993, 39-48; Yates, 1964, chapters I-VI; Yates 2001, section I; Merkel and Debus 1988; Idel 1992, 319-351; Walker 2000; Stausberg 1998; Mebane 1989; Collins 1974; Schefer 2001, 13-27;.Allen, Rees, and Davies 2002; Dulles 1941; Wirszubski 1989; Copenhaver 1999, 25-76; Håkansson 2001; Szőnyi 2005.

“Chymistry” seems to emerge when this occultism gives an epistemic horizon to the late medieval alchemy, and especially that kind of alchemical practice codified in the texts of the Pseudo-Geber Corpus (a set of Latin texts falsely attributed to the Arab alchemist Jabir ibn Hayyan). It is due to this conjunction that the empirical knowledge of substances’ properties and “natural principles” can be developed into a theoretical knowledge of material transformations. Hence, the overtly theosophical aspects of Renaissance alchemy can be explained, without devaluating its role in the consolidation of early modern sciences. Since God, in this context, is regarded as the inner life of cosmos, the knowledge of material transformations becomes coterminous with the knowledge of the occult powers of God, with the actual participation, that is, in God’s living as cosmos. Only recently, in the historiography of alchemy, and generally in that of the sciences, research efforts have been made to shed some light on this fascinating grey zone between empirical knowledge and theosophical speculations. The most insightful of them exemplify how prolific an interdisciplinary approach, combined with a methodology capable to ward off retrospective projections and to reactivate, instead, past discourse strategies, may become in this respect. Works indicative of such an orientation are the following: Vickers 1984; Clulee 1988; Matton 1991; Bono 1995; Gilly 1998; Coudert 1999; Brann 1999; Harkness 1999; Kahn 2007; Forshaw 2006; Forshaw 2008; Forshaw and Killeen 2007.

In contradistinction with that flourishing state of the art in the rest of Europe, Greek historiography has not yet entered into this new and promising field of research. How and whether Renaissance alchemy has been disseminated in Greek-speaking communities is something that up to the present remains totally unexplored. What this absence of a secondary bibliography actually reflects is not the lack of relevant primary sources, but the huge lacuna still gaping in present-day Greek historiography concerning the Renaissance as a European movement having its particular impact on the Greek-speaking communities of the time.



Beyond the State of the Art

We must, at this point, highlight the fact that our research has already been fruitful in disclosing unexamined or unknown primary sources, opening thus a way beyond the state of the art. We have located some relevant to alchemy manuscripts that hitherto have passed unnoticed.

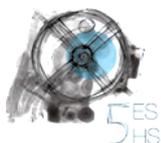
In the library of the Monastery of Olympiotissa, in the city of Ellassona, an early Greek alchemical manuscript is preserved. Evangelos Skouvaras (Skouvaras 1967, 375-378) has given a detailed description of this codex. Folios 1-98 are dated to the year 1507, while ff. α'-ζ' and 104-110 are written from another scribe and dated to the year 1741. It contains, inter alia, writings of Zosimus and Synesius. This indicates that during 18th century there existed in Greek-speaking communities authors who, while trying to compile medical and alchemical knowledge into accessible notes, continued to draw their material from the corpus of ancient

Hellenistic alchemy. This codex is not included in Severyns' list, and this shows that the present list of alchemical manuscripts surviving in Greek libraries is far from being complete. Since a significant part of it, dated to the year 1507, contains one of the earliest versions of the corpus of ancient Greek alchemical texts, the Olympiotissa codex must be examined and collated against the four main alchemical manuscripts (Marcianus gr. 299, Parisinus gr. 2325, καί 2327, Laurentianus gr. 86, 16).

We have, also, detected a lot of manuscripts that attest the emergence and spread in Greek-speaking communities, from the 17th to the 18th century, of this field of knowledge that we have denoted as chymistry.

