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## Introduction

Nature and Nature's Laws lay hid in Night:  
God said, *Let Newton be!* and All was Light.  
*Alexander Pope*

The well-known witty epitaph written by Alexander Pope in honour of Sir Isaac Newton (1642-1727) is so effectively striking<sup>1</sup> in its literary purpose that it is still actually able to remind us nowadays, within just two lines length, of the impressive, unrivalled contribution to the enlightenment of the vast fields of science made by the works of the greatest English mathematician. But, as far as the acknowledgment of Newton's scientific discoveries by his contemporaries is largely known and therefore undisputed, the debate among scholars over the great bulk of his non-scientific texts has been of a completely different kind. Ranging from alchemical to theological-mystical and millenaristic contents, up to studies about the sacred cubit of the Jews and scientific enquires into the very nature of the architectonic perfection of Solomon's Temple, the great amount of Newton's non-scientific manuscripts indeed helps in revealing us that his mind was even possibly greater than we might have ever guessed. By quoting<sup>2</sup> William R. Shea pithy summing up of Newton's most important life periods we know that "he devoted merely two years, 1664-1665, to mathematics and from that time on would only turn to it when solicited;" the study of optics involved him just "for a brief period around 1670 but he never returned seriously to it again." Moreover, he applied to

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<sup>1</sup> Cfr. I. Bernard Cohen and Richard S. Westfall (eds.), *Newton: Texts, Backgrounds, Commentaries*, New York-London, W. W. Norton & Company, 1995, General Introduction, p. xv: "Surely no one has ever captured this image of Newton better than the poet Alexander Pope, with his famous couplet: Nature and Nature's Laws lay hid in Night:/ God said, *Let Newton be!* and All was Light." This edition will henceforth be referred to as Cohen and Westfall (eds.), *Newton*.

<sup>2</sup> All quotations here are from William R. Shea, "Introduction: Trends in the Interpretation of Seventeenth Century Science," in M. L. Righini Bonelli and William R. Shea (eds.), *Reason, Experiment, and Mysticism*, New York, Science History Publications, 1975, pp. 1-17, on p. 6; main edition hereinafter referred to as Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*.

mechanics and dynamics only “for a short while in the 1690s and then only in the two and a half years that produced the *Principia*” though “Newton’s interest in alchemy continued unabated between 1670 and 1696, the year he left Cambridge to become Warden of the Mint.” This very short overlook at Newton’s life enables us to hallmark one most important feature: his deep commitment to alchemical studies<sup>3</sup> – both in terms of praxis and theoretical approach to it. Besides his alchemical task, Newton had another chief interest for religious studies and millenarianism which occupied him throughout his central years, though nothing of his written production on these subjects was published<sup>4</sup> during his lifetime. Actually, until recent<sup>5</sup> years and only in part due to the late re-discovery of Newton’s non-scientific manuscripts, these two fields of Newtonian research had remained uncovered by some serious scholarly criticism and, even when some attempts to enquire into them were made, these never<sup>6</sup> resulted in a syncretic study of Newton’s alchemy and his millenaristic/theological ideas.

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<sup>3</sup> Cfr. Richard S. Westfall, “The Role of Alchemy in Newton’s Career,” in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., pp. 189-232, on p. 195: “Newton’s interest in the art was neither a youthful frolic nor an aberration of senility. It fell squarely in the middle of his scientific career, spanning at the time of most of the achievement on which his reputation rests. Indeed, alchemy appears to have been his most enduring passion.” The nature of Newton’s alchemical studies, along with an explication of fundamental alchemical theories and practices, will be further developed in this study of mine. The general character of this introduction would only therefore provide the description of the structure of my work and its major aims.

<sup>4</sup> Though nothing of non-scientific character was published during Newton’s lifetime, four publications appeared posthumously. These were: *The Chronology of Ancient Kingdoms Amended* (1728), *Observations upon the Prophecies of Daniel and the Apocalypse of St. John* (1733), an essay on the Cubit of the Hebrews (1737), and two letters to John Locke dealing with the Doctrine of the Trinity (1743).

<sup>5</sup> Cfr. Betty Jo Teeter Dobbs, *Alchemical Death & Resurrection: the Significance of Alchemy in the Age of Newton*, Washington, D.C., Smithsonian Institution Libraries, 1990, pp. 1-2, hereinafter referred to as Dobbs, *Alchemical Death & Resurrection*: “Newton is of course better known as a founder of modern science, as a great mathematician and physicist who invented the calculus, found the law of universal gravitation, and satisfactorily explained the spectrum of colors in rainbows and prisms. It is certainly true that he did all those things, but he spent most of his time on alchemical and theological studies, and he left behind large numbers of manuscripts on alchemy and theology that are only now, in this present generation, being seriously studied.”

<sup>6</sup> As a matter of fact, some most interesting considerations about Newton’s concomitant researches into alchemy and theology have been given by Jan Golinski. Though very short in length, his reasoning about the connections implied in the cultural relation between the two fields really deserves further consideration and will be therefore later investigated. Maurizio Mamiani also quotes Golinski’s essay as an interesting reference to the subject: see Isaac Newton, *Trattato sull’Apocalisse*, edited by Maurizio Mamiani, Torino, Bollati Boringhieri, 1994, note 63 on p. 256 (this edition will hereinafter be referred to as Mamiani (ed.), *Trattato sull’Apocalisse*). Golinski’s essay I am referring to is: Jan Golinski, “The Secret Life of an Alchemist,” in J. Fauvel, R. Flood, M. Shortland and R. Wilson (eds.), *Let Newton Be!*,



Needless to say, the most important researcher into the field of Newtonian alchemy has been Betty Jo Teeter Dobbs (1930-1994) whose work was chiefly aimed at discovering the implications of Newton's alchemical praxis in relation to his scientific research<sup>7</sup> especially in terms of his arguing about the existence of a universal vital agent and of the conclusions about gravity<sup>8</sup> he arrived at. But, besides some hints<sup>9</sup> at the alchemy-related theoretical implications of millenarianism and vice-versa, she never prompted an investigation of some possible real influences of the alchemical mind over Newton's explanation of the prophecies as it is especially revealed in some of the manuscripts comprised in the Yahuda collection.<sup>10</sup> Notwithstanding the crucial importance of the results of Dobbs' researches into Newton's alchemical mind, what is of major importance, in my opinion, is her focusing chiefly on the practical side of Newton's alchemical speculation ruling out from her discourse the possible ways which such a comprehensive knowledge could have effected Newton's millenarianism with, thus leaving the broader framework of the issue about Newton's alchemy somehow "in

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Oxford, Oxford University Press, 1988, pp. 147-167; main edition hereinafter referred to as Fauvel et al. (eds.), *Let Newton Be!*.

<sup>7</sup> Cfr. I. Bernard Cohen, "A Guide to Newton's *Principia*," in Isaac Newton, *The Principia: Mathematical Principles of Natural Philosophy*, a new translation by I. Bernard Cohen and Anne Whitman assisted by Julia Budenz, Berkeley, California, University of California Press, 1999, pp. 1-370, paragraph 3.4, on p. 58: "Betty Jo Dobbs's work is not, of course, primarily devoted to questions of chronology. Rather her goal is to show that Newton's alchemy cannot be separated from the rest of his scientific thought." This is my referring English translation of Isaac Newton's *Principia* and it will henceforth be quoted as Cohen and Whitman, *The Principia*.

<sup>8</sup> On this subject see especially Betty Jo Teeter Dobbs, "Newton's Alchemy and His 'Active Principle' of Gravitation," in P. B. Scheurer and G. Debrock (eds.), *Newton's Scientific and Philosophical Legacy*, Dordrecht, Kluwer Academic Publishers, 1988, pp. 55-80, on pp. 59-60; main edition henceforth referred to as Scheurer and Debrock (eds.), *Newton's Legacy*.

<sup>9</sup> See especially Betty Jo Teeter Dobbs and Margaret C. Jacob (eds.), *Newton and the Culture of Newtonianism*, Atlantic Highlands, New Jersey, Humanities Press International, 1995, pp. 32-34, hereinafter referred to as Dobbs and Jacob (eds.), *Newton and the Culture of Newtonianism*; Betty Jo Teeter Dobbs, *The Foundations of Newton's Alchemy or 'The Hunting of the Greene Lyon'*, Cambridge, Cambridge University Press, 1975, pp. 102-111, hereinafter referred to as Dobbs, *The Foundations of Newton's Alchemy*; Betty Jo Teeter Dobbs, *The Janus Faces of Genius. The Role of Alchemy in Newton's Thought*, Cambridge, Cambridge University Press, 1991, pp. 230-249, hereinafter referred to as Dobbs, *The Janus Faces of Genius*. Further enquiry into Dobbs' studies on Newton's alchemical mind and praxis will be provided in chapter II.

<sup>10</sup> The Yahuda collection of Newton's theological manuscripts is nowadays kept at the Jewish National and University Library of Jerusalem. It comprises the manuscripts bought by Prof. A. S. Yahuda at Sotheby's auction in 1936 which, according to his last will, have been donated after his death (1951) to the State of Israel.

a state of delightful ambiguity”<sup>11</sup> and, therefore, partially unsolved. Along with her, Richard S. Westfall asks his readers “whatever Newton’s attitude towards alchemy, what role did the attention that he manifestly devoted to it play in his scientific career?”<sup>12</sup> Once again, it is the relation between science and alchemy in Newton’s works that has been stressed thus excluding however a comprehensive understanding of his knowledge which I find suitable now to term “pansophic.” Adopted for the first time by the Czech literate and educationalist Jan Amos Komenský (also known as Comenius; 1572-1670) to define a comprehensive system of knowledge, the term “pansophia” could at best fit, according to me, Newton’s aim at building up, literally, a system of the world engineered according to his physical laws though moved by, and tending to accomplish, God’s plan for mankind. Hence, since it is alleged that “Newton’s purpose was to construct a unified system of God and nature,”<sup>13</sup> then it is fundamental to underline that each field of Newtonian knowledge must have come to serve his overarching purpose, including therefore alchemical and theological studies. According to Dobbs and Jacob, it is indeed where Newton’s “many different lines of investigation met, where he tried to synthesize their discrepancies into a more fundamental unity, when he attempted to fit partial Truth to partial Truth, that he achieved his greatest insights.”<sup>14</sup> As far as I do completely agree with them, I would try to plunge deeper inside Newton’s mind to grasp the recondite meaning of some of his most controversial texts. It results therefore inevitable that the reasoning of this study of mine should come round to a reading of the mutual exchanges between Newton’s alchemy and theology,

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<sup>11</sup> This expression was originally used by Dobbs to describe the sundry different interpretations about the nature of the “active principle” given by alchemists of different ages. See Betty Jo Teeter Dobbs, “Newton’s Alchemy and His Theory of Matter,” in *Isis*, Vol. 73, No. 4 (Dec., 1982), pp. 511-528, stable URL: <http://www.jstor.org/stable/232144>, on p. 523.

<sup>12</sup> Richard S. Westfall, “The Role of Alchemy in Newton’s Career,” in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., p. 190. In this essay, Westfall compiles a thorough chronology of Newton’s alchemical papers which enabled him to draw some parallels between “the alchemical papers, the records of chemical experimentation, and the familiar events of Newton’s scientific career” (*Ibid.*, p. 191).

<sup>13</sup> Dobbs and Jacob (eds.), *Newton and the Culture of Newtonianism*, cit., p. 12.

<sup>14</sup> *Ibidem*.

insofar as the identification of a supposed stronger influence of the former over the latter is concerned too.

Richard S. Westfall himself when recalling<sup>15</sup> one of the main goals of Newton's alchemy, that is, how to equate alchemical symbolism, points at the resemblance that this process has with Newton's later attempts at decoding the message of the prophecies. Remarkably, just as Newton transferred the meaning of the symbolism of alchemical texts into a certain chemical process so did he manage to rewrite into plain prose the tenets of God hidden behind the words of Biblical prophets: "He that would understand a book written in a strange language must first learn the language, and if he would understand it well must learn the language perfectly."<sup>16</sup> Therefore what I actually suppose is that a joint study of both Newton's alchemical and millenaristic minds would eventually prove that just as his alchemical praxis came somehow to influence his scientific research in terms of ultimate divine justification to it, so the alchemical theories he referred to, shaped his interpretation of the Apocalypse. The premise of any reasoning about such a hypothesis relies chiefly on the ultimate goal shared by both alchemy and millenarianism: "The end of death; the end of all need, all grief, all pain; the achievement of final perfection and final salvation – that was the ultimate significance of alchemy in the age of Newton."<sup>17</sup> Newton himself, in his *Commentarium* to Hermes Trismegistus' *Tabula Smaragdina* remarked that, through alchemical processes, "will you have the glory of the whole world and all obscurities

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<sup>15</sup> See Richard S. Westfall, "The Role of Alchemy in Newton's Career," in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., p. 198. Cfr. Jan Golinski, "The Secret Life of an Alchemist," in Fauvel et al. (eds.), *Let Newton Be!*, cit., pp. 158-159: "His method for interpreting scriptural prophecies, explained at the beginning of his unpublished manuscript on the subject, could equally have described his approach to the alchemical writings" (*Ibid.*, on p. 158).

<sup>16</sup> H. McLachlan (ed.), *Sir Isaac Newton Theological Manuscripts*, Liverpool, Liverpool University Press, 1950, p. 119, henceforth quoted as McLachlan (ed.), *Theological Manuscripts*.

<sup>17</sup> Dobbs, *Alchemical Death & Resurrection*, cit., p. 24. Cfr. Dobbs and Jacob (eds.), *Newton and the Culture of Newtonianism*, cit., p. 32: "Other areas of his interests were even more directly and obviously focused on religion, but the ultimate goal of one of them at least was virtually identical to his goal in studying alchemy. That was the correct interpretation of Biblical prophecy and its correlation with the recorded events of history, for such a correlation would also demonstrate divine activity in the world."

and all need and grief will flee from you.”<sup>18</sup> Newton’s comment is, of course, referring to some lines of the *Tabula*<sup>19</sup> but also to John’s vision of the New Jerusalem in the Book of *Revelation* and, with the Biblical quotation, this first example of the process of linkage between Hermetic and Biblical sources in Newton’s mind has eventually come full circle:

And God shall wipe away all tears from their eyes; and there shall be no more death, neither sorrow, nor crying, neither shall there be any more pain: for the former things are passed away.

*Rev. 21: 4*<sup>20</sup>

Furthermore, what were the possible ways of this alchemical influence over Newton’s Biblical exegesis? And, most of all, what are the traceable undisputable signs of this relation? The latter question is undoubtedly the more meaningful because of its stunning role within the horizon of modern Newtonian criticism. Nevertheless, it is the former of the two questions which enables us to lay the foundations for answering the latter. The first step, in order to define the categories of alchemical influence over Newton’s millenarianism, is to give quite a comprehensive sketch of the Hermetic background in Newton’s age – chapter I will be therefore chiefly devoted to serve this purpose. As a matter of fact, the premise of any reasoning about the identification of

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<sup>18</sup> Dobbs, *The Janus Faces of Genius*, cit., p. 277. Thanks especially to Betty Jo Teeter Dobbs, it is well known that Newton devoted some time of his philosophical and alchemical research to the study of Hermes’ *Emerald Table*. Dobbs transcribed the English version of the *Tabula* and translated both a Latin version thereof and Newton’s Latin *Commentarium* (see Dobbs, *The Janus Faces of Genius*, cit., APPENDIX B, pp. 271-277). All these material is comprised in Keynes MS 28 (Location: King’s College, Cambridge, UK, corresponding at Sotheby Lot n° SL31).

<sup>19</sup> My English referring translation of the *Tabula* is R. Steele’s and (Mrs) D. W. Singer’s version as it is transcribed in E. J. Holmyard, *Alchemy*, Harmondsworth, Middlesex, Penguin Books, 1957, p. 95. A complete transcription of this English translation, along with Newton’s own translation and commentary will be provided in chapter I, paragraph 1.2.

<sup>20</sup> My referring English edition of the Bible, from which all Biblical quotations are taken, is: *The Holy Bible: containing the Old and New Testament in the authorized King James version*, Chicago, Good Counsel Publishing Company, 1960. The choice of adopting the King James version chiefly rests on the will to quote Biblical passages from the edition available also in Newton’s age avoiding, thus, more recent translations or revisions. Only quotations from other editions will be henceforth referred to in the footnotes. Latin epigrams and quotations are taken from: *Biblia Sacra. Vulgate Editionis*, Cinisello Balsamo, Edizioni San Paolo, 1995.

one's own alchemical mind is indeed to trace back his intellectual background since the authorities he looked at as inspirational sources could reveal much of an adept's attitude towards the alchemical art. As far as Newton's status is concerned, one best parallel could be drawn between him – his “pansophia” and alchemical esotericism – and Roger Bacon (ca.1215-ca.1292), the great English Medieval Franciscan philosopher, whose system of knowledge I intend to associate to that proper to Isaac Newton both in term of final goals and structure though, of course, some distinctions due to their distance in time scantily allow a juxtaposition of scientific praxes and achievements. One major clue will be therefore that of seeking a common “matrix of ideas”<sup>21</sup> suitable to be attached to both Roger Bacon's and Newton's systems of the world thus sparking the idea that Newton's backing the ancients was not only due to his task of reviving<sup>22</sup> the *prisca sapientia* of the origins but also to his deep commitment to seeking legitimization in them as inspirational sources.

Chapter II is supposed to reflect my willingness to describe the important role played by alchemical doctrines in the development of modern science. A survey of some important revolutionary personalities in the history of alchemy will be sounded out: the works of Paracelsus (1493-1541), *in primis*, represented the turning point, during the early sixteenth century, in the improvement of the moral dimension of alchemical research. Yet, since my primary concern is to enquiry into, in Rattansi's words, “the complex and changing interplay between Newton's scientific concern and a whole variety of other concerns, and between them and the society and intellectual

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<sup>21</sup> The expression is used by Edmund Brehm to describe his own diagram illustrating Roger Bacon's system of knowledge. I will provided in chapter I a fully detailed description of this diagram which appears in Edmund Brehm, “Roger Bacon's Place in the History of Alchemy,” in *Ambix*, Vol. 23, Part I, (March 1976), pp. 53-58, henceforth referred to as Brehm, “Roger Bacon's Place in the History of Alchemy.”

<sup>22</sup> Cfr. Jan Golinski, “The Secret Life of an Alchemist,” in Fauvel et al. (eds.), *Let Newton Be!*, cit., p. 158: “[...] Newton believed that a pure ancient doctrine had been corrupted in the course of its transmission through history [...]”

culture of his own time,”<sup>23</sup> I am strictly convinced that a thorough background to any criticism of Newton should encompass some personalities which he might have come in contact with, not exclusively in terms of bibliographical approach. Among them I especially enrol: Sir Francis Bacon (1561-1626); the Cambridge Platonist Joseph Mede (1586-1638); Samuel Hartlib (1600-1662); the previously mentioned Jan Amos Komenský. Besides them, a long series of outstanding literary personalities, such as John Donne, George Herbert, Henry Vaughan, are going to exemplify through their lines, how the versatile heterogeneous nature of alchemical vocabulary and patterns was deemed to be “particularly attractive and adoptable to literary treatment.”<sup>24</sup> The plain fact that poets tricked alchemical features out, within their works, in some more attractive literary forms could, in my opinion, recall Newton’s own disguised adaptation of alchemical imagery and symbols in his interpretation of the Apocalypse where he adjusted the soteriological meaning of some of these symbolic forms to a more appropriate one required by that theological context – though maybe the Arian Newton would snort at the use of the term “appropriate.” Also provided in this long second chapter is a general overlook at Newton’s millenarianism which paves the way for the forthcoming analysis of his reading of Biblical prophecies.

Chapter III does not represent a wandering off the point, as its title might suggest to the reader. According to Maurizio Mamiani,<sup>25</sup> it would be of primary importance to avoid a reductive reading of the whole written production of Isaac

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<sup>23</sup> P. M. Rattansi, “Reason and Evaluation in the History of Science,” in M. Teich and R. Young (eds.), *Changing Perspectives in the History of Science*, London, Heinemann Educational, 1973, pp. 148-166, on p. 166; main edition henceforth quoted as Teich and Young (eds.), *Changing Perspectives*.

<sup>24</sup> Stanton J. Linden, *Darke Hieroglyphicks. Alchemy in English Literature from Chaucer to the Restoration*, Lexington, Kentucky, The University Press of Kentucky, 1996, p. 6, hereinafter quoted as Linden, *Darke Hieroglyphicks*.

<sup>25</sup> See Mamiani (ed.), *Trattato sull'Apocalisse*, Introduzione, p. XVI: “Il problema dei rapporti tra scienza e religione è stato affrontato troppo timidamente dagli studiosi di Newton: [...] altri ancora hanno tentato di trovare un qualche legame (influenze, orientamenti, tic...) tra la sua ricerca scientifica e quella non scientifica (teologica, cronologica, alchemica ecc.). Quest’ultima via, che apparentemente è la più proficua, è forse la più infida, a causa della lettura riduttiva che spesso comporta: si leggono, quando si leggono, gli scritti religiosi (o alchemici, o cronologici ecc.) in funzione di quelli scientifici. Una storiografia di questo tipo ammette tacitamente, senza prova alcuna, l’esistenza di universi culturali rigidamente isolati e collocabili in una precisa gerarchia.”

Newton based on the interpretation of his non-scientific papers depending on his scientific works: indeed, this would imply the existence of a series of isolated crystallized dimensions of knowledge, hierarchically ordered, which is a cultural reality completely apart from that of the sixteenth and seventeenth centuries. This broadening the horizon into which each single different tessera of Newton's pansophic mosaic must be placed allows us to state that some alchemical influences can be found scattered through his scientific works and that these last can be therefore read depending on the non-scientific sources they do refer to. To best serve this purpose I have chosen to dwell upon one meaningful parallel that can be drawn between the implications of alchemy and Newton's study of light as he explained it in his *Opticks*. Major focuses of interest are going to be the divine knowledge of light and its Hermetic reference besides the theological and alchemical implications of coloured and white lights also in relation to some works of the Cambridge Platonists. I have to say that this chapter is much indebted to Urszula Szulakowska's studies and, in particular, to her *The Alchemy of Light: Geometry and Optics in Late Renaissance Alchemical Illustration*.<sup>26</sup> The logical development of the reasoning of the work bids me now, however, to revert to the analysis of Newton's millenarianism.

Since my discourse will be now onwards strictly focused onto the core of Newton's millenarianism, the last two chapters will be entirely devoted to the evaluation of some previously unpublished Newton manuscripts. These however have now been made accessible on-line at the website of *The Newton Project*<sup>27</sup> where there

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<sup>26</sup> My referring edition is Urszula Szulakowska, *The Alchemy of Light: Geometry and Optics in Late Renaissance Alchemical Illustration*, Leiden, Brill, 2000, hereinafter referred to as Szulakowska, *The Alchemy of Light*.

<sup>27</sup> The address of the homepage of *The Newton Project*'s website is: <http://www.newtonproject.sussex.ac.uk/>. First conceived in 1998 under the general editorship of Rob Iliffe and Scott Mandelbrote, *The Newton Project*'s formalised existence took place at the beginning of 2000 and it is devoted to the full online publication of the entire bulk of Newton's writings. Further detailed information about the history, structure and goals of the academic organization of *The Newton Project* could be found at the link "About Us" displayed in the homepage of the website. Other important online resources, strictly related to the Newton Project, are: *The Newton Project Canada*

can be found the transcriptions of a great amount of Newtonian texts heterogeneous in subject. The manuscripts which I especially endeavour to analyse<sup>28</sup> are all closely bound together by their common contents of a long *Treatise on Revelation*. Before a detailed presentation of the history and glimpses on the general contents of the Yahuda Collection, chapter IV will previously display a long series of alchemical archetypes whose identification of archetypal status is actually much indebted to the outstanding work of the Swiss-born psychologist and psychiatrist Carl Gustav Jung<sup>29</sup> (1875-1961). As far as we know, some images, symbols and patterns of representation have come along with mankind since its dawning days and have therefore become an integrant part

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(<http://www.isaacnewton.ca>) which is aimed at supporting the English *Newton Project* providing a Canadian-based centre for the transcription of Newton's unpublished manuscripts and the website "*Isaac Newton Chemistry*" (<http://webapp1.dlib.indiana.edu/newton/index.jsp>) which is entirely devoted to the research into Newton's alchemical studies. These three websites constitute three most important resources for this study of mine: they are actually my referring source for the transcription of the Yahuda collection of Newton's manuscripts. The online address of each manuscript will be therefore referred to in the footnotes related to the first quotation of each single text. I have been granted the permission to use and reproduce parts of the unpublished manuscripts of the Yahuda Collection by the National Library of Israel<sup>28</sup> This series of manuscripts dealing with Biblical exegesis comprises Yahuda MS. 1; Yahuda MS. 2; Yahuda MS. 3; Yahuda MS. 4; Yahuda MS. 6; Yahuda MS. 7; Yahuda MS. 8; Yahuda MS. 9; Yahuda MS. 10, and Keynes MS. 5.

<sup>29</sup> Major works I will rely on are: Carl Gustav Jung, *Aion. Researches into the Phenomenology of the Self*, translated by R. F. C. Hull, New York, Pantheon Books, 1959, hereinafter quoted as Jung, *Aion*; Carl Gustav Jung, *Alchemical Studies*, translated by R. F. C. Hull, Princeton-New Jersey, Princeton University Press, 1967, hereinafter quoted as Jung, *Alchemical Studies*; Carl Gustav Jung, *Memories, Dreams, Reflections*, recorded and edited by Aniela Jaffé, translated from the German by Richard and Clara Winston, London, Collins, 1967, hereinafter quoted as Jung, *Memories*; Carl Gustav Jung, *Mysterium Coniunctionis: An Inquiry into the Separation and Synthesis of Psychic Opposites in Alchemy*, translated by R. F. C. Hull, New York, Pantheon Books, 1963, henceforth quoted as Jung, *Mysterium Coniunctionis*; Carl Gustav Jung, *Psychology and Alchemy*, translated by R. F. C. Hull, New York, Pantheon Books, 1953, hereinafter quoted as Jung, *Psychology and Alchemy*; Carl Gustav Jung, *The Archetypes and the Collective Unconscious*, translated by R. F. C. Hull, New York, Pantheon Books, 1959, henceforth quoted as Jung, *Archetypes*. Major important related studies are: Marie-Louise von Franz, *Alchimia*, Torino, Bollati-Boringhieri, 1984; Marie-Louise von Franz (ed.), *Aurora Consurgens: A Document Attributed to Thomas Aquinas on the Problem of Opposites in Alchemy, A Companion Work to C. G. Jung's "Mysterium Coniunctionis;"* translated by R. F. C. Hull and A. S. B. Glover, New York, Pantheon Books, 1966, hereinafter quoted as von Franz (ed.), *Aurora Consurgens*; Jolande Székács Jacobi, *Complex, Archetype, Symbol in the Psychology of C. G. Jung*, translated from the German by Ralph Manheim, New York, Pantheon Books, 1959, hereinafter referred to as Jacobi, *Complex, Archetype, Symbol*; Steven Kings, "Jung's Hermeneutics of Scripture," in *The Journal of Religion*, Vol. 77, No. 2 (Apr., 1997), pp. 233-251, stable URL: <http://www.jstor.org/stable/1205771>; Jon Marshall, *Jung, Alchemy and History: a Critical Exposition of Jung's Theory of Alchemy*, Glasgow, Adam McLean, 2002, henceforth quoted as Marshall, *Jung, Alchemy and History*; Walter Pagel, "Jung's Views on Alchemy," in *Isis*, Vol. 39, No. 1/2 (May, 1948), pp. 44-48, stable URL: <http://www.jstor.org/stable/226767>; Michela Pereira, "Il Paradigma della Trasformazione. L'Alchimia nel 'Mysterium Coniunctionis' di C. G. Jung," in *Aut Aut*, N. 229-230 (gennaio-aprile 1989), pp. 197-217, hereinafter referred to as Pereira, "Il Paradigma della Trasformazione;" Jeffrey Raff, *Jung e l'immaginario alchemico*, Roma, Edizioni Mediterranee, 2008; Gerhard Wehr, *Jung*, Milano, Rizzoli, 1987.



of its collective imagery, passing from a cultural field to another with few changes in meaning. One of these cultural dimensions was that of alchemy, and the evolution of archetypes in its history resembled the evolution occurred to these same archetypes in other contexts of symbolic representation. By picking up handfuls from that archetypal *locus*, Newton adjusted some of the most important alchemical tropes and metaphors to the corresponding Biblical sources especially indulging over some quiet creepy episodes which fathom his taste for the doomed mystifiers of God's Word. Notwithstanding Newton's own usage of alchemical sources, it must be remarked however that alchemy itself, especially at the dawning of its establishment in the Western world, sought legitimation also by adopting some well-known Biblical symbols and images which are among the first onto which the label of "collective imagery" was to be attached.

Nevertheless, before sketching up the main features provided by chapter V, I feel obliged to make my point clear about the status of "Newton the scientist." Notwithstanding the unrivalled position within the history of science of Newton's scientific truths and the fact that we must grant them the top position in his scholarship's achievements, I feel likely to remark that broadening the horizon of Newtonian non-scientific critics would not disqualify his scientific task nor would it anyhow prove at all the primacy of one branch over the other ones within Newton's comprehensive knowledge of the system of the world.

"The Alchemical *Apocalypse* of Isaac Newton," as the title itself reveals, is the focus of chapter V. As I have previously argued, one first hindrance to a criticism on the alchemical influences over Newton's theological writings springs out actually from the simple, though only apparently quite insurmountable, problem of finding out an unquestionable bond between the scientific texts and the rest of his written production. The problem can be solved out by flinging one's energies into the task of unveiling

what lies at the core of Newton's peerless mind – that is, his method. By sharing Ockham's *regula parsimoniae*, Newton hatched out a methodological plan in which simplicity ought to act at different levels within the sundry fields of his scholarship. As a matter of fact, as far as his interpretation of the Biblical prophecies is concerned, the reduction to simplicity of the rules for understanding the Apocalypse matches with the plainness of style typical of Newton's favourite reliable alchemical sources from which he derived much of what he expressed in the folios of his Biblical exegesis. Among these sources, of particular noteworthy interest result to be Hermes' *Tabula Smaragdina*, Michael Maier's *Atalanta Fugiens* (1617), Altus' *Mutus Liber* (1677) which do all share a strongly emphasised conative function in their literary purpose and which Newton himself might have found most akin to his choosing "those constructions which without straining reduce things to the greatest simplicity" because "Truth is ever to be found in simplicity, & not in the multiplicity & confusion of things."<sup>30</sup> Actually, insofar as the hermeneutic rules are the criteria of interpretation of the prophecies as Newton himself explains them, so the heuristic techniques are hermeneutic rules applied to his scientific method. Yet moreover, as Mamiani<sup>31</sup> has observed, the hermeneutic rules have "passed" into the scientific method scheduling it and allowing a mutual exchange of ideas between the first drafts of the *Treatise on Revelation* and the first scientific works (Mamiani hypothesises this stage to cover the years from 1664 to 1672). According to Westfall's dating of the manuscripts, Mamiani reasonably suggests 1675 as the date *ad quem* for the first draft of the *Treatise* and 1672 as the date *a quo*, adding that this first draft may also regard a partial drawing up of a thorough interpretation of the prophecies Newton had in mind and which effectively took out his all life to be accomplished. One major point of interest results from overlapping the dates of

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<sup>30</sup> Both quotation here are from Yahuda MS 1.1, f. <14r>, Jewish National and University Library, Jerusalem; online address of the complete transcription of the manuscript: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00135>.

<sup>31</sup> See Mamiani (ed.), *Trattato sull'Apocalisse*, cit., Introduzione, p. VIII.

Newton's first approaching to his major fields of interest: he started pursuing alchemical research from about 1670 and began writing on apocalyptic exegesis from 1672 shortly after his *annus mirabilis* of 1667 in which he "invented his "fluxions" (the calculus), discovered white light to be compounded of all the distinctly colored rays of the spectrum, and found a mathematical law of gravity, at least in a tentative form."<sup>32</sup> If we recall that the first out of the three editions of the *Principia*<sup>33</sup> published during Newton's lifetime is dated 1687,<sup>34</sup> and therefore quite later than his first non-scientific texts, and then we add the previously mentioned influence in methods partaken by hermeneutic and heuristic rules, we can reasonably conjure up, then, that since an influence of theological speculation over scientific knowledge at the very beginning of Newton's forming years is to be taken for granted, at the same rate a contamination in patterns between his alchemical research and the apocalyptic *Treatise* might well have occurred. This important conclusion helps us once again to sort out the pansophic cipher of Newton's mind. Furthermore, though excellent in resuming his acquaintance with Ockham's razor, the techniques applied by Newton to his explanation of the prophecies enable us also to determine the ways of his alchemical approach to Biblical exegesis. Jan Golinski hints at two possible rates of alchemical influence on Newton's theology: one working at a methodological level and the other resulting from the same "kind of

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<sup>32</sup> Dobbs and Jacob (eds.), *Newton and the Culture of Newtonianism*, cit., p. 7.

<sup>33</sup> The *Philosophiæ Naturalis Principia Mathematica*, commonly known as *Principia*, are Newton's masterpiece – the most sparkling jewel of his scientific achievements' crown. It is to the three editions of the *Principia* that Newton's success among his contemporaries chiefly relied on. Some major secondary sources for the study of its scientific principles and laws, along with the theological implications of the *General Scholium*, are: I. Bernard Cohen, *Introduction to Newton's 'Principia'*, Cambridge, Cambridge University Press, 1971; J. Herivel, *The Background to Newton's Principia*, Clarendon Press, Oxford, 1965; John Roche, "Newton's *Principia*," in Fauvel et al. (eds.), *Let Newton Be!*, cit., pp. 45-61; Richard S. Westfall, *Never at Rest. A Biography of Isaac Newton*, Cambridge, Cambridge University Press, 1980, Chapter X, pp. 402-468, henceforth quoted as Westfall, *Never at Rest*.

<sup>34</sup> Cfr. Betty Jo Teeter Dobbs, "Newton's Alchemy and His 'Active Principle' of Gravitation," in Scheurer and Debrock (eds.), *Newton's Legacy*, cit., p. 56: "By the time of the writing of the *Principia* in the mid-1680s, Newton had already been engaged for a long time in attempts to restore the original truths once known to mankind by decoding obscure alchemical texts and by searching ancient records for the original pure religion."

process of interpretation.”<sup>35</sup> In the few lines he devoted to sketch out his considerations, Golinski succeeds anyway in pointing out one major clue within the frame of Newtonian criticism. I do completely share his position about a comparison in methodology regarding Newton’s enquiry into alchemy and the prophecies, yet I am also convinced that there is one missing feature to complete this tangled puzzle: Newton *de facto* used as primary source the archetypical alchemical imagery. Some textual references will of course be provided to justify my assertions and they will therefore also explain by themselves how an influence between all Newton’s fields of knowledge might have occurred. Notwithstanding this sharing of methodological tools, what I find more interesting is Newton’s deployment of alchemical explanations in his account of Doomsday. Just as the alchemists’ explanation of Biblical episodes tended to reflect their belief that their own microcosmic creation in the alembics resembled God’s *fiat* in the macrocosmic generation of the world, so I deem it possible to associate Newton’s interest in the darkness of the prophecies to the pitchy chaos of the alchemical undifferentiated *prima materia*. Despite the fact that his on-going laboratory practice may have suggested Newton to find some metaphorical concordance between what he saw displayed on the surfaces of his alchemical apparatuses and what he read on the pages of God, another urgent question arises however demanding to be answered: could this have really happened? Actually, my purpose becomes that of suggesting some hypotheses to solve the question out. As a prelude to the beginning of this voyage into Newton’s secret fields of knowledge, I find it quite challenging to quote once again Mamiani’s words:

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<sup>35</sup> Jan Golinski, “The Secret Life of an Alchemist,” in Fauvel et al. (eds.), *Let Newton Be!*, cit., p. 159.

Infatti una e medesima è la strumentazione conoscitiva dispiegata in tutte queste materie, e non si potrà ometterne o isolarne questa o quella parte: o la si comprenderà *in toto* o la si distorcerà allo stesso modo.<sup>36</sup>

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<sup>36</sup> Mamiani (ed.), *Trattato sull'Apocalisse*, cit., Introduzione, p. XIX.