Not only there are many manuscript (and printed) translations or compilations of iatrochymical treatises (up to now we have traced 11 preserved texts of this kind), but we have located also and some manuscript texts exemplifying the relation of chymistry to Renaissance occultism. Two such manuscripts, which still wait to be thoroughly examined, and whose relevance to alchemy has been hitherto ignored, are the following:

i) National Library of Greece, Athens, 1331, dated to the year 1701, ff. 1r-98v. It contains a translation in Greek, made by Anastasios Papavasiliopoulos, of *Enchiridion Physicae Restitutae In quo verus Naturae concentus exponitur, plurimque antiquae Philosophiae errores per canones & certas demonstrationes dilucidè aperiuntur. Tractatus alter inscriptus. Arcanum Hermeticae Philosophiae opus: in quo occulta nature & Artis circa Lapidis Philosophorum materiam & operandi modum canonicè & ordinate fiunt manifesta*. The earlier preserved edition of *Enchiridion* is the second, made in Paris in 1638 (for a detailed description and a list of some of its earlier translations, see Ferguson 1906, I, 248-250). Ferguson, probably following Hermann Kopp (Kopp 1886, I, 345), dated the first edition to 1608, but according to Kurd Lasswitz (Lasswitz 1890, 235) the correct date is 1623 (in Paris). The book was anonymously published, and the French alchemist Jean d'Espagnet is its reputed author. During the whole of the 17th century, it was a very popular work, going through several re-editions and translations, and it is highly illustrative of that conjunction between causal explanations of natural phenomena and conceptualizations on God's presence in the world which is typical for Renaissance alchemy. It played also a significant role in the consolidation of early modern atomism. The fact that such a work has been translated into Greek is historiographically important both for the reason that, as far as we know, this is the first textbook of early modern natural philosophy to appear before a Greek-speaking audience and because its translation into Greek is made in a rather early



period (1701), indicating that the process of appropriation of Western early modern scientific literature by Greek-speaking scholars was not so delayed as it has been hitherto assumed to be.

ii) National Library of Greece, Athens, 1113, first half of the 18th century, ff. 1r- 49v. It contains a Synopsis of Chymia, written by an anonymous author. This is the first, as far as we know, chymical treatise written in Modern Greek, and it is also noteworthy that it is not a translation, but an original work.

These two promising indications evince that a thorough investigation, conducted according to our project plan, will enable access to a rich array of hitherto unknown, or unexploited, primary source material.

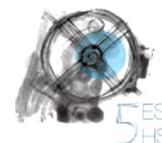
Importance and Expected Impact

The proposed research project will contribute, in a significant manner, to the advancement of historical knowledge both with regard to alchemy and chemistry in particular and to sciences in general. DACALBO will complete Severyns' list of the Greek alchemical manuscripts preserved in Greek libraries (which remains regrettably incomplete, since it is based only on the examination of the inventories of Athens libraries' collections). Thus it will restore the continuity of an international scholarly effort, for a comprehensive record of the written monuments of Greek alchemy, initiated in the 1920s, under the auspices of the Union Académique Internationale, and halted in the 1930s, owing to the grim situation that prevailed in Europe during the years just preceding the outbreak of the 2nd World War. DACALBO will also thoroughly map the hitherto untrodden landscape of Byzantine alchemy and Greek-speaking early modern chemistry, bridging the gap that still persists between the ancient Greek alchemy, the dispersed monuments of which were articulated into a coherent corpus by Byzantine scholars, such as Michael Psellos, and the "new chemistry" of Lavoisier, with which Greek-speaking scholars were acquainted in the early 19th century, through certain textbooks mostly translated from the French. Involving, moreover, the application of novel methodological tools, the project will have a profound, renovating impact on the community of the historians of science in SE Europe, widening, if anything, the range of the methodological resources, already tested in practice, at its disposal.

On the didactical level, the construction of the proposed historical archive will contribute to a deeper apprehension of the historicity of natural sciences, rendering primary source materials accessible to the educators and the public, and offering, for each entry stored in the archive, information necessary for further study.

On the level of the science of history, the proposed archive will enrich the historiography of Byzantium, and that of the Enlightenment in Europe too, providing a map of historical relations illustrative of cultural interactions between the Byzantium, the Arabic East and the Latin West, as well as of continuities or discontinuities between the Byzantine and the Renaissance, or even Modern, sciences.

From a cultural point of view, our digital historical archive will promote a deeper understanding of the various interactions that can be historically ascertained between the different cultural communities which through the passage of time inhabited the Balkan region, and a greater awareness, on citizens' part, of the significance of the written historical monuments as parts of a common cultural heritage, belonging to a common cultural fabric in which the various undertakings of different generations are creatively combined,



exemplifying thus how human beings can be actively engaged in making their history and the world they inhabit.