# Chapter I

## The Hermetic Background

Omnia unius esse aut unum esse omnia.  
*Asclepius, I*

For everyone who seriously desires to dive deeply into the multifaceted, shifty complex personality of Sir Isaac Newton<sup>37</sup> (1642-1727), it is of primary importance to

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<sup>37</sup> I will not provide, in this study of mine, an entire chapter nor a single paragraph devoted to outline the main events of Isaac Newton's life. Each single event will be hinted at whenever the logic development of the reasoning of the work would need that. Some general yet exhaustive surveys on Newton's biography and most important scientific and non-scientific features could be found in Dobbs and Jacob (eds.), *Newton and the Culture of Newtonianism*, cit., pp. 3-60; Maurizio Mamiani, *Introduzione a Newton*, Roma-Bari, Laterza, 1990; S. Mandelbrote, "Newton and Newtonianism: an Introduction," in *Studies in the History and Philosophy of Science* 35 (2004), pp. 415-425. Most important Newton's biographies are: David Brewster, *Memoirs of the Life, Writings, and Discoveries of Sir Isaac Newton*, 2 vols., reprinted with an introduction by Richard S. Westfall, New York-London, Johnson Reprint Corp., 1965; Frank E. Manuel, *A Portrait of Newton*, Cambridge, Cambridge University Press, 1968; Louis Trenchard More, *Isaac Newton. A Biography*, New York-London, Charles Scribner's Sons, 1934; Louis Verlet, *La Malle de Newton*, Gallimard, Paris, 1993; Westfall, *Never at Rest*, cit.; Michael White, *Isaac Newton: the Last Sorcerer*, Fourth Estate, London, 1997. Manuel's and Westfall's works are doubtlessly the two most important among Newton's biographies and each of these studies does represent an alternative to the other. Arthur Quinn defines "Richard Westfall's monumental biography of Newton" as being "a sophisticated reformulation of the old positivist position" counterparted by what he calls the "psychological" approach of Frank E. Manuel (see Arthur Quinn, "On Reading Newton Apocalyptically," in Richard H. Popkin (ed.), *Millenarianism and Messianism in English Literature and Thought 1650-1800*, Leiden, E. J. Brill, 1988, pp. 176-192, on pp. 177-178, main edition hereinafter referred to as Popkin (ed.), *Millenarianism and Messianism*). Cfr. James E. Force, "Newton's God of Dominion: The Unity of Newton's Theological, Scientific, and Political Thought," in James E. Force and Richard H. Popkin (eds.), *Essays on the Context, Nature, and Influence of Isaac Newton's Theology*, Dordrecht, Kluwer Academic Publishers, 1990, pp. 75-102, on p. 76 (Force's essay hereinafter referred to as Force, "Newton's God of Dominion;" major edition as Force and Popkin (eds.), *Essays*): "Westfall's glorious biography of Newton, *Never at rest*, establishes a new paradigm of excellence and comprehensiveness in the study of Newton. Westfall is the only writer in the world today who knows intimately all the hues and shades in Newton's rainbow. [...] But, in considering the relationship between Newton's theology and Newton's science, for example, Westfall holds to studying each hue separately." See also Stephen D. Snobelen, "To Discourse of God: Isaac Newton's Heterodox Theology and His Natural Philosophy," in Paul B. Wood (ed.), *Science and Dissent in England, 1688-1945*, Aldershot, Hampshire, Ashgate, 2004, pp. 39-65, on p. 40: "Richard Westfall, [...] although he was happy to detail Newton's lifelong interest in theology and prophecy, [...] was reticent to entertain the possibility that a study that formed such an integral part of his personality could have helped shape his natural philosophy – although he was quite happy to allow for the reverse. Westfall's outlook is encapsulated in a 1982 paper in which he expressed doubt about the possibility that Newton's theology ever informed his philosophy of nature in any important way, and then went on to say that 'we are more likely to find the flow of influence moving from science, the rising enterprise, toward theology, the old and (as we know from hindsight) fading one'" (the essay will be henceforth quoted as Snobelen, "To Discourse of God"). For a comparative

recognize, and admit, that even the “non-scientific” disciplines covered by Newton’s research – i.e. alchemical and Biblical/theological studies – must be considered and treated with the same dignity<sup>38</sup> which his pioneering scientific works have all been regarded with. Nevertheless, thanks to the pioneering<sup>39</sup> criticism of leading scholars such as James E. Force, Frank E. Manuel, Richard H. Popkin, Richard S. Westfall, and to the most important alchemical studies developed by Betty Jo Teeter Dobbs and Karin Figala – despite the limited understanding<sup>40</sup> of alchemy they had to draw upon and the fierce criticism they received from hidebound historians, – it is now widely and commonly alleged that Isaac Newton’s alchemical pursuit occupied<sup>41</sup> and interested him

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critics on Newton’s bibliographies see Philip Ashley Fanning, *Isaac Newton and the Transmutation of Alchemy: An Alternate View of the Scientific Revolution*, Berkeley, California, North Atlantic Books, 2009. A complete collection of early Newton’s biographies is fundable in: R. Higgitt, R. Iliffe and M. Keynes (eds.), *Early Biographies of Isaac Newton 1660-1885*, 2 vols., London, Pickering & Chatto, 2006. One last captivating biography on Newton has been recently published in France by the astrophysicist Jean-Pierre Luminet; my referring Italian edition is: Jean-Pierre Luminet, *La Parrucca di Newton. Scienziato, Alchimista o Psicopatico?*, Roma, La Lepre, 2011.

<sup>38</sup> “La “tentazione” di trascurare gli interessi alchemici di uno scienziato come l’autore dei Principia, che aveva caratterizzato un po’ tutta la letteratura critica su Newton fino alla metà del XX secolo, è ormai superata, dopo che gli studi di Betty Jo Teeter Dobbs hanno rivelato l’importanza dei manoscritti alchemici che, assieme a quelli di argomento teologico e storico, ma anche a molti scritti di matematica, di ottica e di fisica, sono rimasti fino ad oggi per la maggior parte inediti” (Michela Pereira, *Arcana Sapienza. L’Alchimia dalle Origini a Jung*, Roma, Carocci, 2001, p. 243, hereinafter quoted as Pereira, *Arcana Sapienza*). Cfr. Force, “Newton’s God of Dominion,” cit., p. 75: “There often seem to be as many Newtons as there are primary colors and we study Newton by studying the many manifestations of his multi-hued genius independently. Failing to appreciate the synthetic unity in Newton’s thought is the inevitable result of overemphasizing one or another of its integrated components.” See also Fauvel et al. (eds.), *Let Newton Be!*, cit., Introduction, p. 7: “It is not really helpful to insist on considering Newton as one or the other. Nor is it sensible to consider a multiplicity of Newtons [...]. We need to appreciate that Newton could be *one and all* of these things.” Cfr. Cherry Gilchrist, *Alchemy, the Great Work*, Wellingborough, Northamptonshire, Aquarian Press, 1984, p. 9, henceforth referred to as Gilchrist, *Alchemy*: “Alchemy demands to be taken seriously; it has been practised by men of distinction in the fields of philosophy, science, medicine and divinity who were inspired by its aims and who dedicated much time and material resources to its pursuit.”

<sup>39</sup> Cfr. Force, “Newton’s God of Dominion,” in Force and Popkin (eds.), *Essays*, cit., p. 76: “There is a second Newton: the heretical theologian who disbelieves in the holy Trinity and believes in the literal fulfilment of the apocalyptic scenario in the book of Revelation. The pioneers in revealing this second Newton have been Frank E. Manuel and Richard S. Westfall.”

<sup>40</sup> Cesare Vasoli remarks how the understanding of Hermetic elements, which were at the basis of the development of the scientific revolution, went along with the low rate which alchemy was ranked with among scholars: “The study of the hermetic elements at the origins of the scientific revolution leaves many people with a feeling of discomfort, an intellectual malaise, as though something indecent had been discovered and was embarrassingly harped upon” (Cesare Vasoli, “Alchemy in the Seventeenth Century: *The European and Italian Scene*,” in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., pp. 49-58, on p. 49).

<sup>41</sup> It would be useful to refer to the critical debate appeared in the volume *Reason, Experiment, and Mysticism* between Marie Boas Hall and Richard S. Westfall. Cfr. Richard S. Westfall, “The Role of Alchemy in Newton’s Career” (pp. 189-232) and Marie Boas Hall, “Newton’s Voyage in the Strange

as seriously as optics or mathematics, just as his Biblical exegesis – as Stephen D. Snobelen’s recent researches into Newton Biblical studies have revealed, – rivalled<sup>42</sup> his scientific commitment both in terms of time and energy he spent on them. Remarkably, John Maynard Keynes, the famous economist and the former owner of the world’s largest collection of Newton’s alchemical manuscripts (which are now held, after Keynes’ death, at King’s College Library, Cambridge), drastically challenged the rationalist aura of Isaac Newton – the *imago scientiæ* par excellence – by boasting that he “was not the first of the age of reason. He was the last of the magicians.”<sup>43</sup> It would be definitely tantalizing to adjust, to Keynes’ portrait of Isaac Newton, Frances A. Yates’ lines about the lurking figure of the Renaissance magus who “[...] had his roots in the Hermetic core of Renaissance Neo-Platonism, and [...] exemplifies that changed attitude of man to the cosmos which was the necessary preliminary to the rise of science.”<sup>44</sup> Actually, this description does perfectly match with Newton’s role as the father of modern science: standing tall on the edge of mechanical rationalism, he nonetheless glanced back to the fathers of knowledge to vouchsafe his mission of

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Seas of Alchemy” (pp. 239-246) both in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit..

<sup>42</sup> On this subject see especially Betty Jo Teeter Dobbs, “Newton’s Alchemy and His Theory of Matter,” in *Isis*, cit., p. 512: “Historians of recent decades have, however, chipped stubbornly away at the problem of Newton’s alchemy, and the feeling that it must have a serious and coherent relationship with his theory of matter has been vindicated. We can now see that Newton used alchemy as a critical counterweight against the inadequacies of ancient and contemporary atomism, inadequacies regarding cohesion and activity, life and vegetation, and the dominion and providence of God. His final formulations on the nature of matter and the powers associated with it grew naturally out of alchemical, theological, metaphysical, and observational concerns.” Cfr. also J. E. McGuire and P. M. Rattansi, “Newton and the ‘Pipes of Pan’,” in *Notes and Records of the Royal Society of London*, Vol. 21, No. 2 (Dec., 1966), pp. 108-143, stable URL: <http://www.jstor.org/stable/531064>, on p. 108: “His studies of theology and ancient chronology were of equal importance to him, and were pursued in as rigorous a fashion as his scientific work” (this essay will hereinafter be referred to as McGuire and Rattansi, “Newton and the ‘Pipes of Pan’”). Further important references to comparative studies on the bulk of Newton’s works could be especially found in McLachlan (ed.), *Theological Manuscripts*, cit.; Frank E. Manuel, *Isaac Newton Historian*, Cambridge, Massachusetts, Harvard University Press, 1963.

<sup>43</sup> J. M. Keynes, “Newton, the Man,” in *The Royal Society Newton Tercentenary Celebration 15-19 July 1946*, Cambridge, Cambridge University Press, 1947, pp. 27-34, on p. 27: “Newton was not the first of the age of reason. He was the last of the magicians, the last of the Babylonians and Sumerians, the last great mind which looked out on the visible and intellectual world with the same eyes as those who began to build our intellectual inheritance rather less than 10,000 years ago.”

<sup>44</sup> Frances A. Yates, “The Hermetic Tradition in Renaissance Science,” in Charles S. Singleton (ed.), *Art, Science, and History in the Renaissance*, Baltimore, The John Hopkins Press, 1968, pp. 255-274, on p. 255.



binding up together the world of future to the dimension of yore, according to God's plans thereof.

From an historical point of view, according to Lawrence M. Principe, "Newton's alchemy would not have become a *cause célèbre* of the 1970s and 1980s had eighteenth-century and subsequent generations not recrafted Newton into the very model of the modern scientist and presented alchemy as something removed from – indeed, *opposed to* – science. Nor would Newton's alchemy have been kept hidden for so long as an embarrassment."<sup>45</sup> And, as long as Principe's opinion is incontrovertibly true and therefore widely sharable, the reason of scholars' long reckless disregard for Newton's alchemical research must be only due to the low rate<sup>46</sup> which alchemy<sup>47</sup> had

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<sup>45</sup> Lawrence M. Principe, "Alchemy Restored," in *Isis*, Vol. 102, No. 2 (June, 2011), pp. 305-312, stable URL: <http://www.jstor.org/stable/10.1086/660139>, on p. 305.

<sup>46</sup> Cfr. Linden, *Darke Hieroglyphicks*, cit., p. 105: "Crucial to an understanding of the reasons for this negative treatment is the fact that authors typically took an interest only on the *exoteric* aspects of alchemy: the making of the philosopher's stone, the possibility of transmuting base metals, and the efficacy of universal medicines and elixirs."

<sup>47</sup> It is actually not an easy task to define how alchemy has changed throughout the centuries of its steady development for the whole history of the alchemical science is far too complex to lead to a single one-sided definition or to an ultimate survey of such a mysterious art. Yet my concern is not to give a comprehensive explanation of what alchemy, in its widest sense, is, but to focus upon those topics needed by my research to be best accomplished. Though one footnote could not encompass the outstanding works which display the breadth of alchemy, it would be worth to see especially T. Moran, *The Alchemical World of the German Court*, Stuttgart, Steiner, 1991; Tara E. Nummedal, *Alchemy and Authority in the Holy Roman Empire*, Chicago, Chicago University Press, 2007; Pamela H. Smith, *The Business of Alchemy: Science and Culture in the Holy Roman Empire*, Princeton, Princeton University Press, 1994. Most suitable reference books and important studies about the history of alchemy are: *Alchimia. I Testi Della Tradizione Occidentale*, edited by Michela Pereira, Milano, Arnoldo Mondadori Editore, 2006, henceforth referred to as Pereira (ed.), *Alchimia*; Titus Burckhardt, *Alchemy*, Baltimore, Maryland, Penguin, 1971; P. Rattansi and A. Clericuzio (eds.), *Alchemy and Chemistry in the 16th and 17th Centuries*, Dordrecht, Kluwer, 1994, pp. 1-15, hereinafter quoted as Rattansi and Clericuzio (eds.), *Alchemy and Chemistry*, Maurice P. Crosland, *Historical Studies in the Language of Chemistry*, London, Heinemann, 1962, hereinafter quoted as Crosland, *Historical Studies*; Mircea Eliade, *Il Mito dell'Alchimia*, Roma, Avanzini e Torraca Editori, 1968; E. J. Holmyard, *Alchemy*, cit.; Jung, *Alchemical Studies*, cit.; Jung, *Mysterium Coniunctionis*; Jung, *Psychology and Alchemy*, cit.; R. B. Onians, *The Origins of European Thought*, Cambridge, Cambridge University Press, 1951; Pereira, *Arcana Sapienza*, cit.; Wayne Shumaker, *The Occult Sciences in the Renaissance. A Study in Intellectual Patterns*, Berkeley and Los Angeles, California, University of California Press, 1972, hereinafter quoted as Shumaker, *The Occult Sciences in the Renaissance*; John Maxson Stillman, *The Story of Early Chemistry* (1924) reprinted as *The Story of Alchemy and Early Chemistry*, New York, Dover Publications, 1960 (hereinafter quoted as Stillman, *The Story of Alchemy*); Lynn Thorndike, *A History of Magic and Experimental Science*, 8 vols., New York, Columbia University Press, 1923-1958, henceforth referred to as Thorndike, *History*; Frances A. Yates, *Giordano Bruno and the Hermetic Tradition*, London, Routledge & Kegan Paul, 1964, hereinafter quoted as Yates, *Giordano Bruno*. For detailed studies and theories about the origin of the term "alchemy" see especially Paolo Cortesi, *Storia e Segreti dell'Alchimia*, Roma, Newton & Compton, 2005, p. 35; Mino Gabriele, *Alchimia e Iconologia*, Udine, Forum, 1997, pp. 11-17;

for centuries been ranked with. But, since we nowadays allegedly enrol alchemy among the tidal waves of natural philosophy, it should instead startle us to discover early modern men of letters rejecting the pursue of *chrysopœia*: “[...] I know of no modern scholar who maintains that alchemy is part of “science” in the modern sense. The point is that it was fully part of contemporaneous *natural philosophy*.”<sup>48</sup> Accordingly, a very first example of Newton’s natural philosophy is traceable in Yahuda MS. 41, entitled “Draft chapters of a treatise on the origin of religion and its corruption:”

So then twas one designe of the first institution of the true religion to propose to mankind by the frame of the ancient Temples, the study of the frame of the world as the true Temple of the great God they worshipped. And thence it was that the Priests anciently were above other men well skilled in the knowledge of the true frame of Nature & accounted it a great part of their Theology.<sup>49</sup>

Furthermore, as suggested by J. E. McGuire and P. M. Rattansi,<sup>50</sup> Newton himself, in the *Principia*, remarks his conviction, actually shared by a most part of the intellectual community of the seventeenth century, that both Nature’s signs and God’s words, intrinsically conceived to harmonize themselves and bolster each other, would

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Gilchrist, *Alchemy*, cit., pp. 9-10; R. B. Onians, *The Origins of European Thought*, cit., pp. 281; 508-509; Pereira, *Arcana Sapienza*, cit., p. 20; note 9 on p. 29.

<sup>48</sup> Lawrence M. Principe, “Alchemy Restored,” in *Isis*, cit., p. 311. Principe himself insists on the true meaning that has to be attached on the concept of natural philosophy by quoting Walter Pagel who, “defending the study of topics that positivistic historians of the day saw as “rubbish,” emphasized that early modern thinkers pursued “Philosophia Naturalis,” defined succinctly as “nature in her entirety, cosmology in its widest sense — that is a mixture of Science, Theology, and Metaphysics” (*ibid.*).

<sup>49</sup> Yahuda MS. 41, f. <7r>, Jewish National and University Library, Jerusalem. The manuscript, written mainly in English with some Latin parts and Greek quotations, is dated back to the early 1690s and consists of c. 28,550 words, 47 pp. on 29 ff. A complete transcription of the manuscript is available online at: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00077>.

<sup>50</sup> “For he saw the task of natural philosophy as the restoration of the knowledge of the complete system of the cosmos, including God as the creator and as the ever-present agent” (McGuire and Rattansi, “Newton and the ‘Pipes of Pan’,” cit., p. 126). A completely different opinion has been expressed by H. Guerlac: “Newton was setting forth only the mathematical principles of natural philosophy, although that philosophy was still to come, ‘the work of other hands, though here and there Newton offers hints and suggestions as to what it may contain’; that new natural philosophy ‘must be erected ... inside the boundaries that he had marked out by his mathematical laws’” (H. Guerlac, “Where the Statue Stood: Divergent Loyalties to Newton in the Eighteenth Century,” in Earl R. Wasserman (ed.), *Aspects of the Eighteenth Century*, Baltimore, John Hopkins University Press, 1965, p. 333).

eventually accomplish their ultimate goal only once their echoes were to be sounded out together in a sole system of knowledge. Remarkably, Newton avows this *credo* of his by summing up in the *General Scholium* his whole scientific and natural knowledge with an eventual boastful clue which runs as follows:

Et hæc de deo, de quo utique ex phænomenis differere,  
ad philosophiam naturalem pertinent.<sup>51</sup>

Stephen D. Snobelen also highlighted how, by sharing an idea largely diffused among natural philosophers of his age, “Newton saw some sort of relationship between natural philosophy and the interpretation of the Bible”<sup>52</sup> since he sincerely embraced the pristine creed of the two Books – at least in general terms. It was allegedly believed that the Almighty had set down the Book of Nature, as well as the Holy Scriptures, and a natural outworking of this theory engendered a twin respect for the ultimate divine authority of both realities (that is, natural philosophy strictly pursued and God’s Word properly interpreted). Actually, since both Books were deemed to be derived from the same holy authority, one would expect to find concord between the two of them and, so, “Newton believed that the ideal for his age was a unified philosophy that brought

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<sup>51</sup> Isaac Newton, *Philosophiæ Naturalis Principia Mathematica*, 3rd. ed. (1726) with variant readings, assembled and edited by Alexandre Koyré and I. Bernard Cohen with Anne Whitman, 2 Vols., Cambridge, Harvard University Press, 1972, hereinafter quoted as Koyré and Cohen (eds.), *Principia*, 3rd. ed. Quotation from: Koyré and Cohen (eds.), *Principia*, 3rd. ed., cit., vol. II, p. 764. For the English translation see Cohen and Whitman, *The Principia*, cit., p. 943: “This concludes the discussion of God, and to treat of God from phenomena is certainly part of natural philosophy.” Cfr. McGuire and Rattansi, “Newton and the ‘Pipes of Pan’,” cit., p. 121: “[...] Newton considered it necessary to complement his endeavours in natural philosophy by an investigation of the sources of the ancient knowledge that he believed himself to be re-discovering; and also that in that ancient tradition God was conceived as being in the most intimate relation with His creation.”

<sup>52</sup> Stephen D. Snobelen, “Not in the Language of Astronomers’: Isaac Newton, the Scriptures, and the Hermeneutics of Accommodation,” in Jitse M. van der Meer and Scott H. Mandelbrote (eds.), *Interpreting Nature and Scripture in the Abrahamic Religions: History of a Dialogue*, Vol. 1, Leiden, Brill, 2008, pp. 491-530, on p. 493 (Snobelen’s essay henceforth referred to as Snobelen, “Not in the Language of Astronomers”). Moreover, Marie Boas Hall remarks herself that “Newton was very much a man of his own age” (Marie Boas Hall, “Newton’s Voyage in the Strange Seas of Alchemy”, cit., p. 239).

together the studies of the Book of Nature and the Book of Scripture.”<sup>53</sup> Consequently, within the whole bulk of Newton’s works, this concord can be fully grasped only by a comprehensive syncretic reading of his scientific works along with his Biblical and alchemical studies:

[...] the most important thing to be discovered in the Biblical records is that God has laid down the plan of human history, as well as the plan of natural history. The latter is to be studied primarily in the Book of Nature, through scientific researches. The former is to be studied in the central prophetic statement about the course of human history, the books of *Daniel* and *Revelation*.<sup>54</sup>

Given the scant attention scholars have paid to the reading of Newton’s non-scientific production – his alchemical and theological studies, – it results therefore of primary importance to collect the missing pieces of the puzzle which will enable us to picture Newton’s entire work as an outstanding unique monolithic outcome.<sup>55</sup> By quoting Betty Jo Teeter Dobbs, whom I do completely agree with, it is possible to reasonably state that “especially when considering Newton’s theological concerns, one can now understand his intense interest in the alchemical process, for he saw it as the epitome of God’s providential, nonmechanical action in the world.”<sup>56</sup> Notwithstanding

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<sup>53</sup> Stephen D. Snobelen, “‘The True Frame of Nature’: Isaac Newton, Heresy and the Reformation of Natural Philosophy,” in John Brooke and Ian Maclean (eds.), *Heterodoxy in Early Modern Science and Religion*, Oxford, Oxford University Press, 2005, pp. 223-262, on p. 260 (Snobelen’s essay henceforth referred to as Snobelen, “‘The True Frame of Nature’”). Cfr. Thomas Tymme’s exposition of the doctrine of the two books: “the Almighty Creator of the Heavens and the Hearth [...] hath set before our eyes two most principall Bookes: the one of Nature, and the other of his written Word” (Tymme’s quotation is from Allen G. Debus, *Man and Nature in the Renaissance*, Cambridge, Cambridge University Press, 1978, p. 14).

<sup>54</sup> Richard H. Popkin, “Newton’s Biblical Theology and His Theological Physics,” in Scheurer and Debrock (eds.), *Newton’s Legacy*, pp. 81-97, on p. 87.

<sup>55</sup> Cfr. Arthur Quinn’s lines in his article “On Reading Newton Apocalyptically” about the new frontier in Newtonian criticism opened up by Rattansi’s and McGuire’s paper “Newton and the ‘Pipes of Pan’”: Newton’s “persistent interest in theological and alchemical matters could be better integrated with his famous achievement in physics and mathematics than was previously thought possible. How exactly this was to be done became for me then, and remains for me now, one of the most interesting questions in Newton studies” (Arthur Quinn, “On Reading Newton Apocalyptically,” in Popkin (ed.), *Millenarianism and Messianism*, cit., pp. 176-177).

<sup>56</sup> Betty Jo Teeter Dobbs, “Newton’s Alchemy and His Theory of Matter,” in *Isis*, cit., p. 528.

that, as maintained by James E. Force, “Newton’s theology, not just his religion, influences his science every bit as much as his science influences the rigorous textual scholarship of his theology,”<sup>57</sup> the new horizon of contemporary Newtonian criticism should, in my opinion, focus on establishing whether this mutual connection between science and religion (that is, theology) may be compared to a supposed similar bond between Newton’s acquaintance with alchemy and his interpretation of the Apocalypse. As already hinted at, the fulcrum of my Ph.D. thesis chiefly relies at the core of this unsolved question about the nature of Newton’s knowledge: my ultimate aim turns out therefore in an attempt at unveiling what of Newton’s alchemical mind has passed into his theological/apocalyptic writings and to what extent the former have come to influence the latter. The clue is that most theological manuscripts enlisted in the Yahuda collection, which I will chiefly rely on, have still so far remained uncovered by a serious scholar criticism.

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<sup>57</sup> Force, “Newton’s God of Dominion”, cit., p. 78.

## 1.1 Some Problems of Textual Interpretation

Any further logical development of this study of mine urges some preliminary considerations about the nature of the manuscripts, texts, and works placed at the core of my research. Yet this introductory discourse also demands a methodological premise on the analytical tools which I am going to use in the enquiry into the texts themselves. One first approach is the psychological Jungian model which the Swiss psychiatrist broadly applied to his thorough analysis of alchemical texts – a ultimate critical contribution which has come to shuffle contemporary alchemical criticism for good:

The *trait d'union* between alchemy, conceived as real historical phenomenon, and analytic psychology is represented by the symbolic character of the one process to which they do both refer to. As a matter of fact, the bold assertion of the chiefly symbolic character of alchemy represents a most considerable achievement of Jung's alchemical interpretation.<sup>58</sup>

Basically influenced by the recurring archaic symbolism of his patients' dreams, Jung established serious connections relating those dream-like projections to alchemical imagery. What Dobbs' reasonably accounts<sup>59</sup> as valuable critical pattern to her studies of Newton's alchemical mind, I myself deem to be as more trustworthy as possible employed in the alchemical analysis of the *Treatise on the Apocalypse*. The archetypal character of some alchemical symbols and of the principles underlying most Hermetic/alchemical doctrines could be sensibly argued to be the reason of Newton's heterogeneous use of them. Besides Jung's psychological approach towards

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<sup>58</sup> Pereira, "Il Paradigma della Trasformazione," cit., pp. 199-200: "*Il trait d'union* basilare fra l'alchimia, intesa come concreto fenomeno storico, e la psicologia analitica è costituito dal *carattere simbolico* del processo cui entrambe si riferiscono. L'affermazione netta del "carattere soprattutto simbolico" dell'alchimia [...] è infatti una proposizione capitale nell'interpretazione che Jung ne ha dato;" my translation.

<sup>59</sup> See Dobbs, *The Foundations of Newton's Alchemy*, cit., pp. 25-35.

alchemical studies, scholars of different ages strived to define the soteriological meaning of esoteric alchemy in different ways. Mircea Eliade (1907-1986) placed alchemy within the broader framework of the history of religions, and through an anthropological study<sup>60</sup> of the *Art*, he outlined a peculiar religious attitude which tended to reflect the primitive behaviours of past societies towards raw matter. Hence, according to him, alchemy was a “spiritual technique” – a religious phenomenon – ruled by proper laws and not an important chapter in the history of science. As far as Newton’s dealing with both alchemical and theological subjects is concerned, another outstanding critical attitude which I will extensively rely on is that of Titus Burckhardt<sup>61</sup> (1908-1984) who privileged the Hermetic tradition as primary source for the development of modern alchemical tradition. Each of these critical hypotheses might help, at the same rate, to enlighten and focus single aspects of alchemical esotericism since heterogeneous was the nature of the influences which led to the establishment of a single theoretical body of knowledge shared, somehow, by most of the adepts. Since one of my targets is supposed to be the suggestion of Newton’s most relevant field of alchemical influence, the path to follow in order to serve my purpose compels me to undertake a rigorous text analysis. Actually, there are three different categories of written sources which I will chiefly rely on: Newton’s manuscripts, alchemical primary

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<sup>60</sup> Most important Eliade’s works which I will rely on are: Mircea Eliade, *Arti del Metallo e Alchimia*, Torino, Boringhieri, 1977; Mircea Eliade, *Il Mito dell’Alchimia*, Roma, Avanzini e Torraca Editori, 1968; Mircea Eliade, *Myths, Dreams, and Mysteries: the Encounter between Contemporary Faiths and Archaic Realities*, translated by Philip Mairet, London, Harvill Press, 1960, hereinafter quoted as Eliade, *Myths, Dreams, and Mysteries*; Mircea Eliade, *Storia delle Credenze e delle Idee Religiose*, Firenze, Sansoni, 1979-1983; Mircea Eliade, *The Myth of the Eternal Return*, translated from the French by Willard R. Trask, New York, Pantheon Books, 1945, hereinafter referred to as Eliade, *Eternal Return*; Mircea Eliade, *The Quest. History and Meaning in Religion*, Chicago, University of Chicago Press, 1969, henceforth referred to as Eliade, *The Quest*.

<sup>61</sup> Most important Burckhardt’s works which I will rely on are: Titus Burckhardt, *Alchemie: Sinn und Weltbild*, Olten, Walter Verlag, 1960, hereinafter quoted as Burckhardt, *Alchemie*; Titus Burckhardt, *Alchemy: Science of the Cosmos, Science of the Soul*, London, Stuart & Watkins, 1967, hereinafter referred to as Burckhardt, *Alchemy*; Titus Burckhardt, *Mirror of the Intellect: Essays on Traditional Science & Sacred Art*, translated and edited by William Stoddart, Albany, State University of New York Press, 1987, hereinafter referred to as Burckhardt, *Mirror of the Intellect*.

sources<sup>62</sup> and the Bible. Some hints at the rate and mode of their interaction will result therefore to be of great value.

As a matter of fact, the controversial, and somehow curious, history<sup>63</sup> of Newton's theological manuscripts indeed equals their heretical character. It can be reasonably argued that Newton's Biblical scholarship<sup>64</sup> was the result of an extremely intriguing blend of modern Biblical exegesis and science applied to it, besides the true conviction that a correct interpretation of God's revealed Word could lead man to discover the Almighty's prophesised plan for both mankind and universal history. Since his college days as a student at Cambridge down to his death, Newton was seriously concerned with religious and theological studies and this commitment of his resulted in a great deal about the accuracy of the Bible, its chronology and leading messages. The long preparation of manuscripts, which took over the central years in Newton's intellectual career, just led to the posthumous publication of four items: *The Chronology of Ancient Kingdoms Amended* (1728), *Observations upon the Prophecies of Daniel and the Apocalypse of St. John* (1733), an essay on the Cubit of the Hebrews (1737), and two letters to John Locke dealing with the Doctrine of the Trinity (1743). Besides these

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<sup>62</sup> The following primary sources are actually of great value to an alchemical criticism of Newton's biblical exegesis because they highly influenced the development of his alchemical mind. These sources are namely: Altus, *Mutus Liber: l'alchimia e il suo libro muto*, introduzione e commento di Eugene Canseliet, Roma, Arkeios, 1995, henceforth referred to as Altus, *Mutus Liber*; Jean d'Espagnet, *Arcanum Hermeticae Philosophiae Opus*, Geneve, Ioannis Ant. et Samuelis de Tourne, 1653, hereinafter referred to as d'Espagnet, *Arcanum*; Jean d'Espagnet, *The Summary of Physics Restored*, edited by Thomas Willard, New York, Garland Publishing, 1999, hereinafter referred to as d'Espagnet, *Physics Restored*; Michael Maier, *Atalanta Fugiens*, Roma, Edizioni Mediterranee, 2002, hereinafter referred to as Maier, *Atalanta Fugiens*; Michael Maier, *Atalanta Fugiens*, translated from the Latin by Joscelyn Godwin, Grand Rapids, Phanes Press, 1989, hereinafter quoted as Godwin (tr.), *Atalanta Fugiens*; Eirenaeus Philalates, *Alchemical Works: Eirenaeus Philalates Compiled*, edited by S. Meroow Broddle, Boulder, Cinnabar, 1994, hereinafter quoted as Philalates, *Alchemical Works*; Salomon Trismosin, *Splendor Solis*, translated by Joscelyn Godwin, Grand Rapids, Phanes Press, 1991, hereinafter referred to as Trismosin, *Splendor Solis*.

<sup>63</sup> On the troubled history of Newton's non-scientific manuscripts see especially: Mamiani (ed.), *Trattato sull'Apocalisse*, cit., Introduzione, pp. VII-VIII; Richard H. Popkin, *The Third Force in Seventeenth-century Thought*, Leiden, E. J. Brill, 1992, pp. 172-174, hereinafter quoted as Popkin, *The Third Force*; Richard S. Westfall, *Never at Rest*, cit., pp. 875-877. A specific account of the Sotheby sale is on-line at: <http://www.newtonproject.sussex.ac.uk/prism.php?id=23>. A further detailed account on Newton's theological papers will be given in chapter IV.

<sup>64</sup> Cfr. Richard H. Popkin, "Newton's Biblical Theology and His Theological Physics," in Scheurer and Debrock (eds.), *Newton's Legacy*, cit., p. 81.



material, a large amount of unpublished manuscripts of heterogeneous nature is nowadays collected in various libraries worldwide after a troubled surviving through centuries of unjustifiable oblivion. After Newton's death in 1727, the lack of a holograph will of his led to the passing of all his possessions to his half-niece Catherine Barton Conduitt and then to her descendants. After a quick examination shortly after Newton's death, some of the manuscripts were deemed suitable to publication while all the others, regarded "not fit to be printed,"<sup>65</sup> were given back to Newton's heirs. Another attempt at offering these manuscripts to great British cultural institutions was made only in the nineteenth century when they were offered to Cambridge University. But the commission drawn up to evaluate Newton's great amount of documents on religion and theology rejected them concluding that the alchemical papers were "of very little interest" and his theological work not "of any great value."<sup>66</sup> The only manuscripts they deemed fit for retention were, of course, the ones on mathematics and physical science which have come up to be collected in the Portsmouth Collection in Cambridge. The remaining large amount of manuscripts was eventually bundled up into consistent lots to be auctioned off at Sotheby's in 1936.<sup>67</sup> It is attested that the hugest purchases were made by Lord John Maynard Keynes, who bought a considerable number of alchemical manuscripts<sup>68</sup> now collected at King's College, Cambridge, and by Prof. A. S. Yahuda whose enormous collection enlisted theological and biblical studies

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<sup>65</sup> The expression is also quoted by Dobbs and Jacob. See Dobbs and Jacob (eds.), *Newton and the Culture of Newtonianism*, cit. p. 11.

<sup>66</sup> Both expressions are quoted from *A Catalogue of the Portsmouth Collection of Books and Papers Written by or Belonging to Sir Isaac Newton*, Cambridge, Cambridge University Press, 1888, Preface, p. xix.

<sup>67</sup> See *A Catalogue of the Portsmouth Collection of Books and Papers*, Cambridge, 1888, p. xix. On Newton's papers for sale at Sotheby's see especially Rob Iliffe, "A 'Connected System'? The Snare of a Beautiful Hand and the Unity of Newton's Archive," in Michael Hunter (ed.), *Archives of the Scientific Revolution*, Woodbridge, Boydell, 1998, pp. 137-157; Peter Spargo, "Sotheby, Keynes, and Yahuda: The 1936 Sale of Newton's Manuscripts," in P. Harman and A. E. Shapiro (eds.), *The Investigation of Difficult Things: Essays on Newton and the History of the Exact Sciences, in Honour of D. T. Whiteside*, Cambridge, Cambridge University Press, 1992, pp. 115-134, hereinafter referred to as Harman and Shapiro (eds.), *The Investigation of Difficult Things*.

<sup>68</sup> A survey of the theological manuscripts in the Keynes Collection could be found in McLachlan (ed.), *Theological Manuscripts*, cit..

nowadays collected at the Jewish National and University Library of Jerusalem. Eventually donated to Cambridge in 1946, the alchemical manuscripts originally gathered by Lord Keynes received, at first, a sporadic study sometimes even affected by anachronistic or misleading criteria of analysis. Moreover, even when scholars hinted at Newton's non-scientific works, these were just called up but to be fended off.<sup>69</sup> It can therefore be reasonably argued that an improving textual analysis, notwithstanding the critical point of view lying at the basis of the analysis itself, must necessarily reckon with the interpretative techniques suitable to explain the symbolic languages and the gaps in meanings intrinsically bound to the nature of alchemical prose and lyrics. Accordingly, an overview of the most diffused alchemical symbols and metaphors applied to Christian symbolism, especially in the literary milieu of the epoch, is going to be one very suitable way to approach an enquiry into the secret alchemical imagery and meanings hidden behind Newton's reading of the prophecies:

The use of the occult language of alchemy and the language of the cabala as allegorical languages for the truth of the Christian religion became, in the seventeenth century, as legitimate as the allegorical Christian interpretations of ancient myths had always been.<sup>70</sup>

This does not imply a literary approach to the analysis of Newton's millenaristic manuscripts but it otherwise suggests that the metaphorical mechanism of knowledge expressed by alchemical philosophy is suitable to convey meanings in sundry contexts of application. The key to guess how this may also be proved by Newton's *Treatise on the Apocalypse* strictly relies on his looking "on the whole universe and all that is in it *as a riddle*, as a secret which could be read by applying pure

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<sup>69</sup> J. M. Keynes, "Newton, the Man," cit., p. 29.

<sup>70</sup> Liselotte Dieckmann, "Renaissance Hieroglyphics," in *Comparative Literature*, Vol. 9, No. 4 (Autumn, 1957), pp. 308-321, on p. 316. Cfr. Lyndy Abraham, *Marvell & Alchemy*, Aldershot, Scolar Press, 1990, p. 25.

thought to certain evidence, certain mystic clues which God had laid out about the world to allow a sort of philosopher's treasure hunt to the esoteric brotherhood."<sup>71</sup>

According to Newton himself, each single field reached out by his cultural research was in need for long time and hard labour to be wiped away from confusion and doubt. Due to the highly symbolic characters of the languages of mathematics, alchemy, and the Holy Scriptures, aware scholars should not be bewildered anymore by an overlapping in Newton's stages of commitment to these three different areas of his scholarship. He found indeed serious linkages in the chains of symbolic meanings binding together these fields of knowledge insofar as the rules of interpretations he adopted to solve the riddles of figurative Biblical passages passed into the scientific texts as heuristic rules. It is highly remarkable how, in the *Scholium*, Newton sought to equalize the nature of the misleading fortune which scientific speculation and the Scriptures had been so far endowed with:

Quantitates relativæ non sunt igitur eæ ipsæ quantitates, quarum nomina præ se ferunt, sed sunt earum mensuræ illæ sensibiles (veræ an errantes) quibus vulgus loco quantitatum mensuratarum utitur. [...] Proinde vim inferunt sacris literis, qui voces hasce de quantitibus mensuratis ibi intepretantur.<sup>72</sup>

Hence, since he spent so much time striving to decode alchemical and Biblical texts which demanded highly-developed exegetical abilities, developing techniques of interpretation must have been a challenging task carried out by Newton throughout his whole life. The task of a fruitful alchemical-oriented text analysis of his various drafts of a *Treatise on the Apocalypse* would therefore mean to adopt a strictly selective

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<sup>71</sup> David Brewster, recoiling at Newton's voluminous alchemical notes, "cannot understand how a mind of such power [...] could stoop to be even the copyist of the most contemptible alchemical poetry" regarding the annotations to be "the obvious product of a fool and a knave" (David Brewster, *Memoirs of the Life, Writings, and Discoveries of Sir Isaac Newton*, cit., vol. II, pp. 374-375).

<sup>72</sup> Koyré and Cohen (eds.), *Principia*, 3rd. ed., cit., p. 52. English translation: Cohen and Whitman, *The Principia*, cit., pp. 413-414.

criterion in choosing which are the possible references crisscrossing the alchemical and prophetic texts in each single supposed overlapping *momentum*. Due to the especially deceiving nature of alchemical symbols, the challenge of restraining from labelling whatever may seem to carry out hidden alchemical meanings requires as much carefulness as possible to be faced. It is indeed when we come to the core of the most cryptic alchemical symbolism that difficulties to decipher it start to pile up and, therefore, doubts increasingly arise. The overdue premise is that the symbolism adopted in alchemical texts of all ages is of a dual nature: a graphic one – which can be counterchecked in Newton’s alchemical manuscripts, – and the other one acting at a literary level – the one traceable in his prophetic manuscripts.

The sacredness of the alchemical creed, whose adepts spoke “in riddles as completely as possible”<sup>73</sup> to wrap up their secrets in an extremely ambiguous and obscure symbolism<sup>74</sup> allegedly designed to conceal their supposed knowledge from the profanes, bade the adoption of a would-be Edenic language.<sup>75</sup> This had to be comprehensible only to those belonging to the secret community of chosen disciples

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<sup>73</sup> E. J. Holmyard, *Alchemy*, cit., p. 28. Holmyard’s quotation is, in its turn, taken from Sherwood Taylor’s translation of an alchemical treatise ascribed to Stephanos of Alexandria (VII century A.D.); no footnote in Holmyard’s edition indicates the original source.

<sup>74</sup> Cfr. Paolo Rossi, *La Nascita della Scienza Moderna in Europa*, Roma-Bari, Laterza, 1997, pp. 21-22, hereinafter referred to as Rossi, *Scienza Moderna*: “Quel linguaggio è strutturalmente e non accidentalmente pieno di slittamenti semantici, di metafore, analogie, allusioni.”

<sup>75</sup> “La presupposizione dell’esistenza di una lingua edenica è, dunque al centro del sogno alchemico che presiede alla visione della *rubedo*. *Nelle operazioni alchemiche è confitta la fiducia di restaurare un ordine originario che è stato turbato e forse definitivamente infranto nel momento della Caduta e della convinzione assunta dall’uomo della creaturalità della propria natura lapsa*. Il riscatto dell’umanità potrà avvenire mediante l’utilizzazione delle parole restituite al loro significato originario e riportate alla loro vera natura di potere sulle cose (il che tuttavia, coincide, in ogni caso, con la sua funzione originaria di verità). L’alchimista si presenta con le caratteristiche di un essere sapiente e superiore che è in grado di *nominare* le cose in modo che esse coincidano con le parole e di *restituirle* alla loro natura originaria e alla loro funzione di potere (che è, in ogni caso, la loro funzione originaria di verità)” (Giuseppe Panella, *Prefazione. La visione della rubedo. Lorenzo Lotto e il sogno della trasformazione alchemica*, in Mauro Zanchi, *Lorenzo Lotto e l’immaginario alchemico. Le “imprese” nelle tarsie del coro della Basilica di S. Maria Maggiore in Bergamo*, Bergamo, Ferrari Editrice, 1997, p. XIII). Regarding the generative power of word, of high interest is a parallel that can be drawn with the Gospel according to John where the process of creation relies on the powerful mighty word of God: 1: 12 But as many as received him, to them gave he power to become the sons of God, *even* to them that believe on his name: 1: 13 Which were born, not of blood, nor of the will of the flesh, nor of the will of man, but of God. 1: 14 And the Word was made flesh, and dwelt among us, (and we beheld his glory, the glory as of the only begotten of the Father,) full of grace and truth.

especially when the *Art* started to clash with the dogmas of the Catholic Church, right after a first transitory period of fusion between the two cultures.<sup>76</sup> At the same rate, Biblical exegetics shared the belief that a true body of knowledge, couched in maddening utterances and enigmatic symbolical references to prevent its vulgar mystification,<sup>77</sup> had been revealed to wise men in the remotest antiquity. The outstanding problem of such complicated riddling and enigmatic languages built upon aphorisms, signs, different alphabets, hieroglyphics, enigmas and deceiving double meanings was its unintelligibility even at different levels of interpretations since alchemists used at their own discretion different symbols to convey identical ideas:<sup>78</sup>

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<sup>76</sup> A thorough study on the relationship between alchemical languages and Christian rituals and symbology could be found in Séverin Batfroi, *La Via dell'Alchimia Cristiana*, Roma, Edizioni Arkeios, 2007, hereinafter quoted as Batfroi, *Alchimia Cristiana*. Batfroi argues that: "Il lettore inesperto [...] potrebbe concludere un po' frettolosamente che l'alchimia ha profondamente influenzato la Chiesa Cattolica nelle raffigurazioni simboliche ed allegoriche [...]. Ora, [...] di fatto è accaduto esattamente il contrario, e la storia lo dimostra inequivocabilmente. [...] In effetti, sin dall'alto Medioevo gli alchimisti di tradizione cristiana hanno adattato l'alchimia, così come la riceverono dal mondo arabo, alle particolarità teologiche, dogmatiche e simboliche della religione loro propria. [...] Vi è comunque un filone comune che l'alchimia cristiana condivide con le altre vie d'Oriente e d'Occidente, nelle quali appare evidente come qualsiasi adattamento sia stato profondamente segnato dall'ambiente culturale e dal periodo storico che ne hanno permesso lo sviluppo (*Ibid.*, pp. 9-11). Besides Batfroi's study about the mutual cultural exchanges between alchemy and Catholicism, the most influential works thereof doubtlessly are Mircea Eliade's ones; see note 60 on p. 30.

<sup>77</sup> Many alchemical texts and treatises do directly refer to their use of obscure, symbolic languages. Clearest example thereof are fundable in *The Hunting of the Greene Lyon* ("All haile to the noble Companie/ Of true Students in holy Alchimie,/ Whose noble practice doth hem teach/ To vaile ther secrets with mistie speech;" on-line transcription of the text at <http://www.alchemywebsite.com/tcbglyon.html>); *Rosarium Philosophorum* ("I will therefore speak plainly and manifestly so that the unskillful, as those that are expert and skillful, shall be able to understand the secret of this mystery. Neither shall any man justly use slanderous and blasphemous words against me, for seeing that the Ancient Philosophers have written so obscurely and confusedly that they are not understood, nor seem not to agree together, because diverse men searching after this most precious Art have either been deceived or terrified from their purpose;" on-line transcription of the eighteenth century English translation of the *Rosarium* in MS. Ferguson 210 at <http://www.alchemywebsite.com/rosary0.html>. My Latin reference edition is *Rosarium Philosophorum: ein alchemisches Florilegium des Spätmittelalters, herausgegeben und erläutert von Joachim Telle; aus dem Lateinischen ins Deutsche übersetzt von Lutz Claren und Joachim Huber*, 2 vols., Weinheim, VCH, 1992, hereinafter quoted as Telle (ed.), *Rosarium*. No further reference in the footnotes will be henceforth provided for the English quotations from the on-line text); Zosimos' treatise "On the Virtues and Composition of the Waters" ("... Relying upon the clearness of these concepts of intelligence, transform the nature and consider manifold matter as being one. Never reveal clearly to any one any such property, but be sufficient unto thyself for fear that in speaking thou bringest destruction on thyself;" Marcellin Berthelot, *Collection des Alchimistes Grecs*, Paris, 1887-1888, II, Greek text, p. 107 ff. French translation, p. 117 ff., quoted in Stillman, *The Story of Alchemy*, cit., p. 165).

<sup>78</sup> Cfr. Maurice Crosland, *Historical Studies in the Language of Chemistry*, cit., pp. 48-62.

## Discorso XI

Le divergenze tra gli scritti tra gli scritti degli autori sono tali che i cercatori della verità dell'arte disperano spesso d'invenirla. In effetti se i ragionamenti allegorici sono difficili a cogliersi e provocano molti errori lo divengono ancor più laddove medesimi termini s'applicano a realtà diverse, e termini diversi a medesime realtà.<sup>79</sup>

Most alchemical texts were implicitly structured on the tight interconnections between the macro-dimension of God, the lesser world of man and the physical reality of nature. In this context, alchemists often borrowed symbols and allegories from theology, literature and mythology to extend as much as possible the fields of application of alchemical symbolism. As a matter of fact, especially in Renaissance and late-Renaissance cultural environments, alchemical images and references were most diffuse<sup>80</sup> and alchemical theories were among the ones upon which the worldview of that age was predicated, since, it must be recalled, the culture of those centuries, far from being sectorial or divided into fixed categories, stood out instead for its compactness. In such a comprehensive culture alchemy played a central role for it was a discipline firmly rooted within the Christian religious tradition, the Jewish mystic kabbalah and ancient Greek philosophy – a knowledge which survived the medieval rereading (and sometimes rewriting) of classics and which flourished with the Renaissance revival of Neoplatonism to finally come even to influence the new emerging scientific disciplines.<sup>81</sup> For these reasons, it appears inconceivable to rule alchemy out of the range of characterizing matters of seventeenth century culture which

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<sup>79</sup> Maier, *Atalanta Fugiens*, cit., p. 78.

<sup>80</sup> “Alchemy extends from well-known figures to a host of lesser-known characters in and out of academic, medical, courtly, and private settings and across the whole social and intellectual spectrum of projectors, entrepreneurs, refiners, miners, and others, all the way to brewers, shoemakers, and drapers” (Lawrence M. Principe, “Alchemy Restored,” in *Isis*, cit., p. 309).

<sup>81</sup> Cfr. F. Sherwood Taylor introductory lines in his *Survey of Greek Alchemy*: “In the Greek writings of the first millennium of the Christian era we find our earliest evidence of that remarkable body of doctrine known as Alchemy. Arising perhaps in the traditional knowledge of the Egyptian priesthood, it flourished as a living science and creed for seventeen centuries” (F. Sherwood Taylor, “A Survey of Greek Alchemy,” in *The Journal of Hellenic Studies*, Vol. 50, Part 1 (1930), pp. 109-139, stable URL: <http://www.jstor.org/stable/626167>, p. 109).

men of letters and writers were all grappling with. Thence, the heterogeneous character of alchemical analogies and metaphors allegedly flourished in the great books of Renaissance magic which appear to us as the result of a strange uncommon mixture – a blend, so to speak, conceived to satisfy different tastes. We may find for example, in the same alchemical manual, an extremely various number of topics ranging from (proto)scientific subjects such as optics, mechanics and chemistry, medicine prescriptions, pages of technical teachings on the construction of machines and mechanical games, codification of secret writings, recipes, poisons for worms and mice up to everyday practical advice for fishermen, hunters and housemaids, tips for magicians, suggestions relating to hygiene, aphrodisiac substances, sex life, besides glimpses on metaphysics, mystical theology and references to Biblical prophets, classical philosophies and medieval masters. By intermingling and blending up together all branches of human knowledge, the renewed magical culture of those centuries firmly wanted to connect itself to the desires for a cultural development, to aspirations to a radical political renewal and to eschatological/*millenaristic* theology:

alchemy is the art of liberating parts of the Cosmos from temporal existence and achieving perfection which, for metals is gold, and for man, longevity, then immortality and, finally, redemption. Material perfection was sought through the action of a preparation (Philosopher's Stone for metals; Elixir of Life for humans), while spiritual ennoblement resulted from some form of inner revelation or other enlightenment (Gnosis, for example, in Hellenistic and western practices).<sup>82</sup>

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<sup>82</sup> This is Harry J. Sheppard's definition of alchemy from "European Alchemy in the Context of a Universal Definition," in *Die Alchimie in der europäischen Kultur- und Wissenschaftsgeschichte*, edited by Christoph Meinel, Wolfenbütteler Forschungen, vol. 32, Wiesbaden, Otto Harrassowitz, pp. 16-17, quoted in Linden, *Darke Hieroglyphicks*, cit., p. 300. Michela Pereira argues that: "Il tentativo di definizione comparatistica dell'alchimia delineato da Harry J. Sheppard nel 1981, che include l'immortalità e la redenzione dentro il discorso alchemico è [...] sicuramente il più completo – in questo senso davvero "universale", anche se va in certa misura qualificato"(Pereira (ed.), *Alchimia*, cit., p. XII). Cfr. Thomas Vaughan's definition of alchemy: "give me an art then, that is a perfect intire *Map* of the *Creation* that can lead me directly to the *Knowledge* of the true *God*... and by which I can attain to all the *Secrets* and *Mysteries* in *Nature*" (*The Works of Thomas Vaughan*, edited by Alan Rudrum, Oxford, Clarendon Press, 1984, p. 166, quoted in Lyndy Abraham, *Marvell & Alchemy*, cit., p. 62).

According to Paolo Rossi's words, "La distinzione, che ha origini gnostiche e averroistiche, fra due tipi di esseri umani – la folla dei semplici e degli ignoranti e i pochi eletti che sono in grado di cogliere la verità celata sotto la lettera e i simboli e che sono iniziati ai sacri misteri – è saldamente legata alla visione del mondo e della storia che fu propria dell'ermetismo."<sup>83</sup> In an early 600-folios hermeneutic treatise on the *Apocalypse*, written when he was just in his thirties, Newton urged for the very first time the need for a syncretic<sup>84</sup> study of both God's words (the Book of Holy Scripture) along with the study of God's works (that is, the Book of Nature), evoking somehow the alchemical bid of the *Rosarium Philosophorum*: "Wherefore again we say this, that all men labouring beyond nature are deceivers and deceived." Since Newton "regarded the universe as a cryptogram set by the Almighty – just as he himself wrapt the discovery of the calculus in a cryptogram,"<sup>85</sup> his primary concern was to establish how to best read the two books and, in order to best accomplish his duty, he had to understand which were the languages the two books were written in and therefore to figure out whom the books were addressed to. In Yahuda MS. 1.1, Newton himself recognises the mystical character of some biblical passages which, to quote Snobelen's words, "is part of a divinely directed challenge meant to separate humanity into wheat and chaff."<sup>86</sup>

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<sup>83</sup>Rossi, *Scienza Moderna in Europa*, cit., pp. 18-19.

<sup>84</sup> Cfr. Richard H. Popkin, "Newton's Biblical Theology and His Theological Physics," cit., p. 91: "Science and the study of Biblical prophecy go together as ways of comprehending God's message."

<sup>85</sup> J. M. Keynes, "Newton, the Man," cit., p. 29.

<sup>86</sup> Snobelen, "'Not in the Language of Astronomers,'" cit., p. 497.



Consider how our Saviour taught the Jews in Parables that in hearing they might hear & not understand & in seeing they might see & not perceive. And as these Parables were spoken to try the Jews so the mysticall scriptures were written to try us. Therefore beware that thou be not found wanting in this tryall. For if thou beest, the obscurity of these scriptures will as little excuse thee as the obscurity of our Saviours Parables excused the Jews.<sup>87</sup>

The different levels in meaning and understanding of the languages featured in the Holy Scriptures allow us then to draw a parallel between the Bible and the “sacred” books of alchemy; moreover, this parallel somehow enhance the criticism on Newton’s alchemical reading of the *Apocalypse* which I would intend to investigate. Embodying the theoretical pillars on which the alchemical *Art* has developed, Hermetism<sup>88</sup> does also represent the chain tightening close alchemy and theology as well as Newton’s alchemical mind and the resulting theoretical approach he applied to his millenarianism. Within this matrix of patterns, it results hence fundamental to enlighten some of the most important features of the Hermetic culture to crisscross those shared topics underlying both Newton’s and Hermes’ cultural horizons because Hermetism and science, as highlighted by Charles Webster, are intermingling disciplines each not ruling out the other:

It is tempting to adopt ‘hermeticism’ as the alternative category, and to dragoon the efficient personnel of science into the former and the inefficient into the latter.<sup>89</sup>

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<sup>87</sup> Yahuda MS 1.1, f. <2v>.

<sup>88</sup> According to Robert M. Schuler, with the term *Hermetism* are identified all the “religious and philosophical writings attributed to Hermes Trismegistus and their interpretation throughout history” (*Alchemical Poetry 1575-1700: From Previously Unpublished Manuscripts*, edited by Robert M. Schuler, New York and London, Garland Publishing, 1995, p. xii, henceforth quoted as Schuler (ed.), *Alchemical Poetry*).

<sup>89</sup> Charles Webster, *From Paracelsus to Newton: Magic and the Making of Modern Science*, Cambridge, Cambridge University Press, 1982, p. 12, henceforth referred to as Webster, *From Paracelsus to Newton*. Cfr. David S. Katz and Richard H. Popkin, *Messianic Revolution*, London, Penguin Books, 1998, pp. 3-4, henceforth referred to as Katz and Popkin, *Messianic Revolution*: “The Renaissance men who chanced on views still held by modern scholars are often seen as scientists while those who meticulously mapped blind alleys are reduced to deluded alchemists and magicians. Nevertheless, the key methodological concept that united all these Renaissance intellectuals was eclecticism – that is, the idea that no one has a

## 1.2 Hermetic Culture

Throughout Renaissance, Europe went through a massive renewal in the arts which changed the cultural perspectives of the whole continent for good,<sup>90</sup> yet the flourishing of the Renaissance brought about formerly unsolved problems which scholars of the period were forced to reckon with, though at times unwilling to do so. Actually, one of the reading keys of the cultural development of Renaissance Europe could be reasonably found in the revival of Neoplatonism<sup>91</sup> along with the rethinking – the “intellectual study of magic”<sup>92</sup> – and improving of the ancient Hermetic tradition as suggested by Frances A. Yates in her revolutionary *Giordano Bruno and the Hermetic*

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monopoly of truth but that it must be sought among all peoples and cultures. Thinkers in the Renaissance thought nothing of mixing Christian theology with Jewish philosophy and Arabic geography.”

<sup>90</sup> Cfr. Katz and Popkin, *Messianic Revolution*, cit., p. 29: “It is clear that many of the ideas which seem so modern to us have their origins, or at least their flowering in the period of intellectual ferment which we call Renaissance.”

<sup>91</sup> A systematic rethinking and elaboration of Platonic philosophy began approximately in the third century B.C. in Hellenistic Alexandria and was later developed by Plotinus (third century A.D.). Known before only through some Arabic translations, the works of Plato and Plotinus were translated into Latin for the first time by Marsilio Ficino (1433-1499) in the second half of the fifteenth century. For a detailed description of Neoplatonic philosophical theories and major exponents see especially: Eugenio Garin, *La Cultura Filosofica del Rinascimento Italiano*, Firenze, Sansoni, 1961; Giovanni Reale, “Filosofia antica,” in *Antichità Classica*, Bologna, Jaca Book, 1994, pp. 15-29; Giovanni Reale, *Storia della Filosofia Antica*, 5 voll., Milano, Vita e Pensiero, 1975-1980; Emanuele Severino, *La Filosofia dai Greci al Nostro Tempo. La Filosofia Antica e Medievale*, Milano, BUR, 2009<sup>o</sup>, hereinafter referred to as Severino, *Filosofia Antica e Medievale*; Cesare Vasoli, *Le Filosofie del Rinascimento*, Milano, Mondadori, 2002; Cesare Vasoli (ed.), *Magia e Scienza nella Civiltà Umanistica*, Bologna, Il Mulino, 1976.

<sup>92</sup> “The intellectual study of magic was a European phenomenon emerging in the Florentine Renaissance with the Platonism of such writers as Ficino and Pico della Mirandola, and spreading to Northern Europe through the works of Paracelsus and Cornelius Agrippa. A key role in the movement was played by Ficino’s Latin translation of the *Corpus Hermeticum*, the supposed teachings of the ancient Egyptian god Thoth, or “Hermes Trismegistus” (Keith Thomas, *Religion and the Decline of Magic*, London, Penguin Books, 1991, p. 266, henceforth referred to as Thomas, *Decline of Magic*). See also John Read, “Alchemy and Alchemists,” in *Folklore*, Vol. 44, No. 3 (Sep., 1933), pp. 251-278, stable URL: <http://www.jstor.org/stable/1256428>, pp. 252-253 and Frances A. Yates, *The Occult Philosophy in the Elizabethan Age*, London, Routledge & Kegan Paul, 1979, p. 17, hereinafter quoted as Yates, *Occult Philosophy*: “Giovanni Pico della Mirandola (1463-94) belonged to the brilliant circle around the Medici court in Florence which included another famous philosopher, Marsilio Ficino. Ficino and Pico were founders and propagators of the movement loosely known as Renaissance Neoplatonism. This movement was stimulated by the works of Plato and the Neoplatonists newly revealed to the West through the Greek manuscripts brought to Florence from Byzantium after the fall of Constantinople. Renaissance Neoplatonism was a rich amalgam of genuinely Platonic teachings with Neoplatonism and with other late antique philosophical occultism. Prominent among the texts of this type which attracted Pico and Ficino was the *Corpus Hermeticum*, supposedly by ‘Hermes Trismegistus’, a mythical Egyptian sage whom the Florentines believed to represent an ancient wisdom which was the remote source of Plato himself. ‘Hermes Trismegistus’ was believed to have lived at about the same time as Moses, or even before Moses, hence the Hermetic texts had a sanctity almost equal to that of Genesis, supposedly written by Moses.”

*Tradition* (1964): “the great forward movements of the Renaissance all derive their vigour, their emotional impulse, from looking backwards.”<sup>93</sup> Furthermore, as there can be no question about the role played by the Hermetic culture in the process of Renaissance cultural enhancement, so it can be allegedly argued that, “indeed, Newton’s intellectual development is best understood as a product of the late Renaissance, a time when the revival of antiquity had conditioned the thinkers of western Europe to look backward for Truth.”<sup>94</sup> Hence, before going any further into the particular analysis of Newton’s “alchemical millenarianism,” it will be of great interest to recall some of the most important features of the particularly mysterious doctrines set in the broader framework of Hermetic knowledge which he allegedly adhered to.

Hermes Trismegistus, the “Thrice-Great Hermes,”<sup>95</sup> whose name was deemed to confer respect and, above all, authority to the large heterogeneous series of doctrines abridged in the *Corpus Hermeticum*,<sup>96</sup> was the most emblematic figure of ancient sacred

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<sup>93</sup> Yates, *Giordano Bruno*, p. 1. Cfr. George Sarton, *Introduction to the History of Science*, 3 vols. in 5, Baltimore., Published for the Carnegie Institution of Washington by Williams & Williams, 1927-1947, Vol. 1, p. 19, quoted in Allen G. Debus, “Chemists, Physicians, and Changing Perspectives on the Scientific Revolution,” in *Isis*, Vol. 89, No. 1 (Mar., 1998), pp. 66-81, stable URL: <http://www.jstor.org/stable/236655>, on p. 67: “the historian of science can not devote much attention to the study of superstition and magic, that is, of unreason, because this does not help him very much to understand the progress. Magic is essentially unprogressive and conservative; science is essentially progressive; the former goes backward; the latter, forward.... There can not be much incentive to encompass that which is indefinite and to investigate the history of something which did not develop.”

<sup>94</sup> Dobbs and Jacob (eds.), *Newton and the Culture of Newtonianism*, cit. p. 8.

<sup>95</sup> Cfr. Morieno Romano, *Testamento Alchemico*, edited by Michela Pereira, Atanòr, Roma, 1996, p. 33: “[...] leggiamo nelle antiche Storie Sacre che vi furono un tempo tre filosofi, ognuno dei quali ebbe nome Ermete. Il primo di essi fu Enoch, che con altro nome fu chiamato Ermete e con un altro ancora Mercurio. Il secondo fu Noè, anche lui denominato inoltre Ermete e Mercurio. Il terzo infine fu Ermete, che regnò a lungo in Egitto dopo il diluvio. Quest’ultimo fu chiamato dai nostri predecessori Triplice, a motivo delle tre dignità che Dio gli aveva concesso. Infatti egli fu Re, Filosofo e Profeta.”

<sup>96</sup> The edition I will henceforth refer to is *Corpus Hermeticum*, edited by Ilaria Ramelli (edizione e commento di A. D. Nock e A. -J. Festugière, edizione dei testi ermetici copti e commento di I. Ramelli), Milano, Bompiani, 2005, hereinafter referred to as Ramelli (ed.), *Corpus Hermeticum*. My referring English translation is Brian P. Copenhaver (ed.), *Hermetica: the Greek Corpus Hermeticum and the Latin Asclepius in a new English translation, with notes and introduction*, Cambridge-New York, Cambridge University Press, 1992, henceforth quoted as Copenhaver (ed.), *Hermetica*. For an accurate description of the key topics of the *Corpus Hermeticum* and the *Asclepius* see *Corpus Hermeticum*, edited by Valeria Schiavone, Milano, BUR, 2006<sup>3</sup>, pp. 38-48, henceforth quoted as Schiavone (ed.), *Corpus Hermeticum*. An extremely brilliant criticism of the *Poimandres* is fundable in Ermete Trismegisto, *Poimandres*, edited by Paolo Scarpi, Venezia, Marsilio, 1987, hereinafter quoted as Scarpi (ed.), *Poimandres*. On the divine nature of the Hermetic texts see also Pereira, *Arcana Sapienza*, cit., p. 32: “[...] tutti gli scritti ermetici, sia quelli di carattere filosofico che quelli concernenti la natura e le tecniche di intervento su di essa (scritti astrologici, alchemici, di medicina magica e di magia teurgica), sono infatti considerati

knowledge for he was esteemed a king and philosopher, he was considered a legendary Egyptian prophet before becoming a Greek interpretation of the Egyptian god Toth – patron of the arts and sciences, and, especially, he was referred to as the founder of alchemy.<sup>97</sup>



Figure 1.  
Giovanni di Stefano, *Hermes Trismegistus*, Siena's Cathedral, ca.1482.  
Reproduced from Matilde Battistini, *Astrologia, Magia, Alchimia*,  
Milano, Mondadori Electa, 2004, p. 140.

Though nowadays allegedly considered to have been compiled in late Hellenistic age, between the first and the third century A.D., Renaissance scholars

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espressione di una conoscenza ottenuta per rivelazione divina, e pertanto fondata su basi completamente diverse rispetto a quelle della filosofia e delle scienze naturali aristoteliche.”

<sup>97</sup> Cfr. Lyndy Abraham, *Marvell & Alchemy*, cit., p. 20: “In its metaphysical aspect, alchemy was directly related to Neo-Platonism. They both had a common source of inspiration in Hermes Trismegistus’s *Hermetica*, or *Corpus Hermeticum*, and the alchemists saw Hermes (or Mercurius) Trismegistus as the father of alchemy. The *Emerald Table*, ascribed to Hermes, contained the basic laws of alchemy.” Lyndy Abraham also remarks how “Ficino’s translation of the *Hermetica* (1471), a seminal Renaissance text, became available in England in 1520, and his commentary on Plato’s *Symposium* inspired English thought and poetics throughout the sixteenth century” (*Ibid.*, pp. 20-21).

firmly believed<sup>98</sup> the *Corpus* to be of pre-Christian, pre-Platonic and possibly even pre-Mosaic origins. From a structural point of view, it is subdivided into seventeen short mystic-mythological treatises<sup>99</sup> written up in ancient Greek with the later addition of a long dialogue – the *Asclepius*<sup>100</sup> – which was the only Hermetic philosophical text known in the Western Middle Ages, for all the other ones were translated only later in 1463 by Marsilio Ficino. Actually, Ficino’s translation helped to establish a first direct connection between the whole *Corpus Hermeticum* and later alchemical philosophies:

alchemy, throughout its history, has shown a dual nature. On the one hand, it has involved the use of chemical substances and so is claimed by the history of science as the precursor of modern chemistry. Yet at the same time, alchemy has, throughout its history, also been associated with the esoteric, spiritual beliefs of Hermeticism and thus is a proper subject for the historian of religious thought.<sup>101</sup>

The texts ascribable to the *Corpus Hermeticum* are therefore tightly bound to the great revival of magical knowledge and occultism begun at the end of the late fifteenth century and was still affecting Europe well throughout the sixteenth century.

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<sup>98</sup> Several were the legends around the supernatural origin of the *Tabula*. The following one has been translated into English by Raphael Patai and was originally reproduced in the *Bibliotheca Græca* of Johann Albert Fabricius (1668-1736): “The *Tabula Smaragdina*, of great authority among the chemists, which, it is said, was discovered by Sarah (the wife of Abraham, as Christophorus Kriegsmann does not hesitate to affirm in the aforementioned *Tabula Smaragdina*) in the valley of Hebron, in a tomb and in the hands of the cadaver of Hermes, contains in obscure words (as it is the wont of the chemists, to give much smoke and little light) everything, as they say, of the basis of performing the chemical Magisterium of the metals, and the method of compounding a certain universal medicine, but most generally described (Patai’s translation of Johann Albert Fabricii ... *Bibliotheca Græca* (ed. Gottlieb Christophorus Harles) vol. 1, Hamburg, 1790, p. 76. See Raphael Patai, “Biblical Figures as Alchemists,” in *Hebrew Union College Annual*, Vol. LIV (1983), pp. 195-229, on p. 203.”

<sup>99</sup> As a matter of fact, it is not possible however to establish precisely either by who or how or when each single text was composed.

<sup>100</sup> The major aim of the *Asclepius* was that of describing the ancient Egyptian religion along with its magical rites and rituals which were deemed to enable the trespassing of all the cosmic forces within the Egyptian Gods’ statues. The text we nowadays share is the one which comes directly from the Latin translation wrongly ascribed in the ninth century to Apuleius of Medaura. For an outlook over the main features of the *Asclepius* see especially Frances A. Yates, “The Hermetic Tradition in Renaissance Science,” cit., p. 257.

<sup>101</sup> Brehm, “Roger Bacon’s Place in the History of Alchemy,” cit., p. 53. Cfr. Katz and Popkin, *Messianic Revolution*, cit., p. 4: “The most important new idea that paved the way for a reconstructed and improved messianism was the body of knowledge that is usually called hermeticism.” Actually, the chain of links which tights close alchemy, Hermeticism, and the interpretation of the Bible provides one solid theoretical justification for an alchemical explanation of Newton’s interpretation of the Holy Scripture.”

Framed within the larger and heterogeneous context of Hermetic-Platonic pattern of ideas, those texts kept on, strongly and effectively, influencing the whole European culture up to, at least, the middle of the seventeenth century. Needless to say, at the beginning of the seventeenth century, when the Hermetic literature was ultimately proved to be post-Christian, it was far too entrenched within the framework of European culture to be discarded from there and be replaced with other, somehow possible, written sources.

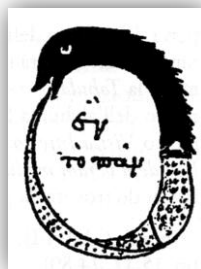
Being the result of the slow merging of different heterogeneous ancient cultures, Hermetic philosophy encompassed the tendency to consider the wholeness of God, which underlay the opposition of all things, in order to reconcile those distinctions to regain that long-regretted pacification vanished with the Fall. Nature, as conceived by magical culture, was not merely made of continuous and homogeneous matter shaping spaces but was characterized by an all-living inner soul, which harshly longed to become substance itself, and an internal and spontaneous principle of activity which resulted in the external matter being permeated by divine spirit. The key topics of the whole Hermetic production are essentially the opposition<sup>102</sup> between body and spirit; the contemplation and the consequent ecstasy in front of the deity; knowledge seen as the supreme good to which man can tend in order to defeat the mother of all vices – ignorance; the divine nature of man; the oneness of God which is explained by the theory of *ἐν τὸ πᾶν*<sup>103</sup> (“the One, the All”) along with its symbolic counterpart, the serpent *ὄροβόρος*:<sup>104</sup>

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<sup>102</sup> Cfr. Marie-Louise von Franz, *Alchemy. An Introduction to the Symbolism and the Psychology*, Toronto, Inner City Books, 1980, p. 213, hereafter quoted as Franz, *Alchimia*: “L’alchimia illustra splendidamente la necessità di non nuocere allo spirito a vantaggio della materia, e di non nuocere alla materia a vantaggio dello spirito. Il corpo dev’essere spiritualizzazione e lo spirito si deve incarnare. L’alchimia, come ha fatto notare Jung, compensa l’unilateralità dello spiritualismo cristiano. L’alchimia non è un movimento anticristiano, ma completa il Cristianesimo richiamando l’attenzione sugli aspetti che esso trascura, ossia sulla fisicità e sulla materia” (I have to quote here the Italian translation of the book because the English edition was not available to me).

<sup>103</sup> Cfr. *Asclepius*, 2: “[...] non enim hoc dixi, omnia unum esse et unum omnis, utpote quæ in creatore fuerint omnia, antequam creasset omnia? nec inmerito ipse dictus est omnia, cuius membra sunt omnia.

“1. Here is the mystery: the serpent *Ouroboros* this composition which in its ensemble is devoured and melted, dissolved and transformed by the fermentation or putrefaction. It becomes a deep green and the color of gold is derived from it. It is from it that is derived the red called the color of cinnabar. This is the cinnabar of the philosophers. Its stomach and back are the color of saffron, its head is a deep green, its four feet constitute the tetrasomie [...]. Its three ears are the three sublimed vapors. [...] 3. The One furnishes the Other its blood; and the One gives birth to the Other. Nature rejoices in nature triumphs over nature; nature masters nature opposed that not for a nature, but for to such another nature proceeding of itself by the process, with trouble and great effort. 4. But thou, my dear friend, apply thy intelligence to these matters and thou wilt not fall into error; but work seriously and without negligence, until thou hast seen the end (of the process). 5. A serpent is stretched, guarding this temple, and he who has subdued it commences by sacrificing it, then roasts it, and after removing its flesh up to the bones, make of it a step to the entrance of the temple. Mount upon it and thou shalt find the object sought. For the priest at first a man of copper has changed color and nature and has become a man of silver; a few days later, if thou wishest, thou wilt find him changed to a man of gold.”<sup>105</sup>




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huius itaque, qui est unus omnia uel ipse est creator omnium, in tota hac disputatione curato meminisse (Ramelli (ed.), *Corpus Hermeticum*, cit., p. 516).

<sup>104</sup> The ancient symbol of the serpent *ouroboros* is a representation of a dragon-snake swallowing its own tail thus forming a circle. It was imagined as embodying the properties of generating itself, fertilizing itself, devouring itself and killing itself. According to alchemical symbolism, it depicts the eternal circularity of the changes of the world as also of the endless circular motion of the *Opus Alchymicum*. See Jack Lindsay, *The Origins of Alchemy in Graeco-Roman Egypt*, New York, Barnes and Noble, 1970, p. 261: “The snake curving round with his tail in his mouth is an obvious emblem of the unity of the cosmos, of eternity, where the beginning is the end and the end is the beginning. It summarises the creed of up-and-down down-and-up, a circular movement of energies and qualities. It symbolises the Philosopher’s Stone or Egg in which All is included and yet a ferment of changes is going on.”

<sup>105</sup> A very ancient description of the *ouroboros* is contained in the *Codex Marcianus*, *ms Marciano greco* 299, chapter II. The quotation is from: Marcellin Berthelot, *Collection des Alchimistes Grecs*, cit., I, p. 171, quoted in Stillman, *The Story of Alchemy*, cit., pp. 171-172. I do count the figure here reproduced as being picture 2 in the series of images collected in this work; therefore, the other figures will be henceforth counted starting by number 3 in the below related descriptions. The picture is here reproduced from Pereira (ed.), *Alchimia*, cit., p. 21. Pereira’s volume also furnishes an Italian transcription of the manuscript (*Ibid.*, pp. 20-21). Cfr. Zosimos’ treatise “On the Virtues and Composition of the Waters:” “A serpent is lying at the entrance guarding the temple. Seize him, immolate him, flay him, and taking his flesh and his bones, separate his members. Then joining the members with the bones, make of them a step to the entrance of the temple, mount upon it, and enter. Thou wilt find what thou sleekest. The priest, this man of copper, whom thou seest seated in the spring gathering to himself the color – do not consider him as a man of copper, for he has changed the color of his nature and has become a man of silver. If thou wishest, thou wilt soon have him a man of gold” (Marcellin Berthelot, *Collection des Alchimistes Grecs*,

Another outstanding feature of Hermetic knowledge was its fostering the illusion of a metaphysical renewal which might lead man to regain the Edenic domination over nature he mastered before the Fall – that is, human palingenesis.<sup>106</sup> The Hermetic opportunity of mystical regeneration and the alchemical law of ‘No generation without prior corruption’<sup>107</sup> seem to recall and confirm the biblical progress from decay to growth and from death to resurrection as it is described in John 12: 24: “verily, verily, I say unto you, except a corn of wheat fall into the ground and die, it abideth alone: but if it die, it bringeth forth much fruit.”<sup>108</sup>

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cit., II, Greek text, p. 107 ff. French translation, p. 117 ff., quoted in Stillman, *The Story of Alchemy*, cit., p. 165). Zosimos’ words seem actually to be recalled and epitomized by the description of the *Codex Marcianus*.

<sup>106</sup> “La dottrina di salvezza, di cui Ermete Trismegisto si fa portavoce presso gli uomini e che a ragione degli studiosi è stata posta in relazione con il medio e il neoplatonismo, da una parte, e con lo gnosticismo, dall’altra, può dirsi condensata nel *Poimandres*, il primo trattato o *logos* del *Corpus Hermeticum*” (Scarpi (ed.), *Poimandres*, cit., p. 25). A much useful study on the relation between Gnosticism and alchemy is Henry J. Sheppard, “Gnosticism and Alchemy,” in *Ambix*, Vol. 6, (Dec. 1957), pp. 88-109.

<sup>107</sup> Stanislas Klossowski de Rola, *The Golden Game. Alchemical Engravings of the Seventeenth Century*, London, Thames & Hudson, 1988, p. 126, hereinafter referred to as de Rola, *The Golden Game*.