Finally, the proposed exhibitions will enrich the understanding of the public understanding about Alchemy, its implications on the societies of the past and its contribution to the birth of Chemistry. They will constitute the base for the organization of events which will take place beyond the proposed project.

Methodology

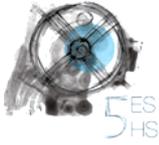
In order to attain the desired ends, DACALBO will fully exploit the methodological innovations brought forth by the most recent and most comprehensive historical research projects centered on Western Medieval and Renaissance alchemy:

a) It will employ an international interdisciplinary approach that combines paleographical, philological, historical, technological, and core scientific skills. The research team comprises historians (Ancient, Medieval and Contemporary history), philologists-palaeographers, historians of science and technology, chemists, specialists of science education, of communication with the public and web technicians. The need for such a number of disciplines is the reason for the constitution of such a numerous project team. DACALBO implementation will highly profit from the experience and the scholar support of worldwide reputation specialists on the field of Alchemy and of science-religion.

b) Considerable weight will be given to the re-assessment of the historical development of alchemy after a critical review of already known primary sources, and most importantly, on the basis of new historical evidence. At any rate, working with unpublished manuscript material always led to rethinking given historical schemas. In our case, manuscript primary sources constitute the greatest part of all surviving primary textual sources, and the reason is that printing press, available for Greek-speaking scholars, was established in Ottoman territories only at the beginning of 19th century (even though some Greek-speaking communities had been running printing presses outside Ottoman territory from the 16th century onwards). All of them are hitherto unpublished. We have to prepare ourselves for unexpected evidence, or results that do not match with given historical interpretations. In this respect, a methodological step we have to make is to consider the process of collecting and studying primary sources as an opportunity to test the historical picture we have inherited, and not as an occasion in which we merely add new data to an existing narrative.

c) The range of social and cultural implications of alchemy will be touched upon, since the presented corpus of texts under study will be indicative of how, in any given period, alchemy is being related to other disciplines, how it affects everyday life, what technological applications it brings about, what interactions can be detected between alchemical and medical practices, how much alchemy is invested in the dynamics of poetic language, folk narratives and mythopoetic creativity.

d) The historical reconstruction will methodically avoid any retrospective projections. The extensive use of secondary sources may well guide our research, but we will not let this guidance bias our findings. A crucial methodological assumption, here, is that whenever we study a written monument of the past we have to acknowledge its actual distance from us, to reactivate it as a kind of discourse different from what we have learnt to expect from our particular standpoint. This emphasis on the difference in terms of perspective will help us fully appreciate the significance of findings that possibly challenge established historical



interpretations, and will enable us to pose interesting new questions, instigating new research directions and agendas.

e) DACALBO will focus on possible points of contact, zones of tension or areas of overlap, between temporalities that are usually considered as being radically distinct, as for example the temporality of religion and that of science. Renaissance alchemy, invested as it is with strong theosophical overtones, involves multiple intersections where empirical observations meet with Christological suppositions, theological doctrines, and even praise/worship techniques. The historiography of religions, in this case, must communicate with the historiography of sciences. All the more so, when the objects of our research are situated in the cultural, intellectual and geographical space marked by Southeastern Europe, where multiple religions flourished, such as Eastern Christianity, Islam, and Judaism. Crossing the narrowly delineated historiographical borders is yet another innovative methodological stratagem that we intend to use in order to amplify the advantages of cutting-edge multidisciplinary research and at the same time to be able to transcend its possible limitations (for example, the presupposition that the multiple disciplines brought together in a common project are from the outset distinct, self-sufficient entities).

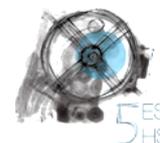
f) The methodological rules that we choose to adopt are not a conclusively defined set of prescriptions.

Generally, while treating the primary source material we intend to collect, our methodology, on account of this material's novelty, will be flexible, permitting us to probe deep into the problems arising as our research proceeds and to effectively question established assumptions, whenever new insights are required to be given.

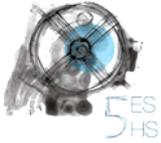
(DACALBO project is under the patronage of the International Academy of History of Science.

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Acknowledgments

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