<sup>108</sup> Cfr. I Corinthias 15: 36-38: “*Thou* fool, that which thou sowest is not quickened, except it die: And that which thou sowest, thou sowest not that body that shall be, but bare grain, it may chance of wheat, or of some other *grain*: But God giveth it a body as it hath pleased him, and to every seed his own body.” For an interesting alchemical parallel see the short poem “La Fenice,” in S. Piccolini and R. Piccolini, *La biblioteca degli alchimisti*, Padova, F. Muzzio, 1996, pp. 201-217, III, on p. 207, hereinafter referred to as S. and R. Piccolini, *Biblioteca*: “Da quei frutti di nuovo fiorisce la ricchezza,/ dalla natura del grano che è seminato prima/ come semplice seme, e quindi il raggio del sole/ all’avanzarsi della primavera risveglia tutti i segni della vita,/ la grande ricchezza del mondo, così che i frutti, ornament della terra, siano attraverso se stessi/ prodotti nuovamente.”





Figure 3.  
 Michael Maier, *Tripus Aureus*, illustration of Basil Valentine's eighth key.  
 Reproduced from de Rola, *The Golden Game*, p. 122.

Thus, thanks to the highly heterogeneous nature of its astrological and alchemical lore which helped to create an intellectual environment sympathetic to every kind of mystical and magical activity, Hermetic doctrines became the solid ground which Renaissance magical revival was firmly rooted in.

Furthermore, besides these fundamental axioms, within the broader framework of *Hermeticism*<sup>109</sup> there was also contained the embryonic concept of one of the most important theory which alchemical esotericism chiefly relied on to grant its philosophy: the so-called *macrocosm-microcosm* theory. Already developed by Plato in his *Timæus*,<sup>110</sup> the macrocosm-microcosm worldview was essentially centred on the belief

<sup>109</sup> Hermeticism is a “syncretic body of knowledge, belief and speculation that provides a basis for the theory and practice of magic, astrology, and, especially, alchemy” (Schuler (ed.), *Alchemical Poetry*, cit., p. xii). The term *Hermeticism* refers to an “amorphous body of notions and attitudes deriving not merely from Hermes but also from the mystical side of Plato and his Neoplatonic successors and from such other esoteric systems as the numerology of Pythagoras and the Jewish cabala” (Wayne Shumaker, “Literary Hermeticism: Some Test Cases,” in Ingrid Merkel and Allen G. Debus (eds.), *Hermeticism and the Renaissance: Intellectual History and the Occult in Early Modern Europe*, Washington, Folger Shakespeare Library, 1988, pp. 293-294, main edition henceforth quoted as Merkel and Debus (eds.), *Hermeticism and the Renaissance*).

<sup>110</sup> Plato's *Timæus* (half of the fourth century BC) is a long dialogue, though mainly written in the form of a monologue, whose main character – Timæus – is caught in his explanation to Socrates about the idea of

that God and the Cosmos could be acknowledged throughout the experience of nature and the little world of man resulted therefore to be the reflected image of its divine creator being thus, the both of them, guided by the same powers and principles<sup>111</sup> and resulting therefore to be “easily assimilated into a contemporary world-view which thought in terms of analogy, allegory, correspondences, and the Great Chain of Being.”<sup>112</sup> Among Newton’s alchemical manuscripts, one striking reference to the reality of things alluded to by the macrocosm-microcosm theory is to be found in Keynes MS. 22: “for all the inferior things have their natural inclination from the superior, God being above all in his will.”<sup>113</sup> The alchemical<sup>114</sup> revision of this theory – one of the most ancient themes of the *Art* – led to the idea that the individual achievements of the alchemist’s *Opera* equalled what, at a higher level, the universal

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generation and evolution of the physical world. Main themes of the dialogue are: the status of the four elements and their constant motion, the role of the Demiurge and the embryonic idea of a division between good and evil as being part of mankind’s evolution. Remarkably, John Maxson Stillman argued that: “In so far as the Neoplatonic philosophy as applied to alchemy possessed a basis in ancient Greek philosophy, it was based mainly upon Plato’s conceptions as formulated in his work entitled “*Timæus*.”” (Stillman, *The Story of Alchemy*, cit., p. 143). Actually, if the Demiurge in the Platonic myth about the creation of the universe – the *Timæus*, – by gleaning from the world of ideas, succeeded in moulding a perfect well-proportioned living Cosmos holding up in its inside all the mortal and immortal living beings (see especially *Poimandres*, Treatise IV, 1-4), the Demiurge of Gnostic derivation set forth, in fact, a terrifying chaos, an incomplete wretched creation which has been tickling alchemists’ minds since the dawn of the *Art* by the idea that their alchemical work could lead the damned Origin to an improved reality, thus establishing a new order on Earth – what is actually known as “Golden Age.” Cfr. Treatise I of Hermes’ *Poimandres*: “15. E per questo, a differenza di tutti gli altri esseri che vivono sulla terra, l’uomo è duplice: mortale nel corpo, immortale nella sostanza di Essere Umano. Pur essendo, infatti, immortale e avendo il potere su tutti gli esseri, subisce le vicissitudini dei mortali, soggiacendo al fato. Dunque, sebbene sia al di sopra dell’armonia delle sfere, vi è divenuto sottoposto, e, sebbene sia androgino in quanto figlio di un Padre androgino, e anche insonne in quanto è figlio di un insonne, tuttavia si lascia vincere < dal desiderio e dal sonno >” (Ramelli (ed.), *Corpus Hermeticum*, cit., pp. 81; 83).

<sup>111</sup> Cfr. E. M. W. Tillyard, *The Elizabethan World Picture*, Harmondsworth, Penguin Books in association with Chatto & Windus, 1972, p. 73: “*Homo est utriusque naturæ vinculum*. He was the nodal point, and his double nature, though the source of internal conflict, had the unique function of binding together *all* creation, of bridging the greatest cosmic chasm, that between matter and spirit.” For detailed studies about the macrocosm-microcosm worldview, besides Tillyard’s *The Elizabethan World Picture*, see especially J. B. Bamborough, *The Little World of Man*, Longman, Green and Company, London, 1952, pp. 20-27 and Arthur Lovejoy, *The Great Chain of Being*, Harper, New York, 1960, pp. 66-98.

<sup>112</sup> Lyndy Abraham, *Marvell & Alchemy*, cit., p. 166.

<sup>113</sup> Keynes MS. 22, f. <12v>, 24. The manuscript is entitled “*The Epitome of the Treasure of Health Written by Edwardus Generosus Anglicus innominatus*,” on-line address of its transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00011/>.

<sup>114</sup> Cfr. Pseudo-Jean de Meun’s *The Alchimyst’s Answere to Nature*: [...] sweete mother *Nature*/ (Farr the most excellent Creature/ Which God [...] created)/ To you praise & thanks be rendred./ [...] you are mother & mistresse./ Governesse of that Macrocosme/ Created for the Microcosme./ The former, the world named is;/ In Greeke, Mycrocosme man is (Pseudo-Jean de Meun, *The Alchimyst’s Answere to Nature*, in Schuler (ed.), *Alchemical Poetry*, cit., pp. 171-193, ll. 1-10).

creation meant. This parallel further enhances the chances to solve out the troubling question of finding some theoretical justification to ground Newton's reading of the prophecies as a development of his mastering alchemical praxis. As a matter of fact, the epitome of God, as supposed to be revealed within the Biblical pages of *Daniel* and *Revelation*, was at the same rate recognisable, by industrious alchemists, within the divine nature of that vital agent so long searched after also by Newton himself: "the alchemical active principle – the vital spirit of which he was in hot pursuit – was no more and no less than the agent by which God exercised his providential care among the atoms."<sup>115</sup>

Within the vast fields of alchemical literature, one most meaningful example of the macrocosm-microcosm theory is provided by the second<sup>116</sup> plate of Altus' *Mutus Liber*, first published in 1677 at La Rochelle and then gathered in Jean-Jacques Manget's *Bibliotheca Chemica Curiosa* (first edition printed in 1702).<sup>117</sup> Of key importance within my critical horizon of Newton's reading of the biblical prophecies, Altus' *Mutus Liber* is an extraordinary example of how alchemical knowledge was metaphorically conceived by his most faithful adepts as being the earthly resemblance<sup>118</sup> of God's divine creation. Accordingly, the twofold nature of the alchemists' process of alignment to God's will demanded also the steady enhancement of the adept's soul as it is symbolically described by the fifteen plates of the *Mutus Liber*.

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<sup>115</sup> Betty Jo Teeter Dobbs, "Newton's Alchemy and His Theory of Matter," in *Isis*, cit., p. 520.

<sup>116</sup> For a wise criticism on the second plate of Altus' *Mutus Liber* see especially Mino Gabriele, *Commentario sul "Mutus Liber"*, Milano, Archè, 1974, pp. 75-77. My modern referring edition is Altus, *Mutus Liber*, cit.

<sup>117</sup> A survey on the history of the editions of the *Mutus Liber* can be found in Adam McLean, *A Commentary on the Mutus Liber*, Edinburgh, Magnum Opus Hermetic Sourceworks, 1982, pp. 1-4, henceforth referred to as McLean, *Commentary*.

<sup>118</sup> Cfr. Altus, *Mutus Liber*, cit., Canseliet's comment to the second plate, p.60: "Da questo chaos, l'artista trae la luce, come il Dio biblico nel primo giorno della Creazione, di cui Mosè dipinse la straordinaria settimana nel suo libro della *Genesi*."



Figure 4.  
Second plate from Altus' *Mutus Liber*.  
Reproduced in Altus, *Mutus Liber*, cit., p. 61.

According to Altus' metaphorical representation, the illusionary process of the alchemist's enacting the supposed original environmental conditions of divine creation in the *vas Hermetis* would take place in the egg-shaped flask placed right in the centre of the *athanor* whereas, higher above, the philosophical egg would stand for the macrocosm of the Almighty's creation supposed to be staged throughout alchemical praxis. This process, evolving an ascending action within the microcosmic dimension of

the alchemical *athanor*, resembles the macrocosmic level of the action of the sun shining upon the philosophical egg held by the two angels: as a matter of fact, the passive role of the alchemist's egg-shaped *vas* seems to enact the first precept of the *Urtext* of alchemy – Hermes Trismegistus' *Tabula Smaragdina*.<sup>119</sup> Actually, one major point within the whole pattern of Hermetic criticism doubtlessly relies on the textual review of Hermes' *Tabula* and, given the key role played by this text within the particular development of Hermetic philosophies, related alchemical theories and their resulting influences on Western culture alike, I do regard its complete reproduction, along with Newton's own transcription and translation, as being of greatest usefulness within the logical economy of my study.

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<sup>119</sup> For further information see the related entry "Emerald Table" in Lyndy Abraham, *A Dictionary of Alchemical Imagery*, Cambridge, Cambridge University Press, 2001, hereinafter quoted as Abraham, *Dictionary*.

This is the English<sup>120</sup> translation of Hermes' *Tabula*:

*True it is, without falsehood, certain and most true. That which is above is like that which is below, and that which is below is like that which is above, to accomplish the miracles of one thing.*

*And as all things were by the contemplation of one, so all things arose from this one thing by a single act of adaptation.*

*The father thereof is the Sun, the mother the Moon.*

*The Wind carried it in its womb, the Earth is the nurse thereof.*

*It is the father of all works of wonder throughout the whole world.*

*The power thereof is perfect.*

*If it be cast onto the Earth, it will separate the element of Earth from that of Fire, the subtle from the gross.*

*With great sagacity it doth ascend gently from Earth to Heaven.*

*Again it doth descend to Earth, and uniteth in itself the force from things superior and things inferior.*

*Thus wilt thou possess the glory of the brightness of the whole world, and all obscurity will fly far from thee.*

*The thing is the strong fortitude of all strength, for it overcometh every subtle thing and doth penetrate every solid substance.*

*Thus was this world created.*

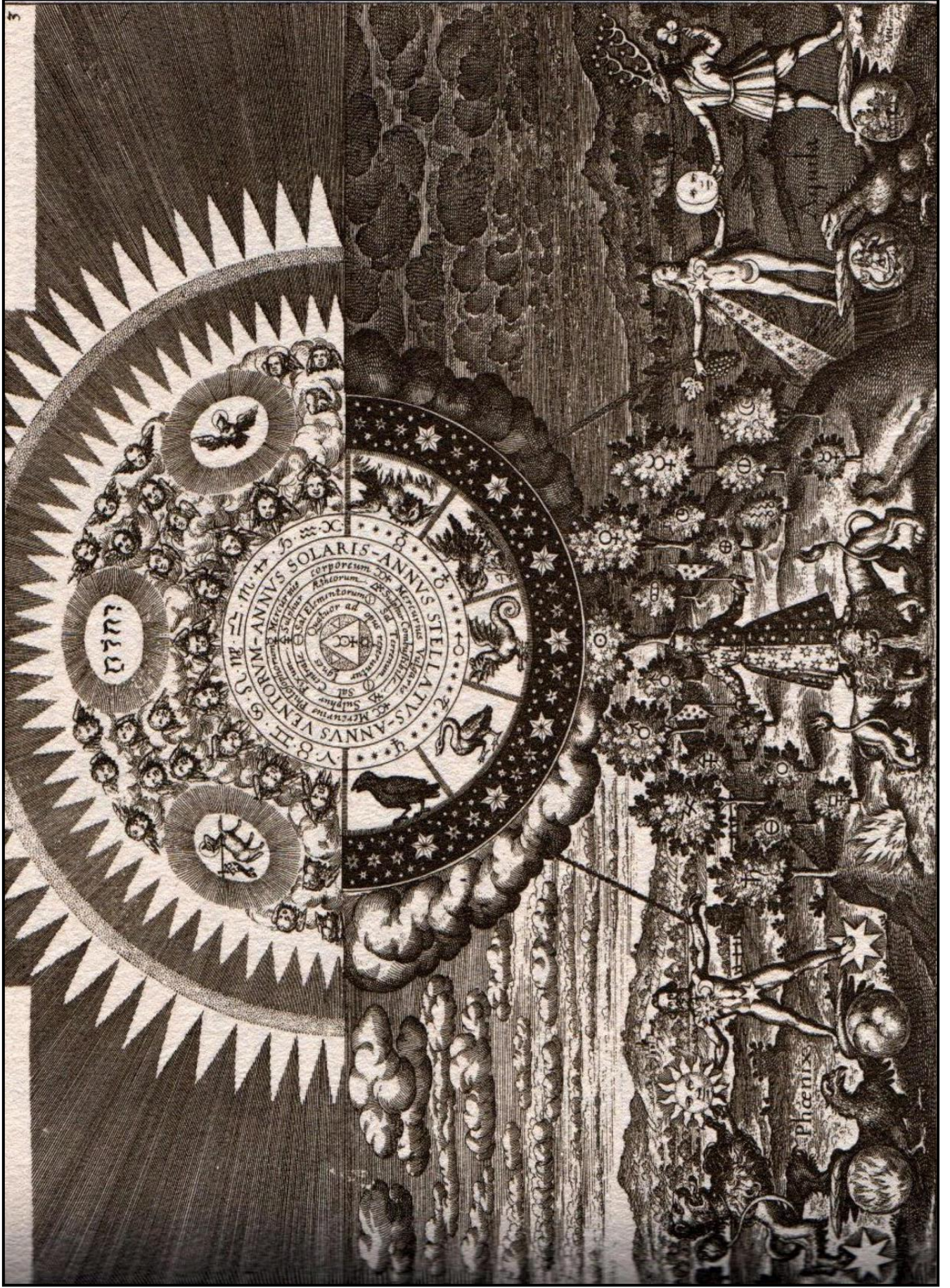
*Hence there will be marvelous adaptations achieved, of which the manner is this.*

*For this reason I am called Hermes Trismegistus, because I hold three parts of the wisdom of the whole worlds.*

*That which I had to say about the operation of Sol is completed.*

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<sup>120</sup> E. J. Holmyard, *Alchemy*, cit., p. 95 (this English translation is R. Steele's and Mrs. D. W. Singer's version).



**Plate 1. The polarities between *macrocosm* and *microcosm*.**

Johann Daniel Mylius, *Opus Medico-Chymicum*, 1618, reproduced here from Alexander Roob, *Alchemie & Mystik, Köln*, Taschen, 1996, p. 234.



Newton's translation and transcription of Hermes' *Tabula*, as it is recorded in Keynes MS. 28,<sup>121</sup> runs as follows:

- 1) *Tis true without lying, certain & most true.*
- 2) *That wch is below is like that wch is above & that wch is above is like yt wch is below to do ye miracles of one only thing.*
- 3) *And as all things have been & arose from one by ye mediation of one: so all things have their birth from this one thing by adaptation.*
- 4) *The Sun is its father, the moon its mother,*
- 5) *the wind hath carried it in its belly, the earth its nourse.*
- 6) *The father of all perfection in ye whole world is here.*
- 7) *Its force or power is entire if it be converted into earth.*
- 7a) *Seperate thou ye earth from ye fire, ye subtile from the gross sweetly wth great indoustry.*
- 8) *It ascends from ye earth to ye heaven & again it desends to ye earth and receives ye force of things superior & inferior.*
- 9) *By this means you shall have ye glory of ye whole world & thereby all obscurity shall fly from you.*
- 10) *Its force is above all force. ffor it vanquishes every subtile thing & penetrates every solid thing.*
- 11a) *So was ye world created.*
- 12) *From this are & do come admirable adaptaions whereof ye means (Or process) is here in this.*
- 13) *Hence I am called Hermes Trismegist, having the three parts of ye philosophy of ye whole world.*
- 14) *That wch I have said of ye operation of ye Sun is accomplished & ended.*

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<sup>121</sup> Thanks especially to Betty Jo Teeter Dobbs, it is well known that Newton himself devoted some time of his philosophical and alchemical research to the study of the *Emerald Table*. This is Dobbs' transcriptions from Keynes MS. 28 (Location: King's College, Cambridge, UK, corresponding at Sotheby Lot n° SL31) of Newton's translation and transcription of Hermes' *Tabula Smaragdina*. Another important Newtonian document dealing with the precepts of Hermes' *Tabula* is Keynes MS. 21, especially ff. <16r>-<16v> (<http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00011/>). See Betty Jo Teeter Dobbs, "Newton's Commentary on the Emerald Tablet of Hermes Trismegistus," in Merkel and Debus (eds.), *Hermeticism and the Renaissance*, cit., pp. 183-184, see also Dobbs, *The Janus Faces of Genius*, cit., pp. 271-277). The central role played by the study of the *Emerald Table* within the development of Newton's alchemical knowledge will be later further inquired.

The unrivalled unprecedented success, both in terms of later influences on Western knowledge and revisions of the text itself, notched up by the *Tabula Smaragdina* throughout its history as the established Hermetic main referring source, has been mainly due to the heterogeneous system of precepts it purported. Enshrining the basic laws of alchemy, the *Emerald Table* was also deemed to record the secret of God's creation thus fostering a strong link with the text revealing the process of divine creation: the book of Genesis. To best illustrate this first close bond between Hermetic and Christian traditions, it would be useful to recall Maurice Crosland's words:

an important analogy was the comparison of the process of creation willed by the alchemist in his cucurbit to the creation of the world by God. The two main texts on which this comparison was based were the Book of Genesis and the *Tabula Smaragdina*. The former described the creation of the world and the latter gave some authority to the analogy with alchemical creation.<sup>122</sup>

By positing the description of an overwhelming harmonious relationship and unity between God's macrocosm and the microcosm of man, both pervaded by a universal soul or spirit, the *Emerald Table* remarkably stressed<sup>123</sup> the importance of the *Sun* and the *Moon* as founding pillars of God's architectural structure of the world according to the alchemical<sup>124</sup> allegorical symbolism thereof:

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<sup>122</sup> Crosland, *Historical Studies*, cit., p. 19. Cfr. *Asclepius*, 6, in Ramelli (ed.), *Corpus Hermeticum*, cit., p. 524: "[...] spiritus, quo plena sunt omnia, permixtus cunctis cuncta uiuificat, sensu addito ad hominis intelligentiam, quæ quinta pars sola homini concessa est ex æthere. [...]" See also Raphael Patai, "Biblical Figures as Alchemists," in *Hebrew Union College Annual*, cit., p. 196: "[...] a cherished tradition in alchemy that the processes of the *Magisterium*, the Great Work, of making gold were strictly analogous to those of the creation of the world as described in Genesis 1 and 2. The Philosophers' Stone was therefore considered a world in miniature, a *minutus mundus*, which corresponded also to man the microcosm."

<sup>123</sup> Cfr. The Fifth Parable in Trismosin, *Splendor Solis*, cit., p. 38: "The philosophers attribute two bodies to this Art, namely Sun and Moon, which are the Earth and Water. They are also called Man and Woman, and they bring forth four children: two boys who are Hot and Cold, and two girls who are Moist and Dry. These are the four elements. And they make the fifth essence: the white Magnesia, which is no falsity."

<sup>124</sup> Robert Fludd (1574-1637), writing about the study of alchemy, remarked that it should encompass "the law of Macrocosm and Microcosm, the supernatural world as well as of nature and of the artist working on Nature" (C. H. Josten, "Truth's Golden Harrow: An Unpublished Alchemical Treatise of

God, like a wise Architect, sits in the centre of all, repairs the ruins of His building, composeth all disorders, and continues his creature in his first primitive harmony.<sup>125</sup>

To best accomplish a preliminary overlook over the entangled symbolic pattern<sup>126</sup> of the alchemical *Sun* and *Moon* I would suggest to start from considering Raymond Lulli's definition of alchemy:

an occult part of philosophy, the most necessary, a basic art which cannot be learned by just anyone. Alchemy teaches how to change all precious stones until they achieve the true balancing of qualities; how to bring human bodies to their healthiest condition; and how to transmute all metals into the true Sun (gold) and true Moon (silver), by means of a unique body, universal medicine, to which all particular medicines are reduced.<sup>127</sup>

Every basic alchemical practical theory affirmed that, after the dissolution of the *massa confusa* of the primordial *prima materia* had occurred in the *hermetic vessel*, the *albedo* stage – the adept's mystical merging with God and the metaphoric embracing of the whole Creation – had to provide an unceasing process of refinement of the various elements that were derived during the previous *nigredo* phase. Remarkably, the outstanding goal of the middle stage of alchemical *chrysopœia* was that of

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Robert Fludd in the Bodleian Library,” in *Ambix*, 3, 1949, p. 96, quoted in Lyndy Abraham, *Marvell & Alchemy*, cit., p. 62).

<sup>125</sup> Thomas Vaughan, *Anthroposophia Theomoagica*. By *Eugenius Philalethes*, London, 1650, p. 29, quoted in E. C. Pettet, *Of Paradise and Light. A Study of Vaughan's Silex Scintillans*, Cambridge, Cambridge University Press, 1960, p. 81.

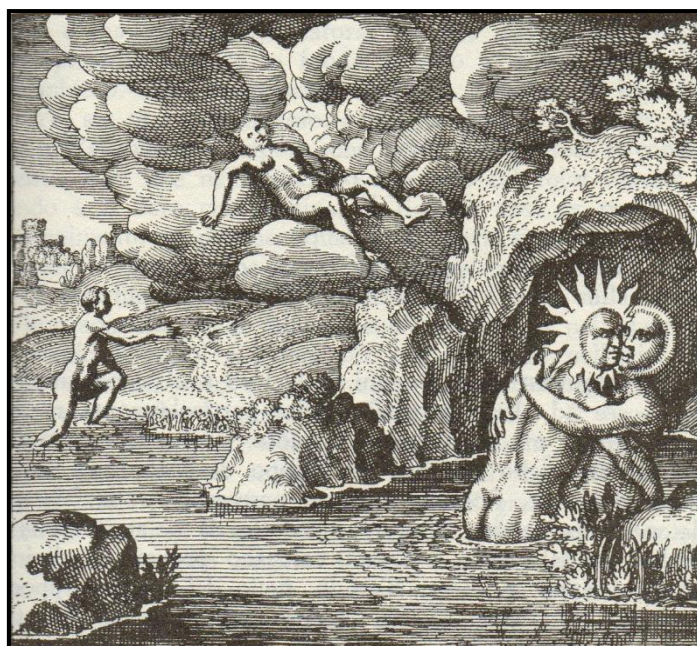
<sup>126</sup> For a concise though exhaustive survey of the main outlines of the symbolic pattern of alchemical *Luna* see the relative entry in Abraham, *Dictionary*, cit., pp. 119-120; for the references of the alchemical *Sun* see Abraham, *Dictionary*, cit., pp. 194-195. Pereira, “Il Paradigma della Trasformazione,” cit., p. 203

<sup>127</sup> R. Lulli, *Testamentum*, MS Oxford, Corpus Christi College 244, f. 46<sup>ra</sup>: “Alchimia est una pars celata philosophie, magis necessaria, de qua constituitur una ars que non apparet omnibus, que docet mutare omnes lapides preciosos et ipsos reducere ad verum temperamentum et omne corpus humanum ponere in multum nobilem sanitatem et transmutare omnia corpora metallica in verum solem et in veram lunam per unum corpus medicinale universal ad quod omnes particulares medicine reducuntur.” Reproduced in Michela Pereira, “*Medicina* in the Alchemical Writings Attributed to Raimond Lull (14<sup>th</sup>-17<sup>th</sup> Centuries),” in Rattansi and Clericuzio (eds.), *Alchemy and Chemistry*, cit., note 19 on p. 11. This English translation is quoted from *Ibidem*, p. 3.

achieving, by the end of the whole process, two distinct elements conceived as though they were poles apart; an ambition which, nevertheless, raised the issue of the *coincidentia oppositorum*.<sup>128</sup> In alchemy, the *coniunctio* was the blending up of opposites elements, substances, or principles; actually, this process was, in its turn, called “marriage” because of the figurative copulation of the male and female principles (sometimes portrayed<sup>129</sup> as *brother* and *sister* or *King* and *Queen*) which ought to engender the birth of an androgynous creature. Emblem XXXIV of Maier’s *Atalanta Fugiens* does best illustrate this chain of allegorical representations:

Emblema XXXIV. *De secretis Naturæ.*

In balneis concipitur, & in aëre nascitur, rubeus verò  
factus graditur super aquas.<sup>130</sup>



<sup>128</sup> Cfr. Pereira, “Il Paradigma della Trasformazione,” cit., p. 203: “[...] l’unione degli opposti che, impossibile da esprimere in qualsiasi linguaggio concettuale legato ai rigidi confini delle proprie definizioni, si mostra e insieme si cela dietro formulazioni simboliche sostanzialmente equivalenti, che debbono la loro diversità esteriore al fatto di appartenere a tempi e situazioni profondamente diversi.” A particularly interesting alchemical source is Telle’s *Sol und Luna*, a quite-long poem centered on the *coniunctio* between these two elements. See Pereira (ed.), *Alchimia*, cit., pp. 827-830.

<sup>129</sup> Cfr. Emblema XXV in Maier, *Atalanta Fugiens*, cit., p. 144: “Draco non moritur, nisi cum frater & sorore sua interficiatur, qui sunt Sol & Luna.”

<sup>130</sup> Emblema XXXIV in Maier, *Atalanta Fugiens*, cit., p. 189. The emblem is counted as being figure n°5 in the series compounded in my thesis. Since the meaning of the picture is already given by the related epigraph, I have decided to omit the usual explanatory description.

During the *chymical wedding*, male sulphur (the *Sun* or *King*, creative power) got fused with the female quicksilver (the *Moon* or *Queen*, wisdom) in order to re-gain the quietness of the perfect Platonic union of opposites, which the successful outcome of the *Opus*, incarnated by the *philosopher's stone* forging during the last *rubedo* stage, consistently hinged upon. As Carl Gustav Jung argued in his *Mysterium Coniunctionis*:

the factors which come together in the coniunctio are conceived as opposites, either confronting one another in enmity or attracting on another in love. [...]; for instance the opposites are [...] *spiritus-anima* (spirit-soul) / *corpus* (body), *coelum* (heaven) / *terra* (earth), *ignis* (fire) / *aqua* (water), bright / dark, [...], *masculus* (masculine) / *foemina* (feminine), Sol / Luna.<sup>131</sup>

By an extension of the analogy then, the *Sun* became identified with the “alchemical myth of the *rex marinus*”<sup>132</sup> in which the *King* stood for the *philosopher's stone* throughout its whole developing process of refinement. Just as the *Stone* it represented, the *King* underwent an unceasing number of *solve & coagula* cycles and his decay was therefore bound to the melting of the raw matter of the *Stone* in the alchemical *liquor*. The *King* of the *Opus* drowning in the sea is one most diffuse allegory scattered throughout the pages of alchemical literature. Furthermore, as far as an alchemical criticism of Newton's reading of the biblical prophecies is concerned, noteworthy traces of this symbolism could be found in the *Third Parable* of Trismosin's *Splendor Solis* and in the *Emblem XXXI* of Maier's *Atalanta Fugiens*. Summoning up the biblical apprise of Revelation 22: 12,<sup>133</sup> a mighty reward will be offered to the alchemist able to rescue the sinking *King*: “Whoever rescues me will live with me

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<sup>131</sup> Jung, *Mysterium Coniunctionis*, cit., p. 3. See also Jung, *Psychology and Alchemy*, cit., pp. 313-319.

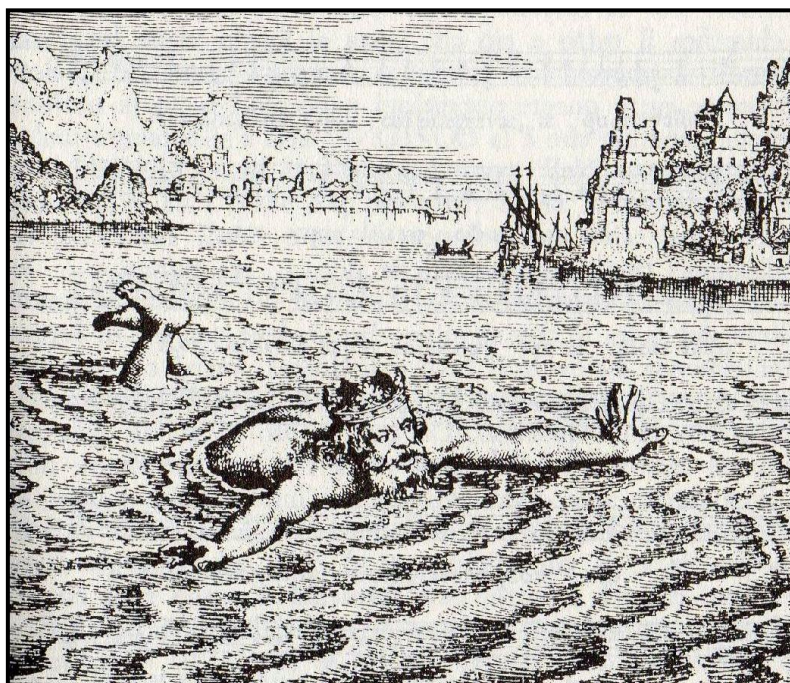
<sup>132</sup> Abraham, *Dictionary*, cit., p. 110.

<sup>133</sup> Rev. 22: 12: “And, behold, I come quickly; and my reward is with me, to give every man according as his work shall be.” Cfr. John 11: 25-26: “I am the resurrection, and the life, he that believeth in me, though he were dead, yet shall he live; And whosoever liveth and believeth in me shall never die.”

forever and reign in my splendor on my royal throne!”<sup>134</sup> At the same rate, Maier’s harsh urging tone towards the grudging adepts bids them to “Rush forward, all,/ You whom I can make happy when I’m saved!”<sup>135</sup>

Discursus XXXI.

Rex natans in mari, clamans alta voce: Qui me eripiet,  
ingens præmium habebit.<sup>136</sup>



Variously alchemically explained as *gold*<sup>137</sup> and (*quick*)*silver*, *sulphur* and

*mercury*, *King* and *Queen*, the symbolic value of *Sun* and *Moon* also became one most

<sup>134</sup> The *Third Parable* in the *Third Treatise* of Trismosin, *Splendor Solis*, cit., p. 34: “Avicenna says in the chapter on Moisture: “When the heat operates in a moist body, a blackness should first result.” For this reason the Ancients beheld a distant mist emerge, which overshadowed and moistened the whole earth. They saw, too, the restlessness of the sea, and the water flood over the face of the earth and become foul and stinking in the darkness. They also saw the King of the Earth sink, and heard him call with his beseeching voice: “Whoever rescues me will live with me forever and reign in my splendor on my royal throne!” and then night enshrouded all things [...]”

<sup>135</sup> Godwin (tr.), *Atalanta Fugiens*, cit., p. 167: *Epigram 31*. The King, whose crown is heavy on his head,/ Swims in the wide sea and cries aloud:/ “Why don’t you rescue me? Rush forward, all,/ You whom I can make happy when I’m saved!/ If you are wise, then make me to my realm,/ And poverty and sickness you’ll forget.”

<sup>136</sup> Maier, *Atalanta Fugiens*, cit., p. 174. The figure, Emblem XXXI in Maier’s *Atalanta Fugiens*, is counted as being n°6 in the series compounded in my thesis. Since the meaning of the picture is already given by the related epigraph, I have decided to omit the usual explanatory description. Cfr. Walter Pagel, “Jung’s Views on Alchemy,” in *Isis*, cit., p. 46: “Such symbols as that of the “depth of the sea,” into which nobody dares to go in order to “save his King,” denote in Jung’s opinion the unconscious self of the alchemist – the “abyss” which, in contrast to early Christian belief, not only contains “evil,” but also the “King” who needs “redemption,” and will, at the end of the “work,” emerge, “crowned with his diadem, radiant like the sun, luminous as the carbuncle . . . stable in fire.”

important referring allegories within Newton's frame of Biblical symbols onto which a related alchemical label might be attached. Actually, to best introduce, and somehow hasten, my alchemical reading of Newton's millenarianism, some textual quotations from Yahuda MS. 1.1 would perfectly suit this purpose of mine. Collected at the National Library of Israel at Jerusalem, Yahuda MS. 1.1 is part of a larger series of manuscripts gathered under the shelfmark Yahuda MS. 1 which, in its turns, comprises a whole series of manuscripts (Yahuda MS. 1.1; 1.1a; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 1.8) of an *Untitled Treatise on Revelation* written mainly in English with passages in Latin and quotations in Greek. The c. 650 folios of the manuscripts, according<sup>138</sup> to the Newton's Project website, could be allegedly dated back to the decades 1670s-1680s, constituting therefore, along with Yahuda MS. 3, Newton's first drafts of his fancied *Treatise on the Apocalypse*. Only partially published<sup>139</sup> by F. E. Manuel and Maurizio Mamiani, the whole series of manuscripts appears however incomplete. Many sections of different manuscripts focus on the same critical material and these homogeneous several drafts let us thus guess that Newton allegedly never achieved an average balance of the overall structure of the biblical exegesis he fancied. Since the first parts comprised in Yahuda MS. 1 are generally recognized by scholars as being the most important in revealing

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<sup>137</sup> A good synthesis of the symbolic meaning of "gold" in alchemy is in Gilchrist, *Alchemy*, cit., pp. 19-22.

<sup>138</sup> Mamiani agrees with Westfall's dating of the manuscripts up to the 1680s. See Mamiani (ed.), *Trattato sull'Apocalisse*, cit., Nota al testo, p. XLIII.

<sup>139</sup> See Frank Edward Manuel, *The Religion of Isaac Newton*, Oxford, Clarendon Press, 1974, hereinafter referred to as Manuel, *Religion*, and Mamiani (ed.), *Trattato sull'Apocalisse*, cit. Folios 1-19 of Yahuda MS. 1.1 published in Manuel, *Religion*, Appendix A, pp. 107-125; Folios 12r-19r of Yahuda MS. 6, published in Manuel, *Religion*, pp. 126-136. Folios 1-26 of Yahuda MS. 1.1; Sections 1.1a and 1.3 published by Mamiani with an Italian translation. Mamiani uses a slightly different referencing system which he refers to as, respectively, Yahuda MS Var. I, Newton MS I (ff. 1<sup>r</sup> – 10<sup>r</sup>, 12<sup>r</sup> – 19<sup>r</sup>, 24<sup>r</sup> – 26<sup>v</sup>); Yahuda MS Var. I.I, Newton MS I.I (ff. 1<sup>r</sup> – 31<sup>r</sup>); Yahuda MS Var. I, Newton MS I.3 (ff. a<sup>r</sup> – d<sup>r</sup>, 1<sup>r</sup> – 63<sup>r</sup>). Furthermore, some parts of the manuscripts are analysed in Richard S. Westfall, "Newton's Theological Manuscripts," in *Contemporary Newtonian Research*, Dordrecht, D. Reidel, 1982, pp. 131-134. On-line Catalogue Record of all the sections of Yahuda MS. 1 at <http://www.newtonproject.sussex.ac.uk/catalogue/record/THEM00044>. Yahuda MS. 9.2 has been published in Matt Goldish, *Judaism in the Theology of Sir Isaac Newton*, Dordrecht, Kluwer, 1998, pp. 188-218. Goldish also provides a thorough study on the influences of Jewish theology in the development of Newton's biblical exegesis.

Newton's methodised reading of the prophecies, these same portions of texts would, all the same, drive and guide us successfully in and out of his alchemical maze.

Let's therefore start to consider, from Yahuda MS. 1, Section 1.1, folio <20r>. After an introductory part (ff. <1r>-<10r>), the "Rules for interpreting the words & language in Scriptures" (ff. <12r>-<13r>), the "Rules for methodising|contruing the Apocalyps" (ff. <12v>-<15r>), the "Rules for interpreting the Apocalyps" (ff. <16r>-<19r>), Newton dedicates a whole section (ff. <20r>-<23r>), which has not been published yet,<sup>140</sup> to describe the figurative, allegorical language of the "Prophetic figures" he is endeavouring to decode. This section is here reproduced according to the normalised transcription of the Newton Project Website. To improve the reading of this part of the manuscript I have decided to bracket the numbers, inserted into the text by Newton himself, which are referred to in "The Proof" (ff. <28r>-<55r>) as especially noteworthy passages to develop a correct interpretation of the biblical prophecies. Consequently, I have therefore decided to quote only the explanations of the lines about the symbols of "*Sun*" and "*Moon*," and "*King*" and "*Queen*," which are the true subjects of my analysis (the bracketed call-numbers of these entries have been typed in bold font to allow an easier detecting of the most interesting passages).

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<sup>140</sup> Unpublished both in Mamiani's and Manuel's works.



**Prophetic figures.**

The original of the figurative Language of the Prophets was the Comparison of a Kingdom to the [<sup>1</sup>] World & the parts of the one to the like parts of the other. And accordingly the [<sup>2</sup>] Sun signifies the King and Kingly power. The Moon the next in dignity that is the priestly power with the person or persons it resides in. The greater stars the rest of the Princes or inferior Kings. [<sup>3</sup>] Heaven the Throne court honours & dignities wherein these terrestrial Luminaries & stars are placed, & the [<sup>4</sup>] Earth . inferior people. [<sup>5</sup>] Waters the same. [<sup>5</sup>]. The sea a gathering together of many people into one large dition or body politick, a great kingdom. 5, 21, 25 Rivers & fountains of water, peoples under several heads, many small kingdoms principalities or provinces & their head cities. [<sup>6</sup>] And when there are two sorts of people considered, they are sometimes distinguished by calling one the earth & the other the Sea, waters or rivers.

Moreover a [<sup>7</sup>] Mountain signifies a city & more especially the head City as Ierusalem or Babylon, & sometimes a [<sup>8</sup>] Temple & so [<sup>9</sup>] x Islands signify Temples in a Country represented by the sea. [<sup>10</sup>] Dens & Rocks of Mountains the buildings of Cities or the ruins of them, & chiefly of great stone buildings such as are Forts, Pallaces & [<sup>11</sup>] Temples. [<sup>12</sup>] Trees & Herbs men [<sup>13</sup>] Swarms of Insects (as of Locusts) numerous Armies. [<sup>14</sup>] Wild Beasts forreign Kingdoms. [<sup>15</sup>] Other Beasts, as Froggs, other societies or sects of men according to their qualities. Wildernes a country wasted by these Beasts whither it be in [<sup>16</sup>] temporal or [<sup>17</sup>] spirituall matters. [<sup>18</sup>] Flesh riches upon which they prey. [<sup>19</sup>] The Foules of the Air the things that are in it, as spirits, or infectious diseases, & sometimes Armies & kingdoms.

[<sup>20</sup>] By ships buildings. By Merchant ships &c. [<sup>20</sup>] By Merchant ships buildings for commerce & profit such as are shops to tradesmen & temples to Priests. By a {illeg} of war-ships an Army. By Rivers {illeg} or people of a Kingdom <21r>. [<sup>22</sup>] By overflowing floods Invasions. [<sup>23</sup>] By drying up of waters the decay of military strength [<sup>24</sup>] By Reeds & Flaggs men. [<sup>25</sup>] By Fountains of water Cities & towns. [<sup>26</sup>] And by Fishes Armies or people.

Hitherto I have considered the World onely so far as its parts are compared to the parts of a Kingdom in a due proportion to the whole: which I chose to do becaus this was the original of the figurative language of the Prophets & therefore must be the rule to understand it. But it frequently happens that to make the parts of a Kingdom hold the better correspondence with one another, & for the more convenience of expressing their mutuall respects & actions & sometimes of considering two or more Kingdoms at once the Prophets extend some part of the world to the whole Kingdom: As the celestial frame by putting [<sup>27</sup>] the lesser stars, to signify the common people, & [<sup>28</sup>] the clouds great multitudes of them [<sup>28B</sup>] the Moon a feminine<sup>2</sup> body<sup>1</sup> changeable<sup>3</sup> superstitious illuminated by the sun, a body of people combined in any religion made splendid by the sun that is in any national religion.; or the terrestrial by putting [<sup>29</sup>] the tallest Trees for Kings & Princes & lesser Plants or Herbs for the common people; or any single [<sup>30</sup>] Animal as a Lyon, Beare, [<sup>31</sup>] Dragon Eagle, Lamb, Woman, Man, or even an Angel. &c, by putting their parts & qualities to signify the parts & qualities of the Kingdom. As its [<sup>32</sup>] heads if more then one to signify distinction of the Kingdom into soe many capital parts whether collaterall or successive, [<sup>33</sup>] the horns upon any head the number of Kingdoms belonging to that head, [<sup>34</sup>] the eyes a politician & more emphatically a prophet [<sup>35</sup>] the mouth a, speaker of laws [<sup>36</sup>] the teeth squadrons of armies under their several Commanders, [<sup>37</sup>] the Wings & leggs or feet Armies, [<sup>38</sup>] the

tayl also Armies if it be of a serpentine form so that the Beast may fight with it, otherwise onely a train of attendants, [39] & the body the rest of the Kingdom which is guarded & governed by these parts,. And thus much concerning the parts of a Kingdom.

The chief passions are <22r> represented as followeth.

[40] Ascending up to heaven signifies great exaltation [41] Ascending in a cloud exaltation by a multitude of people; & Riding on the clouds victory & dominion over much people. [42] Covering the Sun with a cloud or with smoke oppression of the King by the armies of an enemy. Passing away of heaven & earth the passing away of a kingdom Isa. 34.4. [43] Darkning smiting or setting of the Sun Moon & Stars, the ceasing of a Kingdom, or desolation of it proportional to the darknes if it be not totall. [44] Blacknes of the Sun & turning the Moon into blood, the splendor of the kingdom put out & the religious body thereof politically slain [45] Turning water into blood great slaughter of the people or at least the political death of a kingdom. [45B] Embittering < insertion from f. 21v > [45B] Embittering of Waters by wormwood vehement affliction of a people & that chiefly by warr. < text from f. 22r resumes > [46] The falling of any thing into water the ruin of that thing. [47] Burning any thing with fire the consuming of it by war. [48] Being scorched with the Sun, affliction through war to be caused by the King. [48B] Appearing like a fiery substance as the Sun Apoc. 1.16 burning brass Apoc. 1.15 flames of fire Apoc. 1.14 or cloathed with a fiery substance as with the Sun Apoc. 12.1 & 19.17 signifies being in great affliction by war or persecution. [49] Earthquakes wars & commotions. [50] Shaking of heaven & Earth commotions so great as to overthrow Kingdoms. [51] Winds long & continued series of war. [51] Whirlwinds very violent & destructive wars. [52] The more sudden & violent tempests of hail & thunder, the battels therein with loss to that side on which the

tempest falls, whereof the greatnes is aggravated if the hail stones be described very great or mixed with fire (i.e. of Lightning) or with blood. <sup>[53]</sup> But rain signifies the blessing of God unless it come with a flood. And living water or water of life is the gift of the spirit Ioan 7.38, 39. Apoc <22v> that is, saith the Chalde Paraphrast I have put the words of my prophesy in thy mouth & protected thee in the shaddow of my power that I might raise up the people of whom tis said they shall be multiplied as the stars of heaven & that I may found the congregation of whom tis said that it shall be multiplied as the dust of the earth, & say to the inhabitants of Sion, Ye are my people. And so in Isa 65.17 Behold I create new heavens & a new earth; & the former shall not be remembred – For behold I create Ierusalem a rejoycing & her people a joy. So in Haggai Yet {once} more I will shake the heaven & the earth & the sea & the dry land & I will shake all nations Hagg. 2.6 Which is afterward by the Prophets interpreted of Kingdoms I will shake saith he the heavens & the earth & I will overthrow the throne of Kingdoms. 21. And so also by the Apostle Paul , *This yet once more* saith he *signifieth the removing of those things which are shaken – that those things which cannot be shaken may remain: wherefore we receiving a kingdom which cannot be moved.* Heb.

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Besides these there are many other figurative expressions, taken for the most part from more obvious similitudes or affinities of things; <sup>[54]</sup> as to represent a Warrior or Potentate by a horsman. <sup>[55]</sup> Victoriousnes by a Bow. <sup>[56]</sup> Iustice by a Ballance or Measure. <sup>[57]</sup> Martyrs by an Altar. The Church by a <sup>[58]</sup> Temple or <sup>[59]</sup> Woman <sup>[60]</sup> Persecution of the Church by the pains of a woman in travail. <sup>[61]</sup> An adulterate Church by a Whore. Idolatry of the Church by <sup>[61]</sup> Whoredom or <sup>[62]</sup> Blasphemy. <sup>[63]</sup> Idols by Men. <sup>[64]</sup> The shutting up of Idols in their Temples or burying them in the ruins thereof by hiding men in Dens & Rocks of Mountains. <sup>[64]</sup> The fall of Idol-temples upon their

Idols by the falling of Rocks<sup>2</sup> & Mountains<sup>1</sup> upon men. [<sup>65</sup>] The throwing down of Idols by the falling of stars unto the earth as figgs fall from a Fig-tree. [<sup>65</sup>] The throwing down of Idol Temples by the departing of the heavens as a scroll when it is rolled together. [<sup>66</sup>] The springing up of new heresies or fals religions by ascention out of the bottomles pit. [<sup>67</sup>] Error & affliction by drunkenness or a potion. [<sup>68A</sup>] Overthrow in warr by a wound. [<sup>68B</sup>] A durable plague of war by a Sore [<sup>68C</sup>] Desolation by nakedness. [<sup>69</sup>] Slaughter of the Wicked | Punishing in hell by treading a Winepress. [<sup>70</sup>] And the end of the World by a harvest or Vinetage. Slaying in hell by treading a winepress. And some others there are which are either so obvious as need no explaining, or may be more conveniently explained hereafter.

According to Newton's own explanation of each single passage in the "The Proof," where he urges to inform his readers about the true meaning of the allegorical language of the prophecies, a deep religious connotation besides some biblical personifications ought to be attached to the symbols of the divine idiom. It is really where Newton's exegetic process evolves into the development of an overarching pattern of symbolical representation that an alchemical influence might be appended to: "symbolic patterns cannot be set aside: if they exist, they are universal."<sup>141</sup> Consequently, Newton explains that "The Sun immutably represents the king, the Moon the next in power to the king [...]. And so Christ is called the morning star."<sup>142</sup> If first read without any further clarifications about their real context, Newton's statements about the true nature of the "Sun" and the "Moon" may appear, even to the aware eye of the most sceptical scholar, as being quoted from an alchemical treatise because they do actually display analogies which recall in tone, language and meaning the entangled mystical fields of the *Art*. In her thorough alchemical dictionary, Lyndy Abraham argues that: "The star is the symbol of man made perfect, the true goal of the opus alchymicum,"<sup>143</sup> meaning that whatever may be compared to a star, would also extoll the ultimate aim of *chrysopæia*. The "man made perfect," which Abraham alludes to, was identified by Christian alchemists with God's son, thus enhancing somehow the drawing of a parallel between Christ and the philosopher's stone – the final outcome of alchemical praxis. At this very point, as far as Newton's critical horizon has never to be let out of sight, a skim through some meaningful analogies occurring between alchemical imagery and Christian dogmas would give more coherence to the subsequent development of my reasoning. When, during the Middle Ages, influences between

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<sup>141</sup> Michel Carrouges, "Le Sismographe Surréaliste," in *Polarité du Symbole*, «Études Carmélitaines, » anno xxxix (1960), quoted and translated in Altus, *Mutus Liber*, cit., Introduzione, p. 21: "Il simbolismo non si lascia accantonare, o è universale oppure non esiste"; my translation from the Italian.

<sup>142</sup> Yahuda MS. 1, Section 1.1, "The Proof," ff. <28r>-<55r>, 2 on f. 28r.

<sup>143</sup> Abraham, *Dictionary*, cit. p. 190.

alchemical knowledge and the Christian religion began to occur at different levels, alchemists' praxis became endowed with the religious doctrine of salvation and this led to the identification of the former as the science of transmuting and refining raw metals and to the idealization of the latter as God's gift to restore human body's physical integrity (conceived as good health and regained perfect psychophysical balance). Later on, another interpretative coordinate, the Aristotelian concept of entelechy,<sup>144</sup> was added by alchemical theorists to justify their enterprises through the legitimization granted by the fathers of philosophy – the *prisci theologi*. Notwithstanding an evolution brought in by later literary adaptations, since the sixteenth century a whole series of alchemical imagery started to be associated with religious symbols. As a matter of fact, seventeenth century alchemists were mostly concerned with, and committed to, the setting forth of the holy meaningful pattern of *chrysopœia*, mainly by devising or reaffirming obscure systems of correspondences which they deem to occur during alchemical transmutations and inner developments taking place within their own souls. In each case the longed-for results were purification and perfection: the achievement of the *Stone* or the moral and spiritual regeneration of the adept whose soul, through God's grace, would eventually become fit for final salvation. The parallel drawn between Christ and the philosopher's stone, eagerly compared for their regenerative potency and ability to “cleanse” and “heal” imperfect matter and bodies – both in fact were regarded as healing agents, able to ease from grief and sorrow, to reward one's merit “in that great & generall refining day”<sup>145</sup> as suggested by Thomas Tymme's accounting of the Millennium, – laid at the

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<sup>144</sup> The term entelechy (from the Greek ἐντελέχεια, entelécheia) was coined for the first time by Aristotle to describe the reality of things in their state of perfection and to define the concept of realizing what would otherwise be merely potential. Strictly connected with Aristotle's distinction between matter (the potential) and form (the actual), the theory of entelechy could be referred to the alchemical axiom of the predestination of the alchemist.

<sup>145</sup> From Tymme's dedication to Joseph Quersitanus, *The Practise of Chymicall, and Hermetical Physicke. . . Translated into English by Thomas Timme, Minister* (London, 1605), quoted in Stanton J. Linden, “Mystical Alchemy, Eschatology, and Seventeenth-Century Religious Poetry,” in *Pacific Coast Philology*, Vol. 19, No. 1/2 (Nov., 1984), pp. 79-88, stable URL: <http://www.jstor.org/stable/1316585>, on p. 80. One most important study on the Christ-philosopher's stone correspondence is Jung, *Psychology*

core of a greater analogical matrix<sup>146</sup> in which to Christian images were supposed to be attached the related alchemical interpretations. Accordingly, the alchemical stages of the *Opus* were juxtaposed to the main events in Christ's life: the nativity,<sup>147</sup> his crucifixion and resurrection; moreover, and most interestingly, two major events in the history of the world – the divine creation of *Genesis* and the last judgment of *Revelation* – were often alchemically described and hence spelt out. Consequently, Christ's crucifixion and resurrection were understood<sup>148</sup> in alchemical terms as the middle stages of “death” and “regeneration” in the endless<sup>149</sup> cycles of “*solve & coagula*,” the miraculously all-healing elixir was equated with Christ's purging, redeeming blood Catholically transubstantiated into wine during the Mass; the chymical wedding of the *coniunctio* embodied the metaphysical, arcane merging with God sought after by all Christian adepts; and the Stone was equalled with Christ the Cornerstone – the *filius macrocosmi*:

I promised to communicate to you a knowledge of our Corner Stone, or Rock, of the process by which it is prepared, and of the substance from which it is already derived by those ancient Sages.<sup>150</sup>

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*and Alchemy*, cit., pp. 332-411, in which this tradition is traced back to such medieval alchemists as Lull and Petrus Bonus. See also Walter Pagel, “Jung's Views on Alchemy,” in *Isis*, cit., p. 47.

<sup>146</sup> Cfr. Lyndy Abraham, *Marvell & Alchemy*, cit., p. 26.

<sup>147</sup> Cfr. Keynes MS. 40, f. <23v>: “In the hour of the stones nativity, the body soul & spirit become inseparably united in the white colour so as ever after to ascend or remain below together, & therefore the spirit or ♀ which is then distilled off consists of all three as also does the body which remains below.” Keynes MS. 40 is entitled “Opus Primum,” on-line transcription at <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00029/>.

<sup>148</sup> Cfr. Abraham, *Dictionary*, cit., p. 28: “The biblical metaphor of the grain of wheat which must first be buried before producing more grain, and the image of Christ's crucifixion and resurrection, are often cited by the alchemists.”

<sup>149</sup> Cfr. Jung, *Psychology and Alchemy*, cit., p. 281: “Time and again the alchemists reiterate that the *Opus* proceeds from the one and leads back to the one, that it is a sort of circle like a dragon biting its own tail.”

<sup>150</sup> Basil Valentine, *Twelve Keys Concerning The Great Stone of the Ancient Sages*, in *Hermetic Museum*, I, p. 315, quoted in Abraham, *Dictionary*, cit., p. 47. See also the entry “Cornerstone” on the same page: “one of the central images of Christianity which has been given an alchemical interpretation. Christ the Cornerstone or filius macrocosmi was identified with the all-healing philosopher's stone which could cast out all corruption and confer immortality.”



This analogical matrix of thought led eventually to establish a direct identification of Christ (or even God) with the master alchemist who had created, manages, and will someday put an end to the history of mankind:

During the sixteenth century alchemy underwent an important change. Dee and others still tried to make gold; but the alchemical terms were increasingly used to express a mystical rather than a practical experience – they were considered hieroglyphics for the soul’s search and for ultimate union with God. The philosopher’s stone *is* Christ, the union of the male and female principles *is* the union of the soul with God, and so on for all alchemical terms and symbols.<sup>151</sup>

The questions which I suggested to the reader in the “Introduction,”<sup>152</sup> are now urgently demanding to be answered. Before resuming the account of Newton’s explanatory proves in Yahuda MS. 1.1, let us therefore take an overview over his acquaintance with alchemical literature. According to John Harrison’s catalogue<sup>153</sup> of Newton’s existing books in his library by the time of his death, he possessed a broad collection of 175 books<sup>154</sup> of alchemical argument besides comprehensive alchemical editions such as Elias Ashmole’s *Theatrum Chemicum Britannicum* and the *Musæum Hermeticum Reformatum et Amplificatum*. Moreover, he devoted much time to the compilation of manuscripts which do range from self-accounted practical experiments, to the copying down of famous alchemical treatises, up to the recording in his “Index

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<sup>151</sup> Liselotte Dieckmann, “Renaissance Hieroglyphics,” in *Comparative Literature*, cit., p. 316.

<sup>152</sup> See Introduction, p. 11. The crucial questions I am referring to are: “which were the possible ways of this alchemical influence over Newton’s biblical exegesis? And, most of all, which are the traceable undisputable signs of this relation?”

<sup>153</sup> John Harrison, *The Library of Isaac Newton*, Cambridge, Cambridge University Press, 1978, hereinafter referred to as Harrison, *Library*. For a review of the general status of Newton’s own library see also H. A. Feisenberger, “The Libraries of Newton, Hooke and Boyle,” in *Notes and Records of the Royal Society of London*, Vol. 21, No. 1 (Jun., 1966), pp. 42- 55, stable URL: <http://www.jstor.org/stable/530817>.

<sup>154</sup> For a complete list of the alchemical books in Newton’s library check also: <http://www.newtonproject.sussex.ac.uk/prism.php?id=88>.

Chemicus”<sup>155</sup> of authorities such as Hermes Trismegistus, Roger Bacon, Thomas Norton, George Ripley, Nicholas Flamel, Basil Valentine, Michael Maier. Within the vast bulk of Newtonian alchemical production, Betty Jo Teeter Dobbs recognized the *fil rouge* underlying Newton’s whole laboratory praxis in his searching after what we might assume could be best called the “vital agent,” or “active principle of matter.”<sup>156</sup> What is particularly interesting, as far as the logical development of my reasoning about a crossed symbolical patterns in meanings between Newton’s alchemy and his biblical exegesis is concerned, is that he identifies that spiritual being, acting like “God’s viceroy” in activating matter, with Christ:

“Thus Christ is the viceroy, the spiritual being that acts as God’s agent in the world, a very unorthodox Christ indeed but one whose many duties keep him engaged with the world throughout time. A part of his function is to insure God’s continued relationship with his creation; Newton’s God is in no danger of becoming an absentee landlord, for he always has the Christ transmitting his will into action in the world.”<sup>157</sup>

Since Newton considered Christ as God’s spirit permeating matter, he also presumed that it was that dignified, benign spirit which, interacting with the physical forces at play in substances, subsumed them vivifying the original unformed matter of

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<sup>155</sup> According to Cesare Pastorino (editor of the website *The Chymistry of Isaac Newton Project*), the heading “Index Chemicus” was Newton’s own assignment to three different texts – namely, Keynes MS. 30/1; 30/2; 30/3 – nowadays collected at King’s College Library, Cambridge, under the comprehensive shelfmark Keynes MS. 30. Each part of the “Index Chemicus” enlists a series of alchemical authors and works usually followed by some references to the pages quoted besides some occasionally explanatory short sentences. Further details on the “Index Chemicus” could be found in Richard Westfall, “Isaac Newton’s Index Chemicus,” in *Ambix* 22 (1975), pp. 175-177. Other especially noteworthy manuscripts with quotations and references to the above mentioned authors are: Keynes MS. 29 (various quotations); Keynes MSS. 17; 51; 52; 53; 54 (particular references to and quotations from George Ripley’s works); Keynes MS. 19 (annotated extracts from Michael Sendigovius and Jean d’Espagnet); Keynes MS. 64 (copy of Basil Valentine’s “Golden Chariot of Antimony”).

<sup>156</sup> Though only introduced here, Newton’s alchemical searching after the divine “vital agent” – and the related debate among scholars – will be further investigated in chapter II, paragraph 2.3. The implicit relation between Christ as God’s vital agent and Newton’s Arianism does trespass the logical boundaries of this part of my discourse. Some references thereabout, along with the reproduction of important manuscripts related to Newton’s Arian views, could be found in chapter II, paragraph 2.5.

<sup>157</sup> Both expressions are quoted from Betty Jo Teeter Dobbs, “Newton’s Alchemy and His Theory of Matter,” in *Isis*, cit., p. 527.

the universe – God’s effective *fiat* in the process of divine creation. Within this chain of thoughts, according to Dobbs’ tracing back of Newton’s matrix of ideas, it could be allegedly supposed that, in order to justify his identification of Christ with God’s divine Word addressing to Adam in Eden and revealing himself to Moses and to the patriarchs as recorded in the biblical pages, Newton might have literally taken down the opening passages of John’s Gospel: “In the beginning was the Word, and the Word was with God, and the Word was God. The same was in the beginning with God. All things were made by him; and without him was not any thing made that was made. In him was life; and the life was the light of men (John 1: 1-4).” One textual proof to Dobbs’ hypothesis is supplied by a quotation from an almost unheard-of Newtonian manuscript, namely SL255.8, f. <1r>:

3 Christ is also called *the God who was in the beginning with God* to signify that he was that God who walked in Paradise in the cool of the day & sentenced Adam & Eve & the Serpent, & by whom God the father made all things in the beginning & gave the promisses to the Patriarchs & of whom God said to the people of Israel, Obey my voice for my name is in him.<sup>158</sup>

The importance of this last assumption rests in its suggesting the directions undertaken by Newton’s connections between the different fields of his scholarship, which he actually esteemed all necessary in the process of development of its pansophic worldview though allegedly the top position in his scale of values was occupied by his theology and divine accomplishment – that is, the true understanding of the prophecies.

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<sup>158</sup> SL255.8 (unknown location) is entitled: “Passage on the faith Christ taught the disciples;” address of its online transcription: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00358>. Cfr. SL255.9 (unknown location), f. <2v>: “And this state of the primitive Church explains to us the true meaning of the beginning of the gospel of Iohn. *In the beginning was the Word & the word was with God. All things were made by him & without him was nothing made that was made.* By these words Iohn confirms the opinion of the Nazarenes & those Ebionites who said that Christ was in the beginning of the creation of the world, & was then with God the father & that God created all things by him” (the manuscript is entitled “Passage on early Christian sects;” address of its online transcription: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00359>).

One most revealing quotation from Newton's theological manuscript is a passage from Yahuda MS. 15, where Christ is addressed as he whose resurrection has come to "prepare a place for the blessed" according to the divine Word of *Revelation* and to sparkingly prove the gist of the prophecies:

He [Christ] is said to have been in the beginning with God & that all things were made by him to signify that as he is now gone to prepare a place for the blessed so in the beginning he prepared & formed this place in which we live, & thenceforward governed it. For the supreme God doth nothing by himself which he can do by others.<sup>159</sup>

This passage acquires more meaning if compared to the following fragment from SL255.5 (Location Unknown) in which Newton overtly expresses his belief that Christ's sacrifice was the true revelation of the prophecy:

<1r>

begins & ends with the worship of him that sits upon the throne. He & Christ are worshipped for their benefactions. Christ is worshipped as he is the Lamb of God who was slain for us & hath redeemed us with his blood. The seven lamps are not worshipped tho they represent the seven spirits before the throne from whom Iohn wishes grace & peace to the Churches. God gave this Revelation to Iesus Christ & he sent & signified it by his Messenger to his servant Iohn: but when Iohn fell down to worship this prophetic Messenger he was forbidden. See thou dost not, saith the Messenger; I am thy fellow servant, & of thy brethren [the Prophets] that have the testimony of Iesus: worship God: For the testimony of Iesus is the spirit of prophesy.<sup>160</sup>

Within this entangled net of correspondences, alchemy might have come to comfort Newton in his conviction that God was One, and that Christ was a healing agent for mankind's sufferings. Consistently relying on the alchemical assumption that

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<sup>159</sup> Yahuda MS. 15, "Drafts on the History of the Church," Jewish National and University Library, Jerusalem; address of its online transcription: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00058>.

<sup>160</sup> SL255.5 (unknown location) is entitled: "Fragment on Revelation;" address of its online transcription: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00355>.

the union of body and soul was often symbolised by the *coniunctio* occurring between *Sol* and *Luna*, Christ – the Christian epitome of the Stone – glaringly appeared as being of divine origin though subordinate to the single unitary nature of God. As the Stone arises at the end of the chymical wedding to acknowledge man’s merging with God’s spirit – “For the most veritable Sun is procreated by the art,”<sup>161</sup> – so Christ was given life by God to free man from baseness and sin, to relieve his pain and sufferings, to herald and diffuse the Word of the prophecies for mankind to usher in the Golden age of the Millennium: “And so where the woman is said to be clothed with the sun & the moon under her feet, Rev. 12, the Sun & moon signify the glory of the righteousness of Christ wherewith the Church is to be clothed, & of her own righteousness which she is to put off but yet be supported by it as it borrows splendor from that sun & shines as it were by reflexion.”<sup>162</sup> The soteriological meaning of this passage might be enhanced by a comparison with the following lines from Newton’s “*Commentarium Hermetis Trismegisti Opera Chemica*.”

Et sicut res omnes ex uno Chao per consilium Dei unius creatae sunt, sic in arte nostra res omnes id est elementa quatuor ex una hac re quae nostrum Chaos est per consilium Artificis & prudentem rerum adaptionem nascuntur. Est et ejus generatio humanae similis, nimirum ex patre & matre qui sunt Sol et Luna. Et quando per horum coitum Infans concipitur, gestatur is in ventre venti. Terrae foliatae ad usque nativitatis horam, & post nativitatem nutritur ad ubera donec adolescat. Hic ventus est balneum. Solis et Lunae, Mercurius Draco et Ignis qui tertio loco succedit ut operis gubernator [...].<sup>163</sup>

Newton glanced therefore back to the forerunners of the *Art* to grant his heretic credo, though the suggestions set forth by a resemblance in terms strewn throughout

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<sup>161</sup> Hortulanus’ *Commentary on the Emerald Table*, I, in Stanislas Klossowski de Rola, *Alchemy. The Sacred Art*, London, Thames & Hudson, 1997, p. 16, hereinafter quoted as de Rola, *Alchemy*.

<sup>162</sup> Yahuda MS. 1, Section 1.1, “The Proof,” ff. <28r>-<55r>, 44 on ff. 42r-43r.

<sup>163</sup> Keynes MS. 28, f. <6v>; <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00017/>. Cfr. Dobbs, *The Janus Faces of Genius*, cit., p. 275; English translation on pp. 276-277.

contemporary alchemical texts and biblical books could have engendered in him the true belief that alchemy was one of the ways which God's plan for mankind was to be revealed through. Counterchecked by Newton's highly developed alchemical laboratory praxis, his acquaintance with alchemical mastery acted therefore on a twofold level: the Book of Nature, which his science deciphered, was ready to be challenged by his (sorrowfully) unsuccessful experiments<sup>164</sup> and the Book of Revelation laid opened to be understood also throughout alchemical symbolism. According however to the direction of Newton's first path of alchemical research, we can now shift as well the alchemical perspective of our critics and look closer at his praxis before resuming, shortly after, the evidences of Yahuda MS. 1.1.

Published for the first time in 1975 by Dobbs in her *The Foundations of Newton's Alchemy or 'The Hunting of the Greene Lyon'* as Newton's own composition, the so-called *Clavis*,<sup>165</sup> along with its experimental contents, fixes the starting point of my following chain of links. Though allegedly recognised as (most probably) being Newton's copy of one Eirenæus Philalethes' detailed process for the production of an amalgam of antimony, mercury, silver, and gold, the short *Clavis* does concern us not for its true author but for the impact that the 'signature' of the so-called "star of antimony" affected Newton's alchemical philosophy with. Newton's interest<sup>166</sup> in its theories and practical developments was so great that, even if he was not the author of the manuscript, he felt somehow committed to, at least, the copying down of the

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<sup>164</sup> One most interesting article on Newton's experimental praxis is P. Spargo, "Investigating the Site of Newton's Laboratory in Trinity College, Cambridge," in *South African Journal of Science* 101 (2005), pp. 315-321.

<sup>165</sup> Further reasoning about the alchemical implications of the '*Clavis*' will be given in chapter II, paragraph 2.3. The short account of its contents provided here is merely devoted to introduce the following symbolic pattern of meanings of "The Proof" in Yahuda MS. 1.1.

<sup>166</sup> Harrison catalogue records among Newton's existing books in his library by the time of his death one volume of Valentine's *Chariot*. See Harrison, *Library*, cit., entry 129 on p. 95: "[129] *Basil Valentine his Triumphant chariot of antimony, with annotations of T. Kirkringius ... 8°, London, 1678.*" The volume carries many signs of dog-earing which attest Newton's close acquaintance with Valentine's work. Moreover, Keynes MS. 64 represents Newton's own copying down and re-elaboration of Valentine's *Chariot*. The manuscript is entitled "*Basil Valentine Currus Triumphalis Antimonij*," on-line transcription available at: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00053/>.

original draft to preserve it in his library. Actually, the “antimony maze”<sup>167</sup> of seventeenth century alchemical background was chiefly the result of the overemphasised attention over the star-like pattern crystallization of antimony derived from the reduction of antimony ore with iron in Basil Valentine’s *Triumphwagen der Antimonium* (*The Triumphant Chariot of Antimony*, first published in 1604). From a symbolical point of view, the star represented “antimony’s natural signature or sign, demonstrating its affinity with celestial bodies and suggesting its ability to draw into itself the celestial virtues that streamed constantly toward earth from heaven.”<sup>168</sup> A projection of this is to be found in Newton’s proof n°44, of which I do transcribe here the following passage: “Yet the celestial bodies are not to be interpreted so strictly of the persons of Kings & Princes but that the Sun & Moon may sometimes be used to signify in general the splendor & glory of a kingdom in as much as the Sun is the glory of the world by day & the moon by night.”<sup>169</sup> Curiously enough, according to alchemical heterogeneous symbolism, antimony may also signify the black, arcane matter of the initial *nigredo* of which the *Sol Niger* (the black sun) was an emblem too.

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<sup>167</sup> Abraham, *Dictionary*, cit., p. 8.

<sup>168</sup> Dobbs, *The Foundations of Newton’s Alchemy*, cit., p. 199.

<sup>169</sup> Yahuda MS. 1, Section 1.1, “The Proof,” ff. <28r>-<55r>, 44 on f. 42r. Cfr. Yahuda MS. 1, Section 1.1a, f. <23v>, Jewish National and University Library, Jerusalem; online complete transcription at: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00136>.

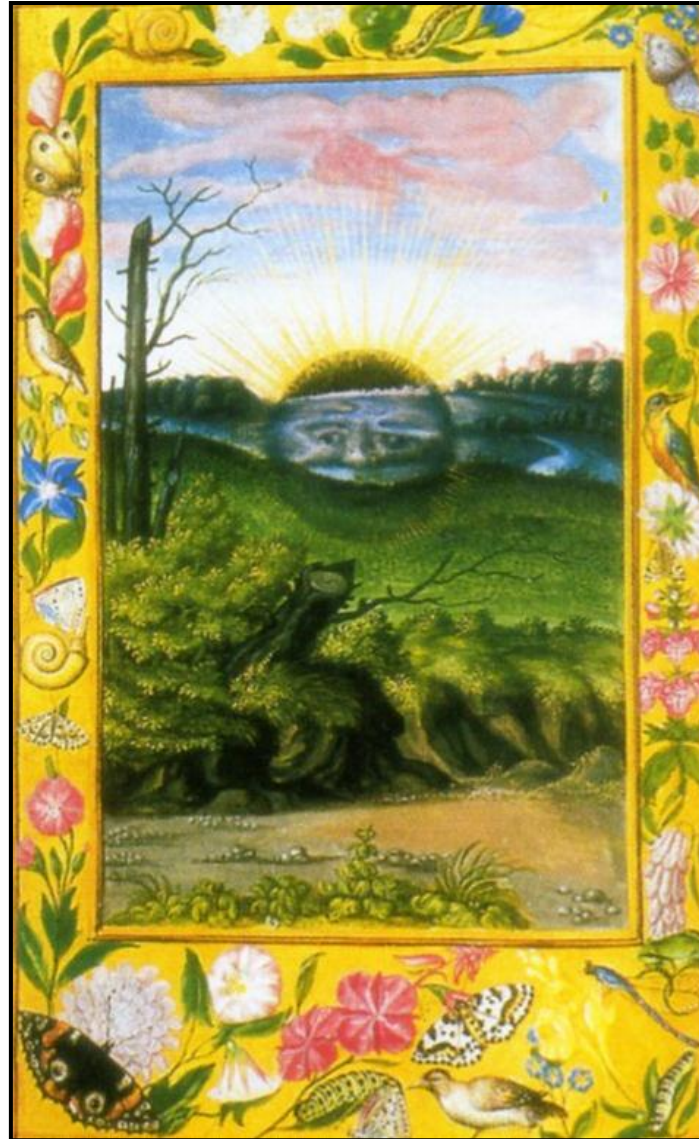


Figure 7. *Sol Niger*.  
From Solomon Trismosin, *Splendor Solis*,  
Plate XIX, MS. Harley 3469, British Library, London;  
reproduced here from Alexander Roob, *Alchemie & Mystik, Köln*, Taschen, 1996, p. 234.

The *Sol Niger* stands for the death and putrefaction of the raw matter or for the *coniunctio* during the *nigredo*<sup>170</sup> after which the Stone-in-progress has to be melted down to be eventually resurrected into a new life. Thence, by means of shifting from one realm to another, Newton states the following:

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<sup>170</sup> Cfr. de Rola, *Alchemy*, cit., p.11: “The *nigredo* phase ends with the appearance on the surface of a starry aspect, which is linked to the night sky which told the shepherds and kings that a child was born in Bethlehem. And so the first work, the first degree of perfection, nears completion when, from the mutual destruction of conjoint opposites, there appears the metallic, volatile humidity which is the Mercury of the Wise.”



for the stars of heaven & the constellations thereof shall not give their light, & the sun shall be darkened in his going forth & the Moon shall not cause her light to shine.<sup>171</sup>

The shining rays of the alchemical *King's* golden Sun are blurred utterly out and replaced by the darkness brought in by a total eclipse.<sup>172</sup> The primordial matter in the *Hermetic Vas* is dead and so is Christ. Resurrection has still to come forth to save the Almighty's Kingdom on Earth as explained by Eirenæus Philaletes, allegedly one of Newton's favourite alchemical authors: "But before the renovation of these Natures, they must in the first place pass through the Eclipse, both of Sun and Moon [...] which is the Gate of Blackness, and after they shall be renovated with the Light of Paradise."<sup>173</sup> Though already recorded in the 'Index Chemicus' as reference source under the entry "Eclipsis,"<sup>174</sup> the resemblance of Newton's own interpretation of the Biblical blackness of the sun with alchemical definitions as Philaletes' one is best heightened by the exegetic comment of proof n°44:

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<sup>171</sup> Yahuda MS. 1, Section 1.1, "The Proof," ff. <28r>-<55r>, 43 on f. 42r.

<sup>172</sup> Cfr. Abraham, *Dictionary*, cit., p. 186: "At the death of the matter, darkness reigns. The light of the sun (gold) is said to be put out, totally eclipsed." Cfr. Keynes MS. 38, "Notanda Chemica," f. <9v>: Mercurius enim vulgi est aqua sed deest ei spiritus et vis/ ignea ad urendum. Supple si potes quod deest summo/ cum artificio, tum non amplius erit ☿ vulgi sed similis/ nostro: — rejectis scilicet faecibus per sublimationem./ quam Philosophi primam materiae tenuis praeparationem/ appellant per quam Eclipsis terrena interpositionis/ tollitur ut possit illuminationem a sole accipere: quod fit/ cum fusca sphaera Saturni quae totum obnubilabat/ horizontem deletur. (on-line transcription at: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00027/>).

<sup>173</sup> Eirenæus Philaletes, *Ripley Reviv'd: or an Exposition upon Sir George Ripley's Hermetico-Poetical Works*, p. 15, quoted in Abraham, *Dictionary*, cit., p. 65.

<sup>174</sup> Keynes MS. 30/1, f. <32r>: "Eclipsis. nigredo Saturni. Arcan Herm. p 49. Intr. apert. p. 84. Philal in Ripl. port. p. 46. Fons Chem. Philos. p. 107. Ripl. p. 138. Aureum saeculum redivivum p. 94, 95. Consil. conjug. p. 136. Maier Sept. Philos. p. 87." The manuscript is entitled "*Quomodo Metalla generantur et corrumpuntur in venis*;" on-line address of its complete transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00200/>.

And so where the Sun is turned into blackness & the moon into blood I Joel 2.31, & Rev. 6.12, I had rather understand it in general of the splendor of the Kingdom put out & the glory turned into bloodshed then interpret it only of the King & the next in dignity: for the perishing of those two persons infers not the overthrow of the Kingdom; whereas in I Joel the turning of the Sun into darknes & the moon into blood is made the description of that universal overthrow of the gentile Kingdoms & mighty slaughter of all their armies which is to happen at the great day of God Almighty, as is at large described in the next chapter. As for the Moons being turned into blood, the expression seems borrowed from the dusky reddish colour of the moon in a partial Eclips which is here rather alluded unto then the darknes of a total eclips that the great slaughter of the nations may be exprest by calling the colour blood. ffor that this word was intended for an expression of their bloodshed is plain by the precedent sentence. I will shew wonders in the heavens & in the earth, *blood* & fire & pillars of smoke (i.e. slaughter & war.) To which is subjoyned by way of explication: The sun shall be turned into darkness & the moon into blood before the great & terrible day of the Lord come.<sup>175</sup>

Furthermore, flipping through the following ‘proofs,’ other surprising crossed references between alchemical and biblical symbolical patterns are to be ferreted out. An example of this is to be found in proof n°46, where Newton really seems to glance back at the alchemical drowning of the *King* when unfolding his exegesis of *Revelation* 8: 10.<sup>176</sup> Here is the passage, quoted from Yahuda MS. 1.1, I am referring to:

And so by analogy, the falling of the great star upon the rivers Rev 8-10 must signify the ruin of some great Prince. To which purpose the Indian Interpreters teach us: If one dream he sees the stars fall into the sea, let him understand thereby a slaughter of men to be caused by the king & if the king have this dream, he shal see a very great slaughter or mortality of his people. Achm: c: 170.<sup>177</sup>

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<sup>175</sup> Yahuda MS. 1, Section 1.1, “The Proof,” ff. <28r>-<55r>, 44 on f. 43r.

<sup>176</sup> *Revelation* 8: 10: “And the third angel sounded, and there fell a great star from heaven, burning as if it were a lamp, and it fell upon the third part of the rivers, and upon the fountains of waters.”

<sup>177</sup> Yahuda MS. 1, Section 1.1, “The Proof,” ff. <28r>-<55r>, 46 on f. 44r.

This long and quite complicated cluster of crossed correspondences between alchemical symbolism and Newton's biblical exegesis gains its crowning accomplishment with the quotation of a passage from the *Aurora Consurgens*, a treatise "composed almost entirely of Biblical quotations, whose 'alchemical' meaning is hinted at by the interpolation of quotations from classical alchemy."<sup>178</sup> The manuscript containing the whole treatise is nowadays collected in the Codex Parisinus Latinus n°14006, ff. <1v>-<12v> (Bibliothèque Nationale, Paris),<sup>179</sup> though other copies of the original text exist in mutilated forms in manuscripts scattered throughout European libraries.<sup>180</sup> Chiefly due to a single printing of the original text in Johannes Rhenanus' *Harmoniae inperscrutabilis chymico-philosophicae sive Philosophorum antiquorum consentientium Decades duae* (Frankfurt, 1625), the *Aurora Consurgens* was actually scarcely known before von Franz's edition and German translation (1957). As remarked in her 'Introduction' to the first edition, the second part of the original work achieved greater popularity thanks especially to its publication in the collection entitled *Artis auriferae, quam Chymiam vocant* (Basel, 1593 and 1610). Furthermore, according to Harrison's thorough catalogue, it is proved that Newton's owned at least one printed copy<sup>181</sup> of the *Artis auriferae* and this boosts somehow the chances of a contamination between his alchemical and exegetical minds. The value of my statement is rendered by

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<sup>178</sup> My referring edition is von Franz (ed.), *Aurora Consurgens*, cit., Introduction, 1. Preliminary, p. 3.

<sup>179</sup> Cfr. von Franz (ed.), *Aurora Consurgens*, cit., Introduction, 5. The Manuscripts, pp. 25-27; Jung, *Psychology and Alchemy*, cit., p. 361.

<sup>180</sup> The most valuable manuscripts, worth to be recalled here, are namely: Codex Marcianus Venetiarum (Valentinelli, V, 155), ff. <65r>-<161r>, Biblioteca Marciana, Venice; Codex Rhenoviensis 172, Zentralbibliothek, Zurich; Codex Vindobonensis n° 5230, ff. <239r>-<249v>, Österreichische Nationalbibliothek, Wien; Codex Vossianus Chemicus 520, n° 29, University Library, Leiden. See von Franz (ed.), *Aurora Consurgens*, cit., p. xv.

<sup>181</sup> See Harrison, *Library*, cit., entry 90 on p. 91: "[90] *Artis auriferae, quam chymiam vocant, volumina duo, quae continent Turbam philosophorum, aliosq[ue] antiquiss. auctores ... Accessit noviter volumen tertium ... 8°, Basileæ, 1610.*" In the *Rosarium Philosophorum* there is a long quotation from the *Aurora* and it is plausible for Newton to have accessed this secondary source since he owned the volume in which the *Rosarium* was printed. See Harrison, *Library*, cit., entry 493 on p. 130: "[493] *De alchimia opuscula complura veterum philosophorum, quorum catalogum sequens pagella indicabit.* (Pt 1.) 4°, [Francoforti, 1550]."

the nature of the passage from chapter XII of the *Aurora Consurgens* I'm about to quote.<sup>182</sup>

Be turned to me with all your heart<sup>1</sup> and do not cast me aside because I am black and swarthy, because the sun hath changed my colour<sup>2</sup> and the waters have covered my face<sup>3</sup> and the earth hath been polluted and defiled in my works;<sup>4</sup> for there was darkness over it,<sup>5</sup> because I stick fast in the mire of the deep and my substance is not disclosed.<sup>6</sup> Wherefore out of the depths have I cried, and from the abyss of the earth with my voice to all you that pass by the way. Attend and see me, if any shall find one like unto me, I will give into his hand the morning star.<sup>9</sup>

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1 Joel 2: 12: "Now therefore saith the Lord: Be converted to me with all your heart, in fasting and in weeping and in mourning."

2 Cant. 1: 4-5: "I am black but beautiful, O ye daughters of Jerusalem, as the tents of Cedar, as the curtains of Salomon. Do not consider me that I am brown, because the sun hath altered my colour; the sons of my mother have fought against me."

3 Cf. Jonah 2: 6: "The waters compassed me about even to the soul; the deep hath closed me round about, the sea hath covered my head."

4 Ps. 105: 38: "And the land was polluted with blood, and was defiled with their works."

5 Luke 23 :44: "... and there was darkness over all the earth."  
Cf. Mark 15: 33.

6 Ps. 68: 3: "I stick fast in the mire of the deep: and there is no sure standing. I am come into the depth of the sea, and the tempest hath overwhelmed me."

7 Ps. 129: 1: "Out of the depths have I cried to thee, O Lord: Lord, hear my voice."

8 Lam. 1: 12: "O all ye that pass by the way, attend, and see if there is any sorrow like to my sorrow."

9 Apoc. 2: 28: "... and I will give him the morning star."

According to Jung,<sup>183</sup> and to later criticism, the first original version of the *Aurora Consurgens* is controversially attributed to St. Thomas Aquinas (1225-1274), even though scholars allegedly and widely share the conviction that whosoever the true author of the treatise may have been, he couldn't have been Aquinas himself. The treatise's authorship has to be however attached to a certain cleric whose mind was

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<sup>182</sup> von Franz (ed.), *Aurora Consurgens*, cit., p. 133.

<sup>183</sup> Jung, *Psychology and Alchemy*, cit., p. 361. Cfr. von Franz (ed.), *Aurora Consurgens*, cit., pp. 405-431.

utterly steeped into both biblical and alchemical languages – “a man who was vouchsafed an overpowering revelation of the unconscious, which he was unable to describe in the usual ecclesiastical style but only with the help of alchemical symbols.”<sup>184</sup> This quest for adjusting alchemical terms to biblical meanings is what equates Newton’s previously quoted parts from Yahuda MS. 1.1 with the passage from chapter XII of the *Aurora Consurgens*. Thus, Christ – allegorically embodying the alchemical *lapis* – would therefore rise and ascend at the final stage of the *Magisterium* to shine the Almighty’s force of his ‘*Morning Star*.’ The pitchy darkness of the *nigredo* brought in by the eclipse of the *Sol Niger* would be eventually swept away and the *King*, dangerously drowning in the depths of the (alchemical and biblical) sea, would be rescued by the true believer of God’s Word. Reasonably, I argue that the mystery of Christ is in both Newton’s and the *Aurora*’s texts compared to the *lapis*’ enigma insofar as the logical development of both argumentations does follow the same pattern of symbolical references. This would not of course suggest, at any rate, that Newton considered the Holy Scriptures subdued to alchemical dogmas but would otherwise prove his backing to the *Art* as alternative interpretative medium for his biblical exegesis. This introductory discourse about the nature of Newton’s alchemical symbolism in his reading of the prophecies would now end here. I deemed it necessary to introduce, at least in general terms, the reasoning about the complex pattern of analogies which allows an interpretative criticism, shifting from alchemical to theological field, of Newton’s millenarianism. I am also convinced that my choice of broaching these needful corollary premises at the core of my thesis would then appear clearer to the reader, and, for this very reason, I am bringing now about some references to the eschatological consequences of the alchemical doctrine.

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<sup>184</sup> von Franz (ed.), *Aurora Consurgens*, cit., Introduction, 1. Preliminary, p. 4.

First printed in London and translated into English in 1597, Hortulanus' *Commentary on the Emerald Table of Hermes Trismegistus* stands out from other early English translations of alchemical treatises especially for the mastery it proved on strengthening seventeenth-century awareness of the possible eschatological implications of alchemical knowledge. As a matter of fact, Newton himself recognized Hortulanus' authority by recording his name in one of his alchemical manuscript – namely, Keynes MS. 32. The passage of the manuscript dedicated to him, where a direct reference to the first commentary to Hermes' *Tabula* is established, runs as follows:

Hortulanus, alias Garlandus, ex Saxonica Anglia gente  
oriundus, regnantibus adhuc in eo regno Regibus Danicis circiter Anno  
Christi  
1066. inde migravit in alias terras (absque dubio in Hispaniam ad Mauros  
et post annos aliquot regnante Willielmo Nortmanno circiter 1070  
in Angliam rediit. Primus in Tabulam Hermetis commentatus est  
breviter quidem sed accutè sic ut ab omnibus artificibus aliis saepe  
citetur tanquam scriptor legitimus, et inter caeteros ab autore Rosarii  
Philosophorum<sup>185</sup>

Moreover, Hortulanus' *Commentary* consistently displays divine analogy to describe the alchemical process of creation:

as the world was created, so is our stone composed. For  
in the beginning, the whole world and all that is therein,  
was a confused Masse or Chaos . . . but afterward by the  
workemanship of the soveraigne Creator, this masse was  
divided into the four elements, wonderfully separated and  
rectified ... so likewise may divers things bee made by  
ordering our worke, through the separation of the divers  
elements from divers bodies.<sup>186</sup>

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<sup>185</sup> Passage transcribed from Keynes MS. 32, f. <8v>. The manuscript is entitled “*Symbola Aureae Mensae*.” On-line complete transcription of the manuscript: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00021/>.

<sup>186</sup> *The Mirror of Alchimy*. . . *With certaine other worthie Treatises*, London, 1597, pp. 25-26, quoted in Stanton J. Linden, “Mystical Alchemy, Eschatology, and Seventeenth-Century Religious Poetry,” in *Pacific Coast Philology*, cit., p. 83. Cfr. Hortulanus' *Commentary on the Emerald Table*, III, in De Rola, *Alchemy*, cit., p. 16: “*And as all things have been, and come from One by the mediation of One*. He gives here an example saying: *As all have been, and come from the One*, that is to say, from a chaotic globe, or a chaotic mass. *By the meditation*, that is to say by the cogitation and creation of One, that is to say the

This alchemical trope was considerably re-elaborated by Thomas Tymme in his English translation of Joseph Quersitanus' *The Practice of Chymicall, and Hermetical Physicke* (1605). Remarkably, for Tymme, alchemy was not merely concerned with physical transmutations but it was rather a suitable way to deepen and to understand the secrets of nature. Quite appealing to a discourse concerning Newton's alchemical *Apocalypse* and appropriate to temporarily pause the reasoning about Christian-alchemical symbolism, Tymme's alchemical description of Doomsday was the first of many other seventeenth-century variations on the subject:

It may seeme ... an admirable and new *Paradox*, that Halchymie should have concurrence and antiquitie with *Theologie*, the one seeming mere *Humane* and the other *Divine*. And yet *Moses*, that auncient Theologue, describing & expressing the most wonderfull Architecture of this great world, tells us that the *Spirit of God moved upon the water*: which was an indigested Chaos ... yet, by his Halchymicall Extraction, Separation, Sublimation, and Coniunction, so ordered and conioyned againe.<sup>187</sup>

Though early modern European alchemy was characterised by a staggering heterogeneous mixture<sup>188</sup> of theories, practises, and purposes, the *Ars Regia* has always been divided, since its dawning days,<sup>189</sup> into a twofold separation<sup>190</sup> – a dichotomy

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Almighty God. *Thus all things have been born*. That is to say have sprung. *From this single thing*, that is to say from a confused mass [the *Materia Prima*]. 'By adaptation, that is to say by the sole commandment and miracle of God. Thus our Stone is born and sprung from a confused mass, containing within itself all the elements, which has been created by God, and his sole miracle is our Stone sprung and born.'

<sup>187</sup> "The Epistle Dedicatory of Thomas Tymme to his translation of Josephus Quersitanus," in *The Practise of Chymicall, and Hermeticall Physicke*, London, 1695, quoted in Michael T. Walton, "Alchemy, Chemistry, and the Six Days of Creation," in Stanton J. Linden, (ed.), *Mystical Metal of Gold: Essays on Alchemy and Renaissance Culture*, New York, AMS Press, 2007, p. 233; main edition henceforth referred to as Linden (ed.), *Mystical Metal of Gold*.

<sup>188</sup> Among the most important West alchemical schools, philosophies and currents the following are worth to be remembered: Scholastic and anti-Aristotelian, Paracelsian and anti-Paracelsian, Hermetic, Neoplatonic, mechanistic, vitalistic, plus, of course, every combination and compromise thereof.

<sup>189</sup> The problem of the origins of alchemy as a practical discipline and of its historical development as a spiritual doctrine is still nowadays harshly controversially debated by scholars. However, it is reasonably possible to trace a threefold subdivision of the crucial stages of the historical development of alchemy: Hellenic alchemy (approximately between 3<sup>rd</sup> century B.C. and 7<sup>th</sup> century A.D.; a much useful referring article on the topic is F. Sherwood Taylor, "A Survey of Greek Alchemy," in *The Journal of Hellenic*

between exoteric and esoteric alchemies. Notwithstanding the fact that exoteric – practical alchemy – was concerned with the physical transmutation of inferior metals into superior and more perfect ones, the process of purification of base metals has been, through centuries, developed and refined into the twofold synthesis of the so-called *moist* and *dry* ways.<sup>191</sup> These two alchemical praxes, though being both arisen from the same principles and both aiming at shared goals, were substantially different in methods and development. The *moist way* – or *long way* – needed a very long time of decoction and concoction to be accomplished. This was chiefly due to the use of very low temperatures in the furnaces for the operations of cooking and boiling and to the expensive alchemical apparatuses such as glass vessels, pots and tools whose transparency allowed alchemists to register the sundry transformations of the *prima materia* (the *moist way* suggested it to be fine gold), and its variations in the range of colours displaying over the surfaces of the vessels. The philosophical concept of alchemy underlying this one praxis was an elitist view of the *Art*, therefore meant to be followed by few selected people: “it’s a way hedged with infinite briars, and we have

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*Studies*, cit.; to this period belong the works of: pseudo-Democritus (allegedly Bolus of Mendes), Hermes Trismegistus, Maria Prophetissa, Komarios, Zosimos of Panopolis), Arabic alchemy (until 13<sup>th</sup> century A.D.; the most important Islamic alchemists worth to be remembered are: Geber, Rhases, Senior, Abu’L-Qāsim), and Western alchemy (between ca. 12<sup>th</sup> and 18<sup>th</sup> century A.D.). It is then possible to recognize, within each single phase, different currents and theorizations proper of independent alchemical branches. Cfr. Franz, *Alchimia*, cit., p. 62: “L’alchimia si può dire sia nata nel momento in cui i modelli di pensiero della filosofia greca si saldarono con la prassi sperimentale della tradizione egizia.” A profound reflexion on the unsolved question of giving alchemy a comprehensive definition could be found in Linden, *Darke Hieroglyphicks*, cit., p. 11: “Given the problematics of definition, it is useful to think of alchemy as pluralistic rather than singular, as “alchemies” rather than “alchemy.” If the latter, it must be recognized that along the continuum bounded by the poles “exoteric” and “esoteric” there are many intermediate points of permutations. For example, as Robert Schuler has shown, a large number of distinguishable “spiritual alchemies” coexisted in the seventeenth century alone, each having its foundation in various theological doctrines or political ideologies rather than in alchemical theories as such.”

<sup>190</sup> Cfr. F. Sherwood Taylor, “A Survey of Greek Alchemy,” in *The Journal of Hellenic Studies*, cit., p. 138: “The mystical side of alchemy seems of an antiquity at least equal to that of the practical, nor does its obscurity make it less important for an understanding of the subject. The representation of metals by planetary symbols, the symbols of the philosophic egg, and of the serpent, and numerous references to Jewish, Egyptian and Gnostic beliefs all go to show that alchemy had a spiritual significance as well as a practical utility.”

<sup>191</sup> Newton himself was seriously concerned with the true understanding of the differences between the two alchemical praxes. See especially Keynes MS. 46, on-line transcription available at <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00035/>.



made a Vow unto God and Equity, that we would never, in naked words, declare each *Regimen*.”<sup>192</sup>

The other practical branch of alchemy was the *dry way* – also known as *short way* for the less time it needed to be accomplished. Alchemists and critics have been used to associate this way with a laboratory practice highly reduced in time (few months, or even some weeks, were deemed enough for the achievement of the *Stone*) according to the idea that alchemy had to be a science as accessible as possible to whoever wanted to take part in it for the successful outcome of the *Opus* just hinged upon the divine predestination of the would-be alchemist. Other features of the *dry way* were the employment of low metals as starting materials, porcelain- or earthenware-made tools and furnaces working at very high temperatures. This latter sort of practical alchemy proposes an image of the alchemist which recalls and sends back to the figure of an experienced craftsman whereas the *moist way* might well remind us of that, historiographically overrated, mysterious vexed alchemist who represented the elitist evolution from the medieval superstitious alchemist into the shadowy stock figure of the Renaissance “magus, the possessor of forbidden and occult knowledge.”<sup>193</sup> Furthermore, the two ways were often thought to be both necessary if a successful accomplishment of the *Opus* was to be attained, as explained by *Emblem XV* of Michael Maier’s *Atalanta Fugiens* (1618): “Let the work of the potter, consisting of the dry and the wet, teach you.”<sup>194</sup> Nevertheless, though a sustained effort was made by alchemists to codify and

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<sup>192</sup> Eirenaeus Philaletes, “Secrets Reveal’d: or, An Open Entrance to the Shutt Palace of the King,” chapter 19, in Philaletes, *Alchemical Works*, cit., p. 420. Harrison’s catalogue attests that Newton himself owned a copy of the first Latin edition of Philaletes’ “Secrets Reveal’d.” See Harrison, *Library*, cit., entry 838 on p. 167: “[838] *Introitus apertus ad occlusum regis palatium: autore Anonymo Philaletha* [i.e. G. Starkey] ... *nunc primum publicatus, curante J. Langio*. 8°, Amstelodami, 1667.”

<sup>193</sup> Stanton J. Linden, “Francis Bacon and Alchemy: The Reformation of Vulcan,” in *Journal of the History of Ideas*, Vol. 35, No. 4 (Oct. - Dec., 1974), pp. 547-560, stable URL: <http://www.jstor.org/stable/2709085>, p. 548.

<sup>194</sup> Godwin (tr.), *Atalanta Fugiens*, cit., p. 135. Latin original version: “Emblema XV. Opus figuli, consistens in sicco & humido, te doceat” (Maier, *Atalanta Fugiens*, cit., p. 97). Cfr. Epigramma XV: “Aspice quàm celeri figulus sua vasa figuret/ Axerotæ, argillam dum pede miscet aquæ:/ in binis illi est

rule their laboratory practice, it must not be forgotten that the founding matrix of alchemy was one of spiritual or, more properly, mystical-religious character as explained by Herbert Stanley Redgrove:

By some mystics, however, the opinion has been expressed that Alchemy was not a physical art or science at all, that in no sense was its object the manufacture of material gold, and that its processes were not carried out on the physical plane. According to this transcendental theory, Alchemy was concerned with man's soul, its object was the perfection, not of material substances, but of man in a spiritual sense. Those who hold this view identify Alchemy with, or at least regard it as a branch of, Mysticism, from which it is supposed to differ merely by the employment of a special language; and they hold that the writings of the alchemists must not be understood literally as dealing with chemical operations, with furnaces, retorts, alembics, pelicans and the like, with salt, sulphur, mercury, gold and other material substances, but must be understood as grand allegories dealing with spiritual truths.<sup>195</sup>

Actually followed, *pari passu*, by a steady refinement of the exoteric practice, esoteric alchemy – the spiritual, philosophical and even mystical side of the whole alchemical art – was conceived, and actually carried out, as an endless steady inner development of the alchemist. Esoteric alchemy is the knowledge of the secrets of nature<sup>196</sup> (though not aimed at ruling or dominating over it) which was considered by the

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fiducia rebus, ut humor/ pulveribus siccis temperet arte sitim./ Suc quoque tu facies exemplo doctior isto,/ terram aqua ne superet, ne superatur humo (*Ibidem*).

<sup>195</sup> H. Stanley Redgrove, *Alchemy: Ancient and Modern*, London, William Rider & Son, Ltd, 1922, p. 2, hereinafter referred to as Redgrove, *Alchemy*.

<sup>196</sup> See Lyndy Abraham's description of alchemists' concept of nature: "[...] by 'nature' the alchemists referred not only to things green, but to the very 'nature' of the entire creation. And the study of the workings of nature involved not only the discovery of her inherent secrets, but also the glory of the invisible Creator behind these visible works" (Lyndy Abraham, *Marvell & Alchemy*, cit., p. 62). Of particular interest is Paracelsus' opinion, as he gave it in the *Paragranum*, about the role of alchemy in the process of natural acknowledgement: "[...] For nature is so subtle and so keen in her matters that she will not be used without great art. For she yields nothing that is perfected in its natural state, but man must perfect it. This perfecting is called alchemy. For the baker is an alchemist when he bakes bread, the vine grower when he makes wine, the weaver when he makes cloth. Therefore whatever grows in nature useful to man, whoever brings it to the point to which it was intended by nature, he is an alchemist" (Paracelsus, *Opera*, bücher und schriften...Durch Joannem Huserum Brisgoium in zehen unterschiedliche theil, in truck gegeben, Strassburg, 1616, 2 vols., folio, I, p. 219, quoted in Stillman, *The Story of Alchemy*, cit., p. 324).

most devout disciples of alchemy as a lifestyle and as a vast religious and philosophical system tending to the purification and regeneration of their lives. Being an internal salvationist process, esoteric alchemy also set forth a worldview, which placed special emphasis on the unity of all things as created by God and the harmonious relationship between the greater Cosmos and the lesser world of man.

It has to be recalled, however, that both types of alchemy are closely related and that in alchemical works they do often intermingle, thus establishing a close proximity between them and conferring to the whole alchemical body of theory and practice an aura of coherence and unity.<sup>197</sup> Writing about the mutual exchange between esoteric and exoteric alchemies, E. J. Holmyard remarked that alchemical esotericism slowly developed into alchemical praxis which, in its turn, is:

a devotional system where the mundane transmutation of metals became merely symbolic of the transformation of sinful man into a perfect being through prayer and submission to the will of God. The two kinds of alchemy were often inextricably mixed; however, in some of the mystical treatises it is clear that the authors are not concerned with material substances but are employing the language of exoteric alchemy for the sole purpose of expressing theological, philosophical, or mystical beliefs and aspirations.<sup>198</sup>

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<sup>197</sup> Cfr. Pereira, “Il Paradigma della Trasformazione,” in *Aut Aut*, cit., p. 204: “L’alchimia non può essere scissa in due componenti, “materiale” e “spirituale”, pena la perdita di ogni significato della sua tradizione.”

<sup>198</sup> E. J. Holmyard, *Alchemy*, cit., p. 14. Cfr. Arthur E. Waite, *The Secret Tradition in Alchemy: its Development and Records*, London, Kegan Paul, Trench, Trubner & co., ltd.; New York, A. A. Knopf, 1926, p. 405, hereinafter quoted as Waite, *Secret Tradition*: “[...] it should be remembered that the work of metallic transmutation has been compared by alchemists themselves to that of God in the cosmos and that the stages of the one are affirmed to be an exact reproduction or counterpart of the other. We should remember also that Alchemy in all its departments is dealing with subjects – whether spiritual or material – which are *ex hypothesi* fallen, and that this is true indifferently of so-called base metals and of humanity in the base life. The thesis is that regeneration is an analogous process in every kingdom – that metals are reborn, transmuted or redeemed, and that what happens in their case is in correspondence – *mutatis mutandis* – with the higher work of God in the soul.”

The first<sup>199</sup> Latin author to clearly establish the twofold character of the *Art* by distinguishing its speculative character from its praxis, has been the English Medieval monk and philosopher Roger Bacon (ca.1215-ca.1292):

alkimia speculativa, quae speculator de omnibus inanimatis et tota generatione rerum ab elementis [...] alkimia operativa et practica, quae docet facere metalla nobilia, et colores, et alia multa melius et copiosius per artificium, quam per naturam fiant.<sup>200</sup>

In sundry passages of his philosophical works, the speculative value of alchemical research was for the first time acknowledged and compared to natural philosophy and medicine – three disciplines which, according to Roger Bacon, employed three different languages to speak about the same reality:

hence this duplex science of alchemy (that is, theoretical and practical) is unknown to nearly all men. For throughout the world many are working to make metals and colours and other things, yet extremely few know how rightly to make colours, or profitably, and scarcely any one knows how to make metals, and still fewer are they who know how to make preparations which are useful in prolonging life. And they also are few who know how to distil well, and to sublime and calcine and to resolve and do any of those works of art of that kind by which all inanimate things are certified and through which are confirmed theoretical alchemy, natural philosophy, and medicine.<sup>201</sup>

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<sup>199</sup> Edmund Brehm is of a different opinion: “Bacon’s division of alchemy into “speculative” and “practical” seems to me to have been overrated. In the first place, Bacon divided many branches of knowledge into speculative and practical aspects. Secondly, a dichotomy between the theoretical and practical aspects of alchemy had been recognized by adepts since Greek times (Brehm, “Roger Bacon’s Place in the History of Alchemy,” cit., p. 54). Cfr. Michela Pereira, “*Medicina* in the Alchemical Writings Attributed to Raimond Lull (14<sup>th</sup>-17<sup>th</sup> Centuries),” in Rattansi and Clericuzio (eds.), *Alchemy and Chemistry*, cit., p. 3.

<sup>200</sup> R. Bacon, *Opus Tertium*, Brewer (ed.), London, 1859, p. 40, reproduced in Michela Pereira, “*Medicina* in the Alchemical Writings Attributed to Raimond Lull (14<sup>th</sup>-17<sup>th</sup> Centuries),” in Rattansi and Clericuzio (eds.), *Alchemy and Chemistry*, cit., note 18 on p. 11.

<sup>201</sup> Roger Bacon, *Opus Tertium*, in his *Opera Quaedam Hactenus Inedita*, cit., p. 40, quoted in John Maxson Stillman, *The Story of Alchemy*, cit., p. 264.

These lines quoted from Roger Bacon's *Opus Tertium* let us plainly guess the establishment of the fundamental pillar of general alchemical theory: the dichotomy between exoteric and esoteric alchemy – a separation which engendered the late Renaissance development of alchemical knowledge. Furthermore, this distinction eventually turns out to be fundamental to figure out the true nature of any texts supposed to have undergone an alchemical influence because the division between alchemical literature and literary alchemy really hinges upon whether the character of alchemical references traceable in a text could be far more of exoteric or esoteric nature. This is also the case represented by the esoteric alchemy of Newton's prophetic manuscripts; nevertheless, the most ambitious challenge provided by Roger Bacon's philosophical system of knowledge rests on the drawing of a possible comparison with Newton's worldview. This task is going now to be set forth.

### 1.3 Roger Bacon's Pansophic Knowledge

As a short premise to a discourse on the key role played by Roger Bacon (ca.1215-ca.1292) in the development of alchemical knowledge in England, a look at the status of alchemy within late-Renaissance English cultural background will prove extremely suitable to reckon the cutting edge position of his breaking-through<sup>202</sup> proto-pansophic scholarship. As a matter of fact, the interest showed by the Royal Society in the last decades of the seventeenth century towards Bacon's philosophical speculation prompted the enhancement of his status as untimely "hero of experimental science."<sup>203</sup>

About Bacon's fickle reputation, Molland argues the following:

Out of this grew the popular picture of him as a lone figure struggling desperately to illuminate a darkened age, a picture which does not yet seem to be wholly dead. But from the middle of the nineteenth century Bacon became the object of more intensive and wide-ranging critical study and much re-evaluation has taken place. He has been dethroned from his position as a man three hundred years ahead of his time and shown to have been in many ways a typical Scholastic thinker.<sup>204</sup>

Actually, even though some scholars disagree with the pioneering position of Roger Bacon's thought, I am however convinced that a showing off of some connections between his system of knowledge and Newton's scholarship would ultimately prove the contrary.

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<sup>202</sup> Cfr. E. J. Holmyard, *Alchemy*, cit., p. 116: "Bacon was indeed a 'devotee of tangible knowledge', but he was not so far in advance of his time as has sometimes been said."

<sup>203</sup> A. G. Molland, "Roger Bacon as Magician," in *Traditio. Studies in Ancient and Medieval history, Thought, and Religion*, vol. XXX (1974), pp. 445-460, on p. 448.

<sup>204</sup> *Ibidem*, pp. 448-449. Cfr. David C. Lindberg (ed.), *Roger Bacon's Philosophy of Nature. A Critical Edition, with English Translation, Introduction, and Notes, of De multiplicatione specierum and De speculis comburentibus*, Oxford, Clarendon Press, 1983, Preface, p. vii, henceforth referred to as Lindberg (ed.), *Roger Bacon*.

Largely due to the strict educational boundaries of Protestant culture, in England “esoteric magical speculation was largely a derivative affair, stimulated by continental writings, but adding little of its own.”<sup>205</sup> The years of the Civil War and the Interregnum brought about a “democratization of this magical tradition,”<sup>206</sup> engendered by a huge amount of English translations of major alchemical and mystical writings on magic. Among these influential works on the fore of English culture, we can remarkably enlist editions of Agrippa’s and Paracelsus’ writings besides editions in single volumes, or compounded into collections, of Elias Ashmole, Thomas and Henry Vaughan, John Dee, Robert Fludd, John Dastin, and Roger Bacon. Actually, “more books on alchemy were published in England between 1650 and 1680 than before or afterwards.”<sup>207</sup> Among these leading authorities, John Dee (1527-1608) and Robert Fludd (1574-1637) have undoubtedly played the most important roles in widening the horizon of magical speculation in England. Unfortunately, as far as especially Fludd’s Hermeticism is concerned, his most regretful misfortune has been to have promoted a system of Hermetic knowledge by the time in which the intellectual presuppositions of that scholarship had already started to be bashed by mechanistic philosophies. As *viaticum* to the development of a modern scientific method in late seventeenth century, the considerable doctrine of ‘sympathy and antipathy’ started to lose its grip on figures such as Francis Bacon,<sup>208</sup> after having been influencing greatest minds such as John Dee

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<sup>205</sup> Thomas, *Decline of Magic*, cit., p. 267.

<sup>206</sup> *Ibid.*, p. 269.

<sup>207</sup> *Ibid.*, p. 270. See also note 59: “According to J. Ferguson in *Journ. of the Alchemical Soc.*, 1914 (cited by D. Geoghegan in *Ambix.*, X [1962], p. 97 n.5). cf. R. S. Wilkinson in *Ambix*, XV (1968); p. 56. W. Cooper, *A Catalogue of Chymicall Books* (1675), gives an idea of the volume of alchemical literature which had become available.”

<sup>208</sup> Francis Bacon, *The Advancement of Learning, Novum Organum, New Atlantis*, Chicago-London, Encyclopædia Britannica, 1952, p. 122. *Novum Organum*, Book I, aphorism 85: “For the alchemist nurses eternal hope and when the thing fails, lays the blame upon some error of his own; fearing either that he has not sufficiently understood the words of his art or of his authors (whereupon he turns to tradition and auricular whispers), or else that in his manipulations he has made some slip of a scruple in weight or a moment in time (whereupon he repeats his trials to infinity). And when, meanwhile, among the chances of experiment he lights upon some conclusions either in aspect new or for utility not contemptible, he takes these for earnest of what is to come, and feeds his mind upon them, and magnifies them to the most, and supplies the rest in hope. Not but that the alchemists have made a good many

himself. Allegedly beginning from Francis Bacon's exposition of inductive scientific method, the methodological approach of natural science undertook an autonomous way of emancipation from the superstitions of ancient Hermetic doctrine which would eventually culminate with Isaac Newton's "rules for the study of natural philosophy" in the third book of his *Principia Mathematica*. Nonetheless, it must be recorded that Newton widely shared the Hermetic belief that God overtly disclosed the true outworking of natural things to the fathers of human knowledge – the *prisci theologi*<sup>209</sup> Adam and Moses. This knowledge was supposed to have been then bequeathed down by a great chain of wise men in order to protect it from the abuse of the laity.

Glancing backwards to the Middle Ages<sup>210</sup> and early Renaissance, alchemy credibility in England, though controversial, was popular and thriving standing tall in the foreground of the cultural stage of the epoch. The spreading of the alchemical knowledge in England actually relied on a tide of Continental writings, both ancient and contemporary, whose popularity was enhanced by a relatively small yet important group of native authorities which lent their respectability to endow the "new" knowledge with their trustworthiness. Foreshadowed in 1144 by Robert of Chester's first Latin translation from the Arabic of Morienus Romanus' *Book of the Composition of*

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discoveries and presented men with useful inventions. But their case may be well compared to the fable of the old man who bequeathed to his sons gold buried in a vineyard, pretending not to know the exact spot; whereupon the sons applied themselves diligently to the digging of the vineyard, and though no gold was found there, yet the vintage by that digging was made more plentiful. Again the students of natural magic, who explain everything by sympathies and antipathies, have in their idle and most slothful conjectures ascribed to substances wonderful virtues and operations; and if ever they have produced works, they have been such as aim rather at admiration and novelty than at utility and fruit. In superstitious magic on the other hand (if of this also we must speak), it is especially to be observed that they are but subjects of a certain and definite kind wherein the curious and superstitious arts, in all nations and ages, and religions also, have worked or played. These therefore we may pass. Meanwhile if is nowise strange if opinion of plenty has been the cause of want."

<sup>209</sup> Cfr. Betty Jo Teeter Dobbs, "Newton's Alchemy and His 'Active Principle' of Gravitation," in Scheurer and Debrock (eds.), *Newton's Legacy*, cit., p. 56: "Newton had always accepted the Renaissance view of history as a declination from an original golden age, a time in which there had existed an original pure knowledge of things both natural and supernatural, a *prisca sapientia* subsequently lost or garbled through human sin and error and through temporal decay."

<sup>210</sup> One most interesting study on the subject is Jonathan Hughes, *The Rise of Alchemy in Fourteenth-Century England. Plantagenet Kings and the Search for the Philosopher's Stone*, London, Continuum, 2012, henceforth referred to as Hughes, *The Rise of Alchemy*.



*Alchemy*, a prolific strong medieval alchemical tradition begun to flourish in England. Besides the outstanding personalities of John Dastin (early 14<sup>th</sup> century), Sir George Ripley (ca.1415-1490) and the author of the *Ordinall of Alchymie* Thomas Norton (1433-1514), one of the most complex and fascinating figures of the thirteenth century has certainly been the Oxford polymath and Franciscan monk Roger Bacon.<sup>211</sup>

Even though it would be better not to esteem Roger Bacon's interest in natural science as especially noteworthy, since many personalities of the Middle Ages wrote on nature and showed remarkable signs of an independent scientific spirit, these latter were, as reasonably argued by Stillman, "mainly recorders and interpreters of the natural science of this time," while "Bacon was more passionately interested in the accomplishments of scientific discoveries and aims."<sup>212</sup> Hence, the question becomes

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<sup>211</sup> Roger Bacon was a great English theologian and philosopher. He studied at Oxford and was a Robert Grosseteste (or Greathead), a Franciscan scholar, from whose inspiration Bacon acquired a profound interest in mathematics and optics (Grosseteste's outstanding role in the development of alchemical theories, combining natural philosophy with theology, has undoubtedly been played by his great *Hexaëmeron* which deals with how God's spirit shaped the formless *prima materia*). In about 1240 Bacon went to Paris where he spent a great part of his life acquiring much celebrity by his teaching. He was passionately interested in the accomplishments of scientific discoveries and progress – subjects on which he composed his encyclopaedic works aimed at persuading Pope Clement IV to renew the existent educational system in the church: the *Opus Maius*, *Opus Minus* and *Opus Tertium*. Bacon classified the sciences of nature into "perspective" (optics); astronomy (operative and judicial); "the science of weights" (heavy and light); alchemy; "agriculture" (biology); medicine and "experimental science" (see Stillman, *The Story of Alchemy*, cit., p. 260). For a detailed biography of Roger Bacon see: Wouter J. Hanegraaff (ed.), *Dictionary of Gnosis & Western Esotericism*, 2 vols., Leiden-Boston, Brill, 2005, I, pp. 156-158; E. J. Holmyard, *Alchemy*, cit., pp. 115-119; Lindberg (ed.), *Roger Bacon*, cit., Introduction, pp. xv-xxvi. Comprehensive studies on the figure of Roger Bacon are: Brehm, "Roger Bacon's Place in the History of Alchemy," cit., pp. 53-57; Stewart C. Easton, *Roger Bacon and His Search for a Universal Science*, New York, Columbia University Press, 1952; Jeremiah Hackett (ed.), *Roger Bacon and the Sciences: Commemorative Essays*, Leiden, Brill, 1997 (see especially William R. Newman, "An overview of Roger Bacon's Alchemy," *Ibid.*, pp. 317-336); Jeremiah Hackett, "The Reception of Roger Bacon in the 13<sup>th</sup> Century and in Early Modern Period," in *Lumière et vision dans les sciences et dans les arts: de l'Antiquité au XVIIe siècle*, textes réunis par Michel Hochmann & Danielle Jacquart, Genève, Droz, 2010, pp. 149-162, Hackett's essay henceforth quoted as Hackett, "The Reception of Roger Bacon," main edition henceforth referred to as *Lumière et vision*; A. G. Little, *Roger Bacon Essays*, Oxford, 1914; Pereira, *Arcana Sapienza*, cit., pp. 139-145; Michela Pereira, *L'oro dei filosofi: saggio sulle idee di un alchimista del trecento*, Spoleto, Centro Italiano di studi sull'alto medioevo, 1992, pp. 43-83; Lynn Thorndike, "The True Roger Bacon, I" in *The American Historical Review*, Vol. 21, No. 2 (Jan., 1916), pp. 237-257, stable URL: <http://www.jstor.org/stable/1835048>; Lynn Thorndike, "The True Roger Bacon, II," in *The American Historical Review*, Vol. 21, No. 3 (Apr., 1916), pp. 468-480, stable URL: <http://www.jstor.org/stable/1835007>.

<sup>212</sup> Both quotations are from Stillman, *The Story of Alchemy*, cit., p. 257. Stillman adds that Bacon "[...] possessed the fervor of a missionary in presenting the claims of science to the attention of his contemporaries, and an imagination which enabled him to look beyond the state of experimental science in his own time to a future of greater possibilities. It is evident that he was a zealous student of several

whether his method of inquiring into the secrets of nature “was superior to theirs, whether he was unique in such things as his advocacy of experimental science.”<sup>213</sup> Possibly, Bacon’s greatest merit primarily relies on his earnestly preaching about the value of experimental method for the development of scientific research along with his keen interest and genuine enthusiasm for the practical achievements of science. Yet the crowning achievement of his scholarship has been his insight into the possibility of greater things to come: quite, somehow, a proto-pansophic view of human knowledge which tells itself apart for its forerunning the idea that an abrupt increase of human knowledge would come to shuffle mankind’s relation to God for good.<sup>214</sup> Bacon clearly perceived that what was missing for mankind to regain the lost *prisca sapientia*<sup>215</sup> of yore was the establishment of a universal science. He therefore laid down a thorough project of intellectual research around whose core of Christian moralism, all the other branches of his scholarship spun:

[...] l’unità delle scienze non poteva – e non doveva – essere un’unità massiccia di dottrine inarticolate e prive di relazioni reciproche, tali cioè che fra ognuna di esse ed il seguito di tutte le altre non corressero rapporti che, pur lasciando ciascuna nella sua specifica determinatezza, valessero nondimeno a fare di ciascuna la determinazione particolare di una totalità di fini, di strutture e di metodi comuni a tutte.<sup>216</sup>

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branches of science especially of mathematics, physics (notably of optics), astronomy and the chemistry of his time” (*Ibid.*).

<sup>213</sup> Lynn Thorndike, “The True Roger Bacon, II,” in *The American Historical Review*, cit., p. 468.

<sup>214</sup> Cfr. Antonella Sannino, “Riforma degli studi e della società nel *Compendium Studii Philosophiae di Ruggero Bacone*,” in *Studi Filosofici*, XXI (1998), pp. 25-47, pp. 27-28: “Il programma riformatore di Ruggero Bacone, così come è esposto nell’*Opus Maius*, ha sollevato l’interesse della storiografia contemporanea, che ha messo in luce una serie di elementi che concorrono alla costituzione del progetto baconiano di riforma della società: l’adesione all’agostinismo politico, il ruolo del francescanesimo, l’esito pratico del sapere, l’acquisizione del nuovo patrimonio culturale greco-arabo, la presenza di attese escatologiche e millenaristiche, la potenza persuasiva della retorica.” Sannino’s essay will be henceforth referred to as Sannino, “*Compendium Studii Philosophiae*.”

<sup>215</sup> Cfr. Ruggero Bacone, *La scienza sperimentale*, a cura di Francesco Bottin, Milano, Rusconi, 1990, Introduzione, p. 13: “Nella concezione baconiana tutto il sapere ha certamente un’unica origine, in quanto è stato rivelato da Dio attraverso i suoi messaggeri, i profeti, i santi e i filosofi.”

<sup>216</sup> Franco Alessio, *Mito e Scienza in Ruggero Bacone*, Milano, Ceschina, 1957, p. 258.

Allegedly, the overarching unifying aspect of Bacon's strands of scholar research was their being all essentially different tesserae of a single mosaic – the framework of an early pansophy, a *mirabilis scientia integralis*, which, by integrating all parts of knowledge, could lead man to survive the Millennium. The vision of a universal science, thoroughly recorded in his *Opus Maius* (ca. 1247-1267), was first acknowledged by Roger Bacon through the study of the *Secretum Secretorum*,<sup>217</sup> which handed down the darkest, mysterious parts of Aristotle's philosophy. In it, Bacon found proofs to his belief in the practical applications of those heterogeneous sciences whose study he had undertaken. He established connections of operative implications between the fields of astrology and alchemy, medicine, and the mechanical sciences alike. The *Secretum* thus taught him how medicine, melded up with alchemical knowledge, would provide a soberer health regimen for men. The greatest possible outcome of this fusion between alchemical and medical praxes was however esteemed to be the prolongation of human life, as argued by Bacon in his *Speculum Alchemiae*.<sup>218</sup>

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<sup>217</sup> Cfr. Philip Ashley Fanning, *Isaac Newton and the Transmutation of Alchemy: An Alternate View of the Scientific Revolution*, cit., p. 7: "Secretum secretorum extolled the practical benefits of knowledge of nature, and it implied that knowledge of human invention and of nature was an essential part of understanding God. It also advanced the idea of an ancient knowledge that had come down to the sons of Seth (Adam's son), which was subsequently lost and only partly recovered by the Greeks, the Arabs, and now the Christian academics. The book persuaded Bacon the greatest attainment of any truth-seeker was to regain that pristine understanding, or *prisca sapientia* [...]." Actually, this last sentence could be also applied to best describe the ultimate aim of Newton's research into human knowledge. See also Franco Alessio, *Mito e Scienza in Ruggero Bacone*, cit., pp. 97-100.

<sup>218</sup> The Latin original version of the book was translated into English in 1597 as *The Mirror of Alchimy*. Yet there are several opinions among scholars about the correct ascription of the work to Roger Bacon. See especially Stillman, *The Story of Alchemy*, cit., pp. 271-272: "The *Speculum Alchimiae* or *Mirror of Alchemy* attributed to Roger Bacon is a short treatise in seven chapters treating of the composition and origin of the metals. It contains only the conventional Arabian theories of mercury and sulphur as the constituents of metals, [...]. Judging from its contents, this work might have been written as well as in the twelfth century as in the more probable fourteenth. There is nothing in it that is characteristic of Roger Bacon's style or ideas, nor that distinguishes it from many unimportant alchemical lucubrations of anonymous writers of the thirteenth to the sixteenth centuries" (*Ibid.*, p. 271). Scholars like A. G. Little, M. M. P. Muir, E. v. Lippmann do doubt about the authenticity of the *Mirror's* as one of Bacon's work; yet it is unquestionable that Bacon's reputation as an alchemistic chiefly relies on that book.

in many ancient Bookes there are found many definitions of this Art [...]. For *Hermes* saith of this Science: *Alchemy* is a Corporal Science simply composed of one and by one, naturally conjoyning things more precious, by knowledge and effect, and converting them by a naturall commixtion into a better kind. A certain other saith: *Alchemy* is a Science, teaching how to transforme any kind of metall into another: and that by a proper medicine, as it appareth by many Philosophers Bookes. *Alchemy* therefore is a science teaching how to make and compound a certaine medicine, which is called *Elixir*, the which when it is cast upon mettals or imperfect bodies, doth fully perfect them in the verie projection.<sup>219</sup>

Moreover, the yearned-after prolongation of life was bound to Bacon's loudest claim: the strengthening of Christian morality. He actually sought for a comprehensive system of knowledge whose fundamental tenet he imagined to be divine wisdom – “the end that all human thought should serve, and morality is the supreme science:”<sup>220</sup>

[...] the truth of Jesus Christ is the wisdom of the Scriptures. Therefore there is no truth elsewhere except that which is contained in that science.<sup>221</sup>

Bacon's moral philosophy would have allowed Christians to pursue God's revealed wisdom through the acknowledgement of a universal science. This would have granted the good pious believer his chance to understand the prophecies, to answer the divine quest of *Revelation*: “the fate of the world ultimately depends on the knowledge ascribable to divine revelation.”<sup>222</sup> Within the framework of Bacon's eschatology,<sup>223</sup>

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<sup>219</sup> *The Mirror of Alchimy, Composed by the Thrice-Famous and Learned Fryer, Roger Bachon*, edited by Stanton J. Linden, English Renaissance Hermeticism, New York-London, Garland Publishing, 1992, p. 3. Cfr. Michela Pereira, “*Medicina* in the Alchemical Writings Attributed to Raimond Lull (14<sup>th</sup>-17<sup>th</sup> Centuries),” in Rattansi and Clericuzio (eds.), *Alchemy and Chemistry*, cit., pp. 4-5.

<sup>220</sup> Roger Bacon, *The Opus Majus of Roger Bacon*, translated by Robert Belle Burke, Bristol, Thoemmes Press, 2000, Part II: Philosophy, Chapter I, p. 36.

<sup>221</sup> Lynn Thorndike, “The True Roger Bacon I,” in *The American Historical Review*, cit., p. 246.

<sup>222</sup> “Il destino del mondo dipende in ultima istanza dalla sapienza fontalmente riconducibile alla rivelazione divina,” my translation (Davide Bigalli, *I tartari e l'apocalisse: ricerche sull'apocalisse in Adamo e Ruggero Bacone*, Firenze, La Nuova Italia, 1971, p. 162).

<sup>223</sup> Cfr. Ruggero Bacone, *La scienza sperimentale*, cit., Introduzione, pp. 35-38.

man's final redemption could be gained only through the recovering of that *prisca sapientia* – so dear to Newton – earlier revealed by God to the fathers of human knowledge.

Yet, according to Edmund Brehm:

[...] within the context of Bacon's entire conception of science and salvation, the soteriological nature of his alchemical ideas can be appreciated. His conception of science constitutes the amplification of his alchemy, and it implicitly links the alchemical process that produces the *elixir of life* to the soteriological path that leads through Christian morality to eternal salvation.<sup>224</sup>

I think that Brehm's opinion about the hierarchical position of alchemy with the broader framework of his scholarship might be allegedly shared. As a matter of fact, Bacon himself, in one of his most famous and quoted passages, recognizes the foundation of alchemy in the unitary process of the natural generation which links in a chain all inanimate and animate beings emphasizing, moreover, the parallelism and the mutual affinity between alchemy and medicine, which do have their common roots both founded in "*in naturalibus*:"<sup>225</sup>

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<sup>224</sup> Brehm, "Roger Bacon's Place in the History of Alchemy," in *Ambix*, cit., p. 54.

<sup>225</sup> "The things specially and strictly assumed as belonging to nature are those in which is the principle of motion and rest, as in the parts of the elements which are fire, earth and water, and in all things made from them which are inanimate as metals, stones, salts and sulphurs, pigments and colours [...] and things of that sort generated in the belly of the earth" (Roger Bacon, *Communium Naturalium*, Steele ed., Liber I, p. 5, quoted in Stillman, *The Story of Alchemy*, cit., p. 260).

there is another science which treats of the generation of things from the elements and of all inanimate things and of simple and composite humors, of common stones, gems, marbles, of gold and other metals, of sulphurs and salts and pigments, of lapis lazuli (that is, azurium) and minium and other colors, of oils and burning bitumens and other things without limit, concerning which we have nothing in the books of Aristotle. Nor do the natural philosophizers know of these, no the entire crowd of Latin writers. And because this science is not known to the generality of students it necessarily follows that they are ignorant of all that depends upon it concerning natural things, namely of the generation of animate things, of plants, and animals and men, for being ignorant of what comes before, they are necessarily ignorant of what follows. For the generation of men and brutes and plants is from the elements and humors and is related to the generation of inanimate things. [...] natural philosophy and theoretical medicine are necessary for the practice [...]. Of these medicines neither the names nor their meanings can be understood except through this science, and this is theoretical alchemy which theorizes about all inanimate things and the entire generation of things from the elements. But there is another alchemy, operative and practical, which teaches how to make the nobles metals, and colors and many other things better or more abundantly by art than they are made in nature.<sup>226</sup>

Bacon's advocacy of natural science went along with his advocacy of mathematics.<sup>227</sup> Of primary importance for the establishment of his universal science, his "mathematical method" entailed the expounding of his physical and astronomical theories by means of basic geometrical diagrams, under which severe scrutiny he analysed, and overcame, Plato's philosophical theory of the four elements. Moreover, he rejected Democritus' atomical doctrine and firmly resolved to postulate the singleness of our universe. He placed mathematical science at the core of biblical exegesis assuming that it would help in enhancing the deciphering of the numerological patterns of biblical sacred numerology.

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<sup>226</sup> Roger Bacon, *Opus Tertium*, in his *Opera Quaedam Hactenus Inedita*, edited by J.S. Brewer, London, 1859, I, pp. 39-41, quoted in Stillman, *The Story of Alchemy*, cit., pp. 262-263.

<sup>227</sup> Cfr. Ruggero Bacone, *La scienza sperimentale*, cit., Introduzione, p. 33.

Thus far we have come to highlight the fundamental guidelines to understand those parts of Roger Bacon's philosophy needed for a comparison, in terms of pansophic intellectual speculation, with Newton's scholarship. Yet before resolving to pinpoint the resemblances of Roger Bacon's mind scattered throughout Newton's manuscripts and therefore ascribable to his comprehensive system of knowledge, another question must be raised of why such a comparison should be drawn. Jon Marshall in his *Critical Exposition of Jung's Theory of Alchemy*, though not being at all concerned with Isaac Newton's alchemical mind, unwillingly depicts what I do firmly believe is the reason why one should approach the study of Newton's *Treatise on the Apocalypse* according to his alchemical mind. Actually, in his reasoning about Roger Bacon's "implicit distinction" between alchemical esotericism and exotericism, Marshall remarks that: "It appears that speculative alchemy used the theory of alchemy to demonstrate the logical truth of alchemy (*scientia*) and to apply it to questions of the role and function of the divine, while practical alchemy investigates, through action, the workings of the world and hence allows one to speculate upon the mind, or intentions of God."<sup>228</sup> Newton's speculative alchemy, whose experiments he carried out all through his central years, allegedly allows us to trace which were the most important authors he referred to, his shared alchemical views and his relation with the *prisci theologi* though the *locus unicus* of his applying alchemy onto God's will, lays in his own interpretation of the biblical prophecies. Which was then the role played by alchemy in the proper interpretation of the Bible? And which was Newton's adaptation of alchemical knowledge to his own biblical hermeneutics? I suggest that the answer to this last question may only be given by looking backwards to the dawning of alchemy – to that *prisca sapientia* so dear to Newton. Even though his contemporary cultural background was chiefly concerned with the mysticism of the upraising Rosicrucian movement,

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<sup>228</sup> Jon Marshall, *Jung, Alchemy and History*, cit., p. 11.

Newton's Arianism<sup>229</sup> suggests that he rejected a strict Christian reading of the alchemical precepts and that he therefore derived his alchemical mind directly from the alchemy of the origins though, it must be admitted, some hints at that mystical alchemical background passed all the same into his theological works.

Furthermore, the deep connections between Newton's and Roger Bacon's comprehensive worldviews are also to be found elsewhere. Besides John Harrison's entry [110]<sup>230</sup> in his catalogue on Newton's library which does attest the existence of Bacon's *De arte chimia scripta* among his collected works, one first definitive proof about the tight bond between the two of them is rendered to us by Newton's quotations, in some of his alchemical manuscripts, of theories and passages from Bacon's works. The nature of these quotations ranges broadly from mere hints at Bacon's name up to references to his biography and to his major alchemical achievements. In my opinion, it is therefore possible to subdivide the number of manuscripts with explicit references to Roger Bacon into three groups. To the first one, encompassing simple recordings of the

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<sup>229</sup> Cfr. Stephen D. Snobelen, "To Discourse of God," *cit.*, p. 11: "Newton had another reason for secrets: he was a heretic. Sometime in the early 1670s his reading of the Bible and early church history led him to conclude that the cornerstone doctrine of orthodox Christianity, the Trinity, was an unwarranted doctrinal novelty of the fourth century AD. [...] The increasing availability of Newton's unpublished theological papers has allowed scholars to begin to reconstruct the nature of Newton's heresy. In addition to confirming what was suspected even by some in Newton's own day, namely, that he held to an antitrinitarian and generally Arian Christology, there have been a some unexpected revelations. On top of his denial of the Trinity, Newton also rejected the immortality of the soul and the literal existence of evil spirits. Other elements of dissenting religion can also be confirmed, including his acceptance of the principle of believers' baptism." On Newton's Arianism see especially: James E. Force and Richard H. Popkin (eds.), *Newton and Religion. Context, Nature, and Influence*, Dordrecht, Kluwer Academic Publishers, 1999, hereinafter quoted as Force and Popkin, *Newton and Religion*; Stephen D. Snobelen, "Isaac Newton, Heretic: the Strategies of a Nicodemite," in *The British Journal for the History of Science*, Vol. 32 (December 1999), pp. 381-419, henceforth quoted as Snobelen, "Isaac Newton, Heretic"; Stephen D. Snobelen, "Isaac Newton, Socinianism and 'the One Supreme God'," in Martin Mulso and Jan Rohls (eds.), *Socinianism and Cultural Exchange: the European Dimension of Antitrinitarian and Arminian Networks, 1650-1720*, Leiden, Brill, 2005, pp. 241-293; Stephen D. Snobelen, "'The True Frame of Nature,'" *cit.* Of great interest is also the hypothesis ventured by Richard H. Popkin on the influence of the medieval Jewish theologian, Moses Maimonides, on Newton's theological mind. See Ruth Link-Salinger et al. (eds.), *A Straight Path. Studies in Medieval Philosophy and Culture. Essays in honor of Arthur Hyman*, Washington, D.C., The Catholic University of America Press, 1988, pp. 216-229; Richard H. Popkin, "Some Further Comments on Newton an Maimonides," in Force and Popkin (eds.), *Essays*, *cit.*, pp. 1-7.

<sup>230</sup> Harrison, *Library*, *cit.*, p. 93.



name of the English monk, do belong Keynes MS. 13;<sup>231</sup> Keynes MS. 15;<sup>232</sup> Keynes MS. 33;<sup>233</sup> Keynes MS. 35;<sup>234</sup> Keynes MS. 57.<sup>235</sup> As second group I report manuscripts displaying considerable portions of texts about Bacon's alchemical views and references to his life and biography; to this group is ascribable Keynes MS. 32.<sup>236</sup> The passage of the manuscript, transcribed from folio <8v>, relates about some essential details of Bacon's life and hints at his major alchemical quests:

Liber 10. Rocherius Bacon Anglus.

Symb. Elementorum fac aequationem et habes.

Vixit Bacon Henrici 4 Angliae regis tempore qui regnavit ab Anno 1399 ad Annum 1414. Opuscula quaedam edidit nempe Avicennae recapitulationem, alium librum de Chymia, Speculum ejusdem & aliquot Epistolas arcanorum philosophiae plenas. In his omnibus artificem perfectum se declaravit. Tota ejus intentio est ut fiat Elementorum aequatio quam dicit se ex libro Graeci alicujus hausisse. Fit autem haec aequatio quoad qualitates elementorum [eò quod si caliditas praedominetur, astriabit materia et comburentur flores, si frigiditas operatio nimis tarda erit at nunquam ad finem perducetur si humiditas materia induabitur, si siccitas materia segnis uretur ob defectum pluviae]

The third group enlists manuscripts of strictly alchemical subject including procedures, experiments and heterogeneous alchemical symbols where the name of the friar is mentioned in relation to these material. These manuscripts are: Keynes MS.

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<sup>231</sup> All Keynes manuscripts are nowadays collected at King's College Library, Cambridge University, England, United Kingdom. Keynes MS. 13 is entitled "*1 Hermetis Tab. Smarag.*;" on-line address of the manuscript's transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00002/>.

<sup>232</sup> Keynes MS. 15 is entitled "*Out of Bloomfield's Blossoms*;" on-line address of the manuscript's transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00004/>.

<sup>233</sup> Keynes MS. 33 is entitled "*Manna*;" on-line address of the manuscript's transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00022/>.

<sup>234</sup> Keynes MS. 35 is entitled "*Cap 1. Quomodo metalla generantur*;" on-line address of the manuscript's transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00024/>.

<sup>235</sup> Keynes MS. 57 is entitled "*Sol oritur in Luna crescente*;" on-line address of the manuscript's transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00046/>.

<sup>236</sup> Keynes MS. 32 has already been quoted. See note 155 on p. 71 and note 185 on p. 83.

22;<sup>237</sup> Keynes MS. 29;<sup>238</sup> Keynes MS. 30/1;<sup>239</sup> Keynes MS. 31;<sup>240</sup> Keynes MS. 48;<sup>241</sup>  
Keynes MS. 51;<sup>242</sup> Keynes MS. 52;<sup>243</sup> Keynes MS. 53;<sup>244</sup> Keynes MS. 64;<sup>245</sup>  
Portsmouth Add. MS. 3975.<sup>246</sup>

Given the well-documented authorship which Newton attributed to Roger Bacon, a further step may prove the harmony of their scholarships and fulfil the reader's expectations of a high concord between the two of them. Edmund Brehm in his essay "Roger Bacon's Place in the History of Alchemy" proposed a diagram which neatly illustrates Bacon's "matrix of ideas," as Brehm himself labelled it, – "a system with an intimate interrelationship between alchemy, morality, the prolongation of life, and salvation."<sup>247</sup>

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<sup>237</sup> Keynes MS. 22 has already been quoted. See note 113 on p. 49.

<sup>238</sup> Keynes MS. 29 is entitled "Hermes (Graecis dictus i. e. interpres Dei & naturae apud homines;)" on-line address of its transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00018/>.

<sup>239</sup> Keynes MS. 30/1 has already been quoted. See note 174 on p. 78.

<sup>240</sup> Keynes MS. 31 is entitled "*Liber Mercuriolum Corporum*;" on-line address of its transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00020/>.

<sup>241</sup> Keynes MS. 48 is entitled "*Per sublimationes vel cohobationes septem acuatur et praeparatur menstruum primum*;" on-line transcription of the manuscript: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00037/>.

<sup>242</sup> Keynes MS. 51 is entitled "*Sr George Ripley lived in ye days of Edward ye 4<sup>th</sup> to whome he wrote a Epistle*;" on-line transcription of the manuscript: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00040/>.

<sup>243</sup> Keynes MS. 52 is entitled "*Sr George Ripley His Epistle to K. Edward.*;" on-line transcription of the manuscript: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00041/>.

<sup>244</sup> Keynes MS. 53 is entitled "*Of ye first Gate*;" on-line transcription of the manuscript: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00042/>.

<sup>245</sup> Keynes MS. 64 has already been quoted. See note 166 on p. 75.

<sup>246</sup> All Portsmouth manuscripts are compounded in the Portsmouth Collection at Cambridge University Library, England, United Kingdom. Portsmouth Add. MS. 3975 is entitled "*Idea Of a table booke*;" on-line transcription of the manuscript: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00110/>.

<sup>247</sup> Edmund Brehm, "Roger Bacon's Place in the History of Alchemy," in *Ambix*, cit., p. 58.

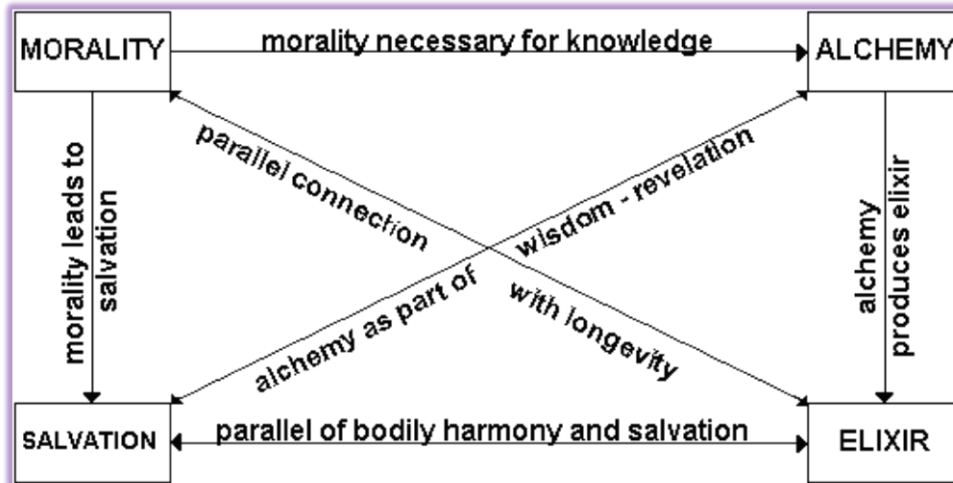


Figure 8.

Brehm's diagram illustrating Roger Bacon's matrix of ideas.

From Edmund Brehm, "Roger Bacon's Place in the History of Alchemy," in *Ambix*, cit., p. 58.

As this diagram is conceived by Brehm to perfectly fit Roger Bacon's mind, so it might well be attached to Newton's pansophic knowledge. Starting from the concept of morality, which for Newton was to be found within some sort of spiritual loyal awareness, the diagram is best read proceeding straightforwardly right to the connected idea of alchemy whose message was prescribed, aprioristically by the Christian fathers of the *Art*, to be revealed only to pure-hearted adepts. Practically, alchemy leads to the elixir, the moral highest alchemical laboratory achievement, which resembles the spiritual salvation gained through the correct (that is, moral) interpretation of the Holy Scripture. Nevertheless, the core of the diagram is the very point in understanding the whole matrix: though one may simply admit the glaring connection between the moral longevity of the soul with the bodily preservation of man, the other crisscrossed link between alchemy and salvation reveals itself, at first sight, everything but easy to guess.

The aim of this work of mine thus becomes also that of showing how Brehm's diagram could also best fit Newton's matrix of mind by attaching a moral dimension to his interpretation of the prophecies and by assuming that his science is somehow derived from his practical alchemy, since "alchemy was a strange blend of logical

thinking and mystical dreaming, of sound observation and wild superstition, of natural and moral ideas, and of objective facts and subjective conceptions.”<sup>248</sup> As a matter of fact, the key issue of framing the dimension of Newton’s idea of morality is far too complex to be tackled out within the length of just few lines. Tightly connected to his idea of a pure, uncorrupted Christianity of the origins, Newton maintained that there “was the moral religion which was plain to all men, love of God and love of neighbor;” it was, indeed, “the natural product of human reason.”<sup>249</sup> Besides this, Newton himself urges to inform his hypothetical readers that a moral dimension does intrinsically exist also in the task of interpreting the biblical prophecies:

But the designe of them is to try men & convert the best, so that the church may be purer & less mixed with Hypocrites & luke-warm persons. And for this end it is that they are wrapt up in obscurity, & so framed by the wisdom of God that the inconsiderate, the proud, the self-conceited, the presumptuous, the scholist, the sceptic, they whose judgments are ruled by their lusts, their interest, the fashions of the world, their esteem of men, the outward shew of thing or other prejudices, & all they who, of how pregnant natural parts soever they be, yet cannot discern the wisdom of God in the contrivance of the creation: that these men whose hearts are thus hardned in seeing should see & not perceive & in hearing should heare & not understand. For God has declared his intention in these prophesies to be as well that none of the wicked should understand as that the wise should understand, Dan: 12.<sup>250</sup>

Hence, a last consideration to this discourse about the accomplishments of two such great minds allows me to remark that, though being their conceptions of science so

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<sup>248</sup> John Read, “Alchemy and Alchemists,” in *Folklore*, cit., p. 278.

<sup>249</sup> Richard S. Westfall, *Science and Religion in Seventeenth-century England*, Michigan, The University Press, 1973, p. 194, henceforth referred to as Westfall, *Science and Religion*.

<sup>250</sup> The passage is quoted from Yahuda MS. 1.1, f. <18r>. Cfr. Yahuda MS. 1.1, f. <1r>.

far-off, Roger Bacon and Newton shared<sup>251</sup> more than their distance in time may suggest and even much more than the lack of related scholar criticism may prove.

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<sup>251</sup> John T. Young writes about the relation between Roger Bacon and Newton in terms of great influence wielded by the medieval philosopher on the seventeenth century scientist: “[...] (Newton’s) other favourite alchemical sources, notably ‘Philaletes’ [...], the *Triomphe hermetique* of Alexandre Toussaint de Limojon, John de Monte Snyders, Ramón Lull [...], Hadrianus a Mynsicht [...], Anrnoldus de Villanova, Basil Valentine, Roger Bacon, and assorted anonymous texts from Zetzner’s *Theatrum chemicum*” (John T. Young, “Isaac Newton’s Alchemical Notes in the Royal Society,” in *Notes and Records of the Royal Society of London*, Vol. 60, No. 1 (Jan. 22, 2006), pp. 25-34, stable URL: <http://www.jstor.org/stable/20462548>, p. 29.

## Chapter II

### Alchemy, Science and Millenarianism

Nolite dare sanctum canibus neque mittatis margaritas vestras ante porcos ne forte conculcent eas pedibus suis et conversi dirumpant vos.

*Matthew 7: 6*

Tu autem Danihel clude sermones et signa librum usque ad tempus statutum pertransibunt plurimi et multiplex erit scientia.

*Daniel 12: 4*

#### 2.1 Alchemy as a Focal Issue in the Development of Modern Science

One of the most clever and surprising theorizations of why secret knowledge has abruptly come to the fore of scholars' attention in the last decades has undoubtedly been given by Richard H. Popkin: "Possibly because the modern world is turning out to have so many forceful, irrational elements that do not disappear with the growth of scientific knowledge, there has been an interest in understanding the irrational elements of the past."<sup>252</sup> Actually, this is the most true reason why one should admit and recognize the pivotal role played by "the so-called irrational mind"<sup>253</sup> in the centuries which enhanced the growth of scientific knowledge. The religious counterpart to the

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<sup>252</sup> Popkin (ed.), *Millenarianism and Messianism*, cit., Introduction, p. 2.

<sup>253</sup> *Ibidem*.

leading role of alchemy, mysticism and such other branches of knowledge in the development of the modern mind was hidden, though largely diffused, in a Biblical quotation from the Gospel according to Matthew, 7: 6: “Give not that which is holy unto the dogs, neither cast ye your pearls before swine, lest they trample them under their feet, and turn again and rend you.” As a matter of fact, this Biblical passage has been (mis)interpreted for centuries as the precept meaning that precious things are meant for few people, bidding man to keep hidden the secrets he unveiled because uncovered truth might turn out dangerous if they fall into bad hands.<sup>254</sup> One cannot be sure whether Newton ever read this Biblical passage, though it could reasonably be taken for granted according to his vast<sup>255</sup> theological knowledge. It is however the deceiving attitude even in his published works and the secretiveness<sup>256</sup> he was committed to, especially towards his most uncommon theories, that allegedly allow us to mark his conscious attachment to that Biblical warning – an admonition also shared by alchemists of all ages. Just as Newton relied on that particular Biblical precept to keep his studies secret, some alchemists metaphorically used the Holy Scriptures to support their laboratory labour and to link part of their chemical ideas to Christian doctrines. As far as the polyvalent role played by alchemical lore within the development of other heterogeneous branches of knowledge is concerned, it would be of particular interest to recall what Robert M. Schuler questioned about: “Recent studies in the history of religion and the history of science have begun to answer perhaps the most vexed questions asked of the enigmatic subject of alchemy: to what extent could its suggestive allegorical language be seen as a vehicle for a “spiritual” or “religious”

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<sup>254</sup> Cfr. Rossi, *Scienza Moderna*, cit., p. 17: “Ciò che è prezioso non è per tutti, la verità va mantenuta segreta, la sua diffusione è pericolosa: in questo modo venne letto, per molti secoli e da moltissimi autori, quel passo del Vangelo.”

<sup>255</sup> To give an idea of the extensive Biblical knowledge of Isaac Newton, it is worth to remark that in Harrison’s catalogue of Newton’s library there are enlisted 33 titles under the entry “Bible.” See Harrison, *Library*, cit., pp. 101-104.

<sup>256</sup> See Arthur Quinn, “On Reading Newton Apocalyptically,” in Popkin (ed.), *Millenarianism and Messianism*, cit., p. 185, Newton: “[...] remained secretive even when he did publish his views.”

content, and when and where did the practice of alchemy have a specific religious significance?”<sup>257</sup> As remarked by Schuler, the fact that also men of science have long been inquiring into the entangled field of the relations between alchemy and religion, maintaining the importance of such a connection to fully grasp its impact on the scientific development, clearly reveals how important it is to skim through the ways alchemy came to influence the beginning of modern science. Accordingly, the major role – sometimes explicit, always implicit – played by Christian theology and metaphysics in the shaping of alchemical philosophy would not disqualify its role in the history of science<sup>258</sup> any more than these same features would at all disqualify Isaac Newton’s scientific scholarship. Seemingly, the art of alchemy, essentially described as “a set of transformative techniques, applicable to spirit as well as to matter,”<sup>259</sup> needs some critical debate on its origins as fundamental premise to each reasoning thereof.

After the theological spirit of unrest brought about in Northern Europe by the Protestant Reformation and the relaxing of harsh orthodox ecclesiastical censorship, the dawning of the seventeenth century saw the publication of a spate of alchemical writings. The secrecy and mystery which surrounded these texts, previously available to scholars either in single editions or gathered into great collections,<sup>260</sup> indeed helped to

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<sup>257</sup> Robert M. Schuler, “Some Spiritual Alchemies of Seventeenth-Century England,” in *Journal of the History of Ideas*, Vol. 41, No. 2 (Apr. - Jun., 1980), University of Pennsylvania Press, pp. 293-318, stable URL: <http://www.jstor.org/stable/2709463>, p. 293.

<sup>258</sup> See Principe’s opinion on the key role of alchemy within the process of redefining the tasks of modern science: “Alchemy’s exclusion illustrates strategic redefinitions of science, while its rehabilitation points to the contextual nature of those definitions. One gift offered by the history of science is the recognition that science is a far messier process than simple models, wishful thinking, or programmatic philosophies will allow. It collects elements from unexpected sources and synthesizes them in unexpected and unpredictable ways. It is never a mechanical or impersonal process – nor would we want it to be. While the laws of nature exist independently of us, the ways we choose to conceive of them, to explore or not to explore them, to describe or not to describe them – that is to say, science – is a very human affair, filled with all the complexities and simplicities, errors and insights, pettiness and nobility that customarily attend human activity. And, to be sure, alchemy forms an important part of that story” (Lawrence M. Principe, “Alchemy Restored,” in *Isis*, cit., p. 312).

<sup>259</sup> Frank Kermode’s foreword to the first edition of Lyndy Abraham’s *Marvell & Alchemy*: Lyndy Abraham, *Marvell & Alchemy*, cit., p. IX.

<sup>260</sup> Some of the most important printed collection of alchemical writings are: *Artis Auriferæ quam Chemiam Vocant* (Basel, 2 volumes, 1572, a 3d volume, 1610); Zetzner, *Theatrum Chemicum* (3 volumes, 1602, 2d ed. 6 volumes, 1613-1661); Jean-Jacques Manget, *Bibliotheca Chemica Curiosa* (2 volumes folio, Cologne, 1702); Elias Ashmole, *Theatrum Chemicum Britannicum* (London, 1652); F.



increase the interest towards them. Along with these editions of alchemical writings came the publication of a large number of *Hermetic Dictionaries*<sup>261</sup> which aimed at helping alchemists in understanding past and contemporary alchemical texts. Remarkably, the turning point from the obscurity of the Middle Ages to the Renaissance world has certainly been the fundamental stage within the process of human development towards the flourishing of the Modern Age. At the same rate, some historical gains helped to enhance a new course of alchemical knowledge in the two centuries which paved the way for the scientific and cultural revolution Europe went through during the seventeenth and eighteenth centuries. It was indeed when alchemy, set eventually free from the boundaries of *chrysopæia*, imperceptibly evolved into chemistry that its reputation as heretic knowledge started slowly to fade away. Notwithstanding Boyle's<sup>262</sup> and Newton's later contributions to the development of 'chemical alchemy,'<sup>263</sup> it was especially with Libavius' *Alchymia* (1595), van Helmont's suggestions about the uses of the term 'gas,' and Glauber's valuable additions to the

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Rothscholzen, *Bibliotheca Chemica* (1719). For further account on the bulk of printed edition of alchemical works and collections from the early sixteenth century onwards one could best refer to: Lenglet du Fresnoy, *Histoire de la Philosophie Hermétique*, 3 volumes, Paris, 1742; Stillman, *The Story of Alchemy*, cit., pp. 273-299. According to the catalogue compiled by J. Harrison of the existing books in Newton's library by the time of his death, Newton bought and widely read some of these previously mentioned collections. Among the others, in the catalogue are cited: [93] Elias Ashmole, *Theatrum chemicum Britannicum. Containing severall poetically pieces of our famous English philosophers, who have written the Hermetique mysteries in their owne ancient language ...* 4°, London, 1652, on p. 91; [221] *Bibliothèque des philosophes (chymiques), ou Recueil des oeuvres des auteurs les plus approuvez qui ont écrit de la pierre philosophale ... Par Le Sieur S.D.E.M.* [i.e. Walter Salmon]. 2 vols. 12°, Paris, 1672-8. [vol. 1 only], on p. 104; [1130] *Musaeum Hermeticum omnes sopho-spagyricae artis discipulos fidelissime erudiens.* 4°, Francofurti, 1625, on p. 197; [1131] *Musæum Hermeticum reformatum et amplificatum, omnes sopho-spagyricæ artis discipulos fidelissimè erudiens ... Continens tractatos chimicos XXI ...* 4°, Francofurti, [1677-]1678, on pp. 197-198; [1608] *Theatrum chemicum, præcipuos selectorum auctorum tractatus de chemiæ et lapidis philosophici antiquitate, veritate, jure, præstantia, & operationibus, continens ...* [Ed. by L. Zetzner etc.] 6 vols. 8°, Argentorati, 1659-61, p. 249 (All references from Harrison, *Library*, cit.).

<sup>261</sup> Cfr. Marie Boas Hall, "Newton's Voyage in the Strange Seas of Alchemy," in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., p. 239.

<sup>262</sup> On Boyle's alchemical scholarship see in particular: William R. Newman and Lawrence M. Principe (eds.), *Alchemy Tried in the Fire: Starkey, Boyle, and the Fate of Helmontian Chymistry*, Chicago-London, University of Chicago Press, 2002; Lawrence M. Principe, "Robert Boyle's Alchemical Secrecy: Codes, Ciphers and Concealments," in *Ambix* 39 (1992), pp. 63-74; Lawrence M. Principe, *The Aspiring Adept: Robert Boyle and His Alchemical Quest*, Princeton, Princeton University Press, 1998; Muriel West, "Notes on the Importance of Alchemy to Modern Science in the Writings of Francis Bacon and Robert Boyle," in *Ambix*, Vol. 9 (1961), pp. 102-114.

<sup>263</sup> A valuable study on the subject, on which I have extensively relied on, is Crosland, *Historical Studies*, cit.

existing general knowledge of metals, acids, and salts that the quest for gold-making started effectively to lose its grip on most devout alchemists. As remarked by Read, after the progressive fading away of alchemical mysticism in the last decades of the seventeenth century, “and although alchemical traditions lingered on into the early eighteenth century, the long age of alchemy virtually ended with Robert Boyle's abolition of the systems of the four elements and the three hypostatical principles and his introduction of the modern chemical idea of an element, as expounded in his celebrated book, *The Sceptical Chymist*, published in London in 1661.”<sup>264</sup>

Nevertheless, it was at the beginning of the seventeenth century that the Hermetic influence reached its peak. In the century when the new rationalism of Christian philosophy and the mechanistic worldview of the scientific revolution revived the European culture, Western alchemy consistently increased the number of its practitioners and admirers throughout the European courts. During this period, alchemical praxis and Hermetic philosophy sensibly merged to flourish eventually in a comprehensive system of knowledge. Hence, just as mathematics encompassed both scientific and mystical studies, so alchemical philosophy purported a syncretic vision of the sacred and the secular dimensions of the world. Alchemists seeking to understand the secrets of nature for transmutation purposes developed useful experimental and observational techniques, and at the same time maintained a holistic, mystical view of the cosmos, placing their work within the context of the ancient macrocosm-microcosm model of the universe. It was the Swiss-born physician, magician and alchemist Philippus Aureolus Theophrastus Bombastus von Hohenheim (1493-1541), better known as Paracelsus,<sup>265</sup> who, for the first time ever, in the sixteenth century, applied the

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<sup>264</sup> John Read, “Alchemy and Alchemists,” in *Folklore*, cit., p. 264.

<sup>265</sup> Paracelsus means “beyond Celsus;” Aulus Cornelius Celsus was a Roman naturalist of the I century A.D. and was esteemed as a principal medical authority of antiquity. Major reference books and studies on Paracelsus’ life and works are: Massimo Luigi Bianchi, *Introduzione a Paracelso*, Roma-Bari, Laterza, 1995; Allen G. Debus, *The Chemical Philosophy: Paracelsian Science and Medicine in the*

macrocosm-microcosm worldview to the scientific and alchemical enquiry into nature besides putting forward a re-elaboration of the interconnectedness of the universe by using Neoplatonic ideas such as the doctrine of signatures.<sup>266</sup> Regarding this, Walter Pagel observed that: “Speculation about such analogies had seriously engaged the human mind since pre-Socratic and Platonic times and throughout the Middle Ages. Paracelsus was the first to apply such speculation to the knowledge of nature systematically.”<sup>267</sup> Newton himself, maybe recognizing some great value in the work of Paracelsus, owned in his library at least six books of the Swiss alchemist. According to John Harrison’s catalogue,<sup>268</sup> these were: [1238] *Aurora thesaurusque philosophorum, Theophrasti Paracelsi, Germani philosophi, & Medici præ cunctis omnibus accuratissimi. Accessit Monarchia physica per G. Dorneum ...* 8°, Basileæ, 1577, which bears few signs of dog-eating; [1239] *Congeries Paracelsicæ chemiæ de transmutationibus metallorum, ex omnibus quæ de his ab ipso scripta reperire licuit hactenus. Accessit genealogia mineralium, atq[ue] metallorum omnium, eiusdem autoris. G. Dorneo interprete.* 8°, Francofurti, 1581, far more used than the previous entry in the catalogue; [1240] *De summi naturæ mysteriis commentarii III, à G. Dorn conversi ...* 8°, Basileæ, 1584; [1241] *Libri v. de vita longa, incognitarum rerum, & hucusque à nemine tractatarum refertissimi, ...* 8°, Basileæ, 1562; [1242] *Opera omnia*

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*Sixteenth and Seventeenth Centuries*, New York, Science History Publications, 1977; Allen G. Debus, *The English Paracelsians*, London, Oulborne, 1965; Ole Peter Grell (ed.), *Paracelsus: the Man and his Reputation*, Leiden, Brill, 1998; Franz Hartmann, *The Life of Philippus Theophrastus Bombast of Hohenheim*, London, Kegan Paul, Trench, Trubner, 1896; Walter Pagel, *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance*, Basel, S. Karger, 1958, henceforth quoted as Pagel, *Paracelsus*; Emil Schlegel, *Paracelsus als Prophet*, Tübingen, Verlag der Buchhandlung Kloeres, 1915; Anna M. Stoddart, *The Life of Paracelsus, Theophrastus von Hohenheim, 1493-1541*, London, J. Murray, 1911; Webster, *From Paracelsus to Newton.*, cit.; Webster, *Paracelsus. Medicine, Magic and Mission at the End of Time*, New Haven and London, Yale University Press, 2008, hereinafter quoted as Webster, *Paracelsus*; Giancarlo Zanier, *L’Espressione e l’Immagine: Introduzione a Paracelso*, Trieste, Edizioni Lint, 1988.

<sup>266</sup> Cfr. Abraham, *Dictionary*, cit., pp. 57-58.

<sup>267</sup> Pagel, *Paracelsus*, cit., p. 50. Cfr. Jung, *Memories*, cit., p. 236: “The writings of Paracelsus contain a wealth of original ideas, including clear formulations of the questions posed by the alchemists, though these are set forth in late and baroque dress.”

<sup>268</sup> See Harrison, *Library*, cit., pp. 209-210.

*medico-chimica-chirurgica...Ed. novissima... 3 vols. in 2. F°, Geneva, 1658; [1243]*  
*Tract. Varii, 4°, 1600.*

According to Allen G. Debus, it was quite a common opinion for Paracelsus to be considered as the “Luther of medicine.”<sup>269</sup> this assumption could be allegedly referred to a juxtaposition in theatrical gestures regarding both personalities. As a matter of fact, the freeing of Christian religion from the trammels of strict Catholic orthodoxy came along with Luther’s burning in 1520 of the papal bull at Wittenberg. Six years later alike, Paracelsus’ public burning Avicenna’s *Canon of Medicine* before the authorities and physicians of Basel represented a similar gesture in the fields of medicine and alchemy. Furthermore, the most valuable theoretical contribution introduced into alchemy by Paracelsus, which exerted a long dominating influence on the alchemical knowledge of the following centuries, was the so-called doctrine of the *tria prima* – that is, sulphur, mercury, and salt.<sup>270</sup> He deemed those three primal substances to be at the basis of the composition of all matter, from metals to man, and he ascribed definite functions to these three elements: sulphur represented the combustible principle, mercury the liquid or volatile element and salt was non-volatile and incombustible:

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<sup>269</sup> Allen G. Debus, “Chemists, Physicians, and Changing Perspectives on the Scientific Revolution,” in *Isis*, cit., p. 71.

<sup>270</sup> Cfr. M. L. Bianchi, “The Visible and the Invisible. From Alchemy to Paracelsus,” in Rattansi and Clericuzio (eds.), *Alchemy and Chemistry*, cit., p. 21: “Obviously the Paracelsian doctrine of *Sal, Sulphur* and *Mercurius* as the principles and partial components of bodies is of alchemical origin.” For a schematic representation of the theory of the *tria prima* see especially Marshall, *Jung, Alchemy and History*, cit., p.13.

There are the substances which give body (or substance) to everything: that is every body consists of three things. The names of three things are sulphur, mercury and salt. When these three are combined then we have what we call a body, and nothing is added to them except life and what depends upon it.<sup>271</sup>



Figure 9. Ouroboros encompassing the symbols of sulphur, salt and mercury. From an *Arabian Manuscript*, *ms Add. 25724*, London, British Library, XVII century, reproduced in Matilde Battistini, *Astrologia, Magia, Alchimia*, cit., p. 302.

Actually, Paracelsus' notion of the *tria prima* does represent the late-Renaissance evolution of the Greek theory of the constitution of matter solely starting from sulphur and mercury. This theory, in its turn, had been developed on the basis of Aristotle's theory of the four elements which enlisted a twofold opposition of the constituting elements: sulphur was identified with fire – characterized by the properties of hotness and dryness – and mercury went along with water – representing therefore the missing matching characteristics of coldness and moistness. Paracelsus, assuming as starting point Heraclitus' axiom of *Πάντα ῥεῖ*, according to which every single substance of the sublunary world is in a situation of steady movement, theorised a

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<sup>271</sup> Paracelsus, *Opera*, cit., folio, I, p. 884, quoted in Stillman, *The Story of Alchemy*, cit., p. 320.

similar hypothesis which could be as well applied to the nature of metals. Since each different shape in nature was the result of different and numberless recombinations of the primordial *prima materia*, the result was that the composition of metals could be altered by an inner recombination of the raw materials they were made of.

As a matter of fact, in both its spiritual and practical aspects, alchemy was primarily concerned with processes of transmutation and regeneration. The overarching idea was that purification could be achieved by refining gross substances into more subtle forms. What has to be recalled now is that the progressive “whitening” of the substances of the physical world resembled, and always had to be followed by, an inner development of the adept’s soul. The transmutation of raw metals into gold was the mundane counterpart of the conversion of man – the microcosm – into a state of higher moral perfection. Accordingly, this process matched the analogous evolution of the Iron Age into the Golden Age of Christ’s reign on Earth. From this point of view, within the ravelled series of correspondences developed from one another, during the Middle Ages there was the common belief that matter consisted of body, spirit and soul: the body furnished solidity and permanence, the spirit fled from fire or was volatile, the soul, though not commonly adopted, was also not very intelligibly defined. Newton himself, in Keynes MS. 52, f. <7v>, agrees with the theorisation about the constitution of matter out of the three elements: “Opus ingrediuntur tria corpus anima et spiritus, fixum variabile & fugitivum [...]” With Paracelsus a high symbolic meaning began to be attached to the parallelism between his doctrine of the *tria prima* and the Medieval threefold composition of matter since he, in his *De Generatio Rerum Naturalium*, related his three constituting principles to the theory of body, spirit and soul by recalling Hermes’ authority:

[...] you should know all seven metals originate from three materials, namely, from mercury, sulphur, and salt, though with different colors. Therefore Hermes has not said incorrectly that all seven metals are born and composed from three substances, similarly also the tinctures and the philosophers' stone. He calls these three substances, spirit, soul and body. But he has not indicated how this is to be understood nor what he means by it. [...] you should know that they mean not other than the three principia, that is mercury, sulphur, and salt [...]. Mercury is the spirit, (spiritus), sulphur is the soul (anima), salt the body (corpus).<sup>272</sup>

The two different alchemical branches of research – the one inquiring into the structure of matter and the one regarding the nature of human soul – resulted therefore to be often inextricably related and bound up by a relation of mutual reliance. Furthermore, by the study of some mystical-alchemical treatises<sup>273</sup> of the age, it clearly stands out that the authors of those works were, almost completely, merely interested with the expressions of theological, philosophical or mystical aspirations and beliefs. For this very reason, they adopted the symbolism of esoteric alchemy grounding however their metaphors and analogies on the common imagery of the two fields of alchemical knowledge. Though his doctrine of the *tria prima* embodies much of Paracelsus' contribution to the expanding<sup>274</sup> of alchemical knowledge, it was with him that the chief goal of alchemy evolved into the cure of diseases and the physician's

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<sup>272</sup> Paracelsus, *Opera*, cit., folio, I, pp. 26-27, quoted in Stillman, *The Story of Alchemy*, cit., p. 321. Remarkably, as example of the alchemical belief in the threefold constitution of matter, a valuable quotation could be drawn from the eighteen series of aphorisms contained in the *Aphorismes or Canons Hermetical* ascribed to Basilius Valentinus and translated into English by John Everard in 1640 which have as main theme the "Body, Soule, & Spirit, of the greater & Lesser world" (The *Aphorismes* are found in MS. Ashmole 1440, pp. 200-204; my quotation is from Robert M. Schuler, "Some Spiritual Alchemies of Seventeenth-Century England," in *Journal of the History of Ideas*, cit., p. 310).

<sup>273</sup> Cfr. Marshall, *Jung, Alchemy and History*, cit., p. 15: "[...] the division between live soul and dead matter became so 'obvious' to people that alchemy itself appeared to split more radically than previously between those alchemies devoted to transmutation of spirit and those devoted to matter. For example productions such as the Book of Lambspring, the works of Khunrath and the writings of Jacob Böhme seem entirely spiritual."

<sup>274</sup> Paracelsus' theory of the *tria prima* actually performed a strong impact on alchemists of the next generations; it indeed stroke the alchemical debate of later centuries on alchemical praxis and philosophy until, at least, the rise of the theory of phlogiston. An example of this is Basilius Valentinus' *Practica cum Duodecim Clavibus* which organized the whole alchemical process, according to the new Paracelsian view, around a series of highly symbolic images.

became some sort of priestly calling. As a matter of fact, from Paracelsus onwards,<sup>275</sup> alchemy turned definitely out to be revolutionarily influenced and reoriented by the placement of chemistry in the service of medicine:

In his conception alchemical *scheidung* [*separation*] also assumes a religious significance: the doctor, in making visible what was invisibly contained in matter, becomes the one who publicly reveals God's miraculous handiwork. He simply re-enacts, in an earthly dimension, the original *scheidung* [*separation*] of beings according to the story of *Genesis*.<sup>276</sup>

It must not be forgotten however that, before the revolutionary innovation<sup>277</sup> of Paracelsian iatrochemistry,<sup>278</sup> the "old" philosophy still held sway, for it was the Greek

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<sup>275</sup> Cfr. Thomas Thomson, *The History of Chemistry*, 2 vols., London, Colburn and Bentley, 1830, I, p. 140: "It is from the time of Paracelsus that the true commencement of chemical investigation is to be dated. Not that Paracelsus or his followers undertook any regular or successful investigation, but Paracelsus shook the medical throne of Galen and Avicenna to its very foundation: he roused the latent energies of the human mind, which had for so long a period remained torpid; he freed medical men from those trammels and put an end to that despotism which had existed for five centuries. He pointed out the importance of chemical medicines and of chemical investigation to the physician." Christopher Hill remarks that: "[...] there was also the alchemical tradition of the craftsmen, which from the time of Paracelsus had begun to influence medicine and to interest the scientists. Dee was in this tradition, and Gilbert was not uninfluenced by it. This helps to explain [Francis] Bacon's emphasis on the study of crafts" (Christopher Hill, *Intellectual Origins of the English Revolution*, Oxford, Clarendon Press, 1965, p. 73, hereinafter referred to as Hill, *Intellectual Origins*). See also M. L. Bianchi, "The Visible and the Invisible. From Alchemy to Paracelsus," in Rattansi and Clericuzio (eds.), *Alchemy and Chemistry*, cit., p. 17: "While explaining its basic hypotheses and general principles, Paracelsus extends the field of its application well beyond the confines established by tradition."

<sup>276</sup> M. L. Bianchi, "The Visible and the Invisible. From Alchemy to Paracelsus," in Rattansi and Clericuzio (eds.), *Alchemy and Chemistry*, cit., p. 21; my translations in brackets. Cfr. Walter Pagel, "Religious Motives in Medical Biology," in *Bulletin of the Institute of the History of Medicine*, No. 2 (1935), pp. 104-106. Pagel observes that Paracelsus was the first to establish "the modern conception of disease by emphasizing the importance of its external cause and its seat in a particular organ. He was actually the first to teach that there are different diseases which can be classified, and that each disease is a peculiar reality, an *Ens*" (*Ibidem*).

<sup>277</sup> Cfr. M. L. Bianchi, "The Visible and the Invisible. From Alchemy to Paracelsus," in Rattansi and Clericuzio (eds.), *Alchemy and Chemistry*, cit., p. 17: "Paracelsus does not refer to the traditional alchemical doctrines in his works, but he re-elaborates them and develops them in various directions. It is a question not simply of revising this or that positive doctrine handed down by tradition, but of a meditation on the whole of alchemy."

<sup>278</sup> Iatrochemistry is alchemy applied to medicine and physiology and it is an alchemical field pioneered by Paracelsus. The followers of this discipline were called spagyrist or iatrochemists and it was a form of scientific enquiry into nature and medicine insisted on practical experimental techniques and rigorous observation. This was a revolutionary position at a century when other sciences were mostly based on speculative theories. Nevertheless, this does not mean that Paracelsus' chemistry was modern in its methods nor could it be compared to the revolutionary concepts of the chemical scientific development started in the seventeenth century: "The chemical philosophy of Paracelsus as comprised in the works attributed to him is in general thoroughly medieval. Based upon the traditional speculations of his



ancient and traditional medieval worldview, with the doctrine of the four elements,<sup>279</sup> the sulphur-mercury theory, the unity of matter and the correspondences between macrocosm and microcosm, that the broader frame of alchemical knowledge still drew upon gleaned ideas and precepts onto which contemporary developments in praxis and theory may be attached. Paracelsus' chief contention was that medical men ought not to be satisfied with leaning on the dicta of the ancients, but should otherwise use their own observations and experience unbiased by inherited dogma: medicine should look to chemistry for a fundamental support in medical practice and alchemists should seek a productive field for their activity in preparing new medicinal agents. Thus, Paracelsian chemistry made its way into the main stream of European medicine chiefly by introducing chemical therapy into the established pharmacopeia. Despite the relatively harsher debate on the Continent between the supporters of ancient Galenic tradition and the Paracelsians, Paracelsus' philosophy found in England an easier way to penetrate the existing medical system. Paracelsianism eventually reached England by the end of the sixteenth century and one of the most fruitful strands of transmission<sup>280</sup> of this alchemical knowledge was the influence exerted by Paracelsus' ideology on the

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predecessors, but elaborated in fanciful extensions by his own imagination, full of occult and superstitious notions current in his period, it did not tend to add clarity or rationality to chemical theory in general" (Stillman, *The Story of Alchemy*, cit., p. 319).

<sup>279</sup> In *Asclepius*, 2-3 is fundable one of the plainest description of the universe created out of the four elements: "2. [...] de cælo cuncta in terram et in aquam et in aëre ; ignis solum, quod sursum uersus fertur, uiuificum; quod deorsum, ei deseruiens. at uero quicquid de alto descendit generans est ; quod sursum emanat, nutriens. terra sola in se ipsa consistens omium est receptrix omiumque generum, quæ accepit, restitutrix. hoc ergo totum, sicut meministi, quod est omnium uel omnia. anima et mundus a natura comprehensa agitantur ita omnium multiformi imaginum qualitate uariata, ut infinitæ qualitatum ex interuallo species esse noscantur adunatæ tamen ad hoc, ut totum unum et ex uno omnia esse uideantur. 3. totus itaque quibus formatus est mundus, elementa sunt quattuor : ignis, aqua, terra, aer. mundus unus, anima una, et deus unus (Ramelli (ed.), *Corpus Hermeticum*, cit., p. 516). Cfr. Treatise I of Hermes' *Poimandres* in which the four elements take part in the vision-like form of the Nous' process of generation: "5. mentre dalla luce...un Logos santo venne a sovrastare la Natura, e un fuoco puro, non mescolato, si sprigionò dalla sostanza umida, su, verso l'alto; ed era leggero e vivace, e al contempo anche attivo, e l'aria, essendo lieve e agile, seguì il soffio infuocato, mentre salivo fino al fuoco a partire dalla terra e dall'acqua, in modo da sembrare sospesa ad esso. La terra e l'acqua, invece, rimasero mescolate tra loro, tanto che non sarebbe stato possibile scorgere la terra separate dall'acqua; ed erano mosse dal Logos che, sotto forma di soffio, si presentava all'udito" (Ramelli (ed.), *Corpus Hermeticum*, cit., p. 77).

<sup>280</sup> For a serious analysis of Paracelsianism widespread throughout Europe see in particular Webster, *From Paracelsus to Newton*, cit., Introduction, pp. 6-7.

writings of English physicians such as Thomas Moffet, John Hester and Sir Walter Raleigh. Following the publication of Bostocke's first English Paracelsian work in 1585, a great number of English translations of the works of Paracelsus were published engendering a lively interest in all aspects of alchemical knowledge. Speaking of this, Christopher Hill has remarked, in his *Intellectual Origins of the English Revolution* (1965), that just as London merchants largely financed and supported England's scientific development in the seventeenth century, so the growth of 'chemical alchemy' was fostered by the new drugs introduced in England by the East India Trade:

before [Francis] Bacon there had been a great development of mathematics and astronomy in England, helped especially by the patronage of London merchants and by Gresham College. There had been a similar development of alchemy, traditionally associated with the craftsmen, into Paracelsian medicine, stimulated by the new industries and the use of new drugs in medicine. Both of these scientific trends had been expressed in a popular scientific literature which was anti-Aristotelian, utilitarian, and optimistic.<sup>281</sup>

Thus English alchemists of the first half of the seventeenth century were also often engaged in theological and political ventures aimed at thoroughly reforming both society and medicine, following Paracelsus' guiding light. Practical and theoretical collaboration was very common among men of science and, although that kind of reform movement was to culminate in both the *Royal Society* (1660) and the *Royal College of Physicians of London*<sup>282</sup> (1684) shortly after the Restoration of Charles II, many alchemists, who stayed in London to help curing the Great Plague of 1655, died. The return of English alchemists to secrecy was characterized by an increase in number – somehow the re-establishment – of secret literary and scientific circles around which

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<sup>281</sup> Hill, *Intellectual Origins*, cit., p. 95.

<sup>282</sup> A brilliant study of the history of the *Royal College of Physicians of London* is Hill, *Intellectual Origins*, cit., pp. 74-84.

spun the most important figures of the forthcoming scientific revolution. Among those outstanding personalities, the first to be recalled is certainly Francis Bacon. Even though it was not only his work but also the important emphasis on observation and experimentation made by the alchemists which provided the intellectual milieu for what is now known as the Scientific Revolution, Bacon's view on alchemy "constitutes evidence of the need for intellectual and scientific reform and, through its crude experimentalism, suggests ways of attaining these goals."<sup>283</sup> Actually, it is more than "a possible hypothesis that alchemy, by neglecting the bent of Medieval and Renaissance scientia of proceeding by logical deduction from axioms, introduced the method of opinion and experiment, and the aim of replication, which led to modern science."<sup>284</sup>

As far as a serious Newtonian criticism is concerned, the intellectual figure of Francis Bacon becomes of cardinal importance both for the introduction of some methodological scientific aspects and for the outlining of some historiographical unsolved problems which regards the two of them: "[...] in termini assai diversi e in un differente contesto culturale, l'esame dell'opera di Newton si trova oggi, per una storiografia non provinciale e arretrata, di fronte a problemi non troppo dissimili da quelli ai quali si è accennato a proposito di Bacone."<sup>285</sup> Moreover, though the great value represented by Francis Bacon's philosophy in the enhancement of Newtonian criticism appears glaringly to us, one major difference between their developments of reasoning in things both scientific and theological must be recalled now. In so far as Francis Bacon's influence on Newton's mind can be gauged, it is highly considerable how far they were in considering the superiority or independence of science over

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<sup>283</sup> Stanton J. Linden, "Mystical Alchemy, Eschatology, and Seventeenth-Century Religious Poetry," in *Pacific Coast Philology*, cit., p. 79.

<sup>284</sup> Marshall, *Jung, Alchemy and History*, cit., p.13. Marshall purposes the contribution of alchemy to the rise of modern science as an hypothesis; I am actually instead convinced that the developments of alchemy in the seventeenth century led to the scientific revolution not only by enhancing scientific discoveries but also, most importantly, by introducing a vision of greater things to come in the mentality of the age.

<sup>285</sup> *Scritti Filosofici di Francesco Bacone*, edited by Paolo Rossi, Torino, Utet, 1975, Introduzione, p. 35, hereinafter quoted as Rossi (ed.), *Scritti Filosofici*.

theology. This is actually what renders Newton an *unicuum* in the whole history of science and philosophy: he never postulated the superiority of one branch of knowledge over the others because he was committed to a syncretic study of the whole bulk of human knowledge allegedly admitting that the method used to enquiry into nature was the same required to interpret the Biblical prophecies:

[Francesco] Bacone affermava che le opere di Dio sono scritte nel libro della natura, e le sue parole nella Bibbia. Questa affermazione, apparentemente utile anche per leggere Newton, conduce tuttavia alla falsa conclusione dell'autonomia della verità scientifica da quella religiosa. Newton invece ricercava soprattutto la coerenza delle due verità, perché una sola ne è la causa: per questo trattava le verità religiose, la rivelazione, come se fossero verità naturali, e viceversa.<sup>286</sup>

In opinion, if something has to be said to describe Newton's attitude towards his fields of research, this should be done in the direction of recognising that he deemed science, and the scientific method, useful to the increase of human knowledge as far as they represented the key to solve out the enigmas of *Revelation*:

[...] Newton would have us read his own work in terms of its role in the salvation history described in the Bible. [...] And it is here with this reading, with Newton's own reading of his work, that we as historians should start.<sup>287</sup>

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<sup>286</sup> Mamiani (ed.), *Trattato sull'Apocalisse*, cit., Introduzione, pp. XVIII.

<sup>287</sup> Arthur Quinn, "On Reading Newton Apocalyptically," in Popkin (ed.), *Millenarianism and Messianism*, cit., p. 187.

## 2.2 “*Many shall run to and fro, and knowledge shall increase.*”

### Francis Bacon’s Foreshadowing the *Millennium*

Francis Bacon<sup>288</sup> (1561-1626) introduced himself in the debate on the moral question of science at the end of the sixteenth century and stood out as being “very much a part of an age that could easily reconcile the findings of belief, imagination, and reason”<sup>289</sup> – an epoch in which the European cultural and scientific frameworks had already undergone a deep renewal though many were the impressive changings that still had to come forth. Francis Bacon’s contribution to the development of contemporary science has been fundamental even though he did none of the greatest scientific discoveries since, as maintained by Howard B. White, much of what we do attach nowadays to our idea of science was born with Bacon’s scientific philosophy: “the vision of the future as the triumph of modern science and the faith in its essential beneficence are, to a large extent, the product of the deliberate effort of Francis

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<sup>288</sup> For a good survey on Francis Bacon’s biography and a general study of his works see especially: F. H. Anderson, *Francis Bacon: His Career and His Thought*, Los Angeles, University of California Press, 1962; B. Bevan, *The Real Francis Bacon*, London, Centaur Press, 1960; J. Box, *The Social Thought of Francis Bacon*, Lewiston, Mellen Press, 1989; A. Dodd, *Francis Bacon’s Personal Life-Story*, 2 vols., London, Rider, 1986; Marta Fattori, Francis Bacon, in *Storia della Scienza*, Istituto della Enciclopedia Italiana, vol. V, Roma, 2002, pp. 275-282; Marta Fattori, *Introduzione a Francis Bacon*, Roma-Bari, Laterza, 2005<sup>3</sup>; R. W. Gibson, *Francis Bacon: a Bibliography of His Works and of Baconiana to the Year 1750*, Oxford, Scrivener Press, 1950; Wouter J. Hanegraaff (ed.), *Dictionary of Gnosis & Western Esotericism*, 2 vols., cit., I, pp. 154-156; Hill, *Intellectual Origins*, cit., pp. 85-130; G. Rees, “Francis Bacon,” in *The Dictionary of Seventeenth-Century British Philoophers*, 2 vols., Bristol, Thoemmes Press, 2000; Paolo Rossi, *Francesco Bacone. Dalla Magia alla Scienza*, Bologna, Il Mulino, 2004<sup>3</sup>, hereinafter referred to as Rossi, *Francesco Bacone*; Brian Vickers, *Francis Bacon*, Harlow, Essex, Longman, 1978.

<sup>289</sup> Linden, *Darke Hieroglyphicks*, cit., p. 117. According to Stanton J Linden: “Bacon frequently categorizes alchemy, astrology, and natural magic as ‘sciences which hold too much of imagination and belief’” (Francis Bacon, *The Works of Francis Bacon, Baron of Verulam, Viscount St. Alban, and Lord High Chancellor of England*, edited by J. Spedding, R. L. Ellis, and D. D. Heath (1872; rpt. New York, 1968), vol. IV, p. 367, quoted in Robert M. Schuler, “Some Spiritual Alchemies of Seventeenth-Century England,” in *Journal of the History of Ideas*, cit., p. 549). Cfr. Paolo Rossi, *Francis Bacon. From Magic to Science*, translated from the Italian by Sacha Rabinovitch, London, Routledge & Kegan Paul, 1968, Introduction, pp. ix-x, hereinafter quoted as Rossi, *Francis Bacon*: “Francis Bacon lived between 1561 and 1626 in an age of conflicting political and cultural ideas. In those years the seeds of England’s political and industrial power were sown, the foundations of the Empire were laid; [...]. This was the age of Elizabeth, Marlowe, and Shakespeare; an age of vitality and exuberance where new urges rubbed shoulders with century-old traditions; a decisive age both for English and European history. [...] around 1600 the English intellectual was more than half medieval and around 1660 he was more than half modern. [...] it is only against this upheaval that the peculiar mentality of an age which opened with Bacon’s programme and closed with Newton’s laws can be fully appreciated.”

Bacon.<sup>290</sup> As a matter of fact, Francis Bacon's chiefly aimed at the establishment<sup>291</sup> of a new concept of science, as he himself informs his readers in the *Novum Organum*:

It is useless to expect great growth in the sciences from the superinduction and grafting of new things on old; instead the instauration must be built up from the deepest foundations, unless we want to go round in circles forever, with progress little or pitiable.<sup>292</sup>

He recommended a kind of science which he wished would place experiments at its basis and he suggested that method should emerge from practice rather than practice from method.<sup>293</sup> Skimming through the pages of human knowledge acquired through the ages, Bacon lamented the scantiness of what had been secured, the human proclivity for fruitless disputation, and the virtual emptiness of what could be achieved through ordinary human efforts. Actually:

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<sup>290</sup> Howard B. White, *Peace Among the Willows. The Political Philosophy of Francis Bacon*, The Hague, Netherlands, Martinus Nijhoff, 1968, p. 7, hereinafter referred to as White, *Peace Among the Willows*. As far as my opinion is concerned, what Howard B. White supposed in his study is doubtlessly true. As a matter of fact, all Baconian philosophic production was directed to the research into the best way of assuring good progress to mankind: he identified this way with science and then he went on with the analysis of its system.

<sup>291</sup> Paolo Rossi sets out 17 different steps in the development of Baconian philosophy of science. Among these, the most important are surely: 1) knowledge has to *hunt* the unknown (Rossi actually says that knowledge should really be a *venatio*); 3) knowledge must better mankind's condition on Earth; 9) magic and alchemy do reflect the Platonic hierarchically organised vision of reality; 12) knowledge must be rooted in a somehow Christian pious background: self-sacrifice, collaboration between scientists and humility are the key concepts for the successful carrying out into contemporary society of the new scientific course; 13) science must be devoted to improve the welfare of human society; 16) one can only overcome nature by complying with it: "*Natura enim non nisi parendo vincitur*", *Novum Organum*, I, aphorism 3 (see Francesco Bacone, *La Nuova Atlantide*, edited by Paolo Rossi, Milano, Tea, 1991, Introduzione, pp. 10-15).

<sup>292</sup> *Novum Organum*, I, 31, in Francis Bacon, *The Instauration Magna Part II: Novum Organum and Associated Texts*, edited with introduction, notes, commentaries, and facing-page by Graham Rees with Maria Wakley, Oxford, Clarendon Press, 2004, p. 77.

<sup>293</sup> Cfr. *Novum Organum*, I, 8 – 9: "Even the works already discovered should be put down to hazard and experience more than to the sciences. For the sciences which we now possess are nothing other than certain permutations of things discovered before, not means of discovering or specifications for new works." – "But the root cause of practically all the evils in the sciences is but one thing: that while we mistakenly admire and magnify the powers of the human mind, we fail to seek out true helps for it" (Francis Bacon, *The Instauration Magna Part II: Novum Organum and Associated Texts*, cit., p. 67).

this view is arrived at through a process of reasoned investigation which, though error-ridden and scientifically invalid by modern standards, anticipates both the spirit and practice of modern science. His conclusions may be fraught with ‘medieval’ superstitiousness, but the means to them point surely in the direction of Robert Boyle, the Royal Society, and, ultimately, the twentieth century.<sup>294</sup>

Bacon established new issues and values, methods (the method of *induction*) and theories which are still nowadays shared by most of the scientific community. Moreover, by placing at the core of his philosophy man, nature and the relationship between the two of them, he successfully established a useful concept of science and the endlessness of the scientific research. According to Bacon’s opinion, scientific research was merely aimed at providing an opportunity of social progress to mankind leading, thus, to a diffused welfare. Scientific issues and values were conceived of as defining the scientific method itself, for a moral method had to answer a higher purpose – actually, this higher purpose was interpreted by Bacon as the fulfilment of Biblical prophecy. The frontispiece of the first edition of his *Instauratio Magna* (1620) is the emblem of Bacon’s belief that the quickening of human knowledge, which he was experiencing (i.e. the dawning of the forthcoming scientific revolution), represented that increase in human knowledge foreshadowed by the biblical admonition in *Daniel 12: 4*: “Many shall run to and fro, and knowledge shall increase.” The representation of ships trespassing the Pillars of Hercules, along with its related epigram “*Multi pertransibunt et augebitur scientia,*” does anticipate in time Newton’s millenarianism which was, all the same, grounded on the assumption that the development of human knowledge would

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<sup>294</sup> Stanton J. Linden, “Francis Bacon and Alchemy: The Reformation of Vulcan,” in *Journal of the History of Ideas*, cit., p. 560. Cfr. Rossi, *Francesco Bacone*, cit., Premessa, pp. 69-70: “[...] complessità e [...] “contraddizioni” sono senza dubbio presenti nella figura e nell’opera di Bacone e il fatto che si sia potuto vedere in lui il “fondatore della filosofia moderna” e il “tipico prodotto della cultura del Rinascimento”, il “teorico e padre dell’empirismo” e il “razionalista”, il “filosofo dell’età industriale” e l’uomo “imbevuto di cultura magica e di alchimia”, il “distruttore della tradizione scolastica” e il “pensatore medievale tentato da un sogno di modernità” è in fondo una conferma del carattere estremamente composito del suo pensiero.”

lead to the true understanding of the prophecies and to the consequent imminence of  
Doomsday:

ffor it was revealed to Daniel that the prophecies concerning the last times should be closed up & sealed untill the time of the end: but then the wise should understand, & knowledg should be increased. Dan 12.4, 9, 10. And therefore the longer they have continued in obscurity, the more hopes there is that the time is at hand in which they are to be made manifest.<sup>295</sup>

This belief was also echoed by Bacon's explanation of the purposes of the *Solomon's house* as they are referred to in his *New Atlantis*: "The end of our foundation is the knowledge of causes, and secret motions of things; and the enlarging of the bounds of human empire, to the effecting of all things possible."<sup>296</sup>

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<sup>295</sup> Yahuda MS. 1.1, f. <1r>.

<sup>296</sup> Francis Bacon, *New Atlantis*, in *Francis Bacon, selected and edited by Arthur Johnston*, London, B. T. Batsford Ltd., 1965, p. 174. Cfr. Stephen D. Snobelen, "'The True Frame of Nature': Isaac Newton, Heresy and the Reformation of Natural Philosophy," in John Brooke and Ian Maclean (eds.), *Heterodoxy in Early Modern Science and Religion*, Oxford, Oxford University Press, 2005, pp. 223-262, on p. 229: "'Another dynamic, that of millenarian aspirations, is evinced in the well-known frontispiece of Francis Bacon's *Instauratio magna*, which depicts ships of learning transgressing the limits of human knowledge represented by the Pillars of Hercules. The epigram on this frontispiece, '*Multi pertransibunt et augebitur scientia*' ('Many shall run to and fro, and knowledge shall increase'), reflects Bacon's conviction that the quickening of knowledge we now call the Scientific Revolution was a fulfilment of biblical prophecy.'" Snobelen's essay will be henceforth referred to as Snobelen, "The True Frame of Nature;" main edition referred to as Brooke and Maclean (eds.), *Heterodoxy*.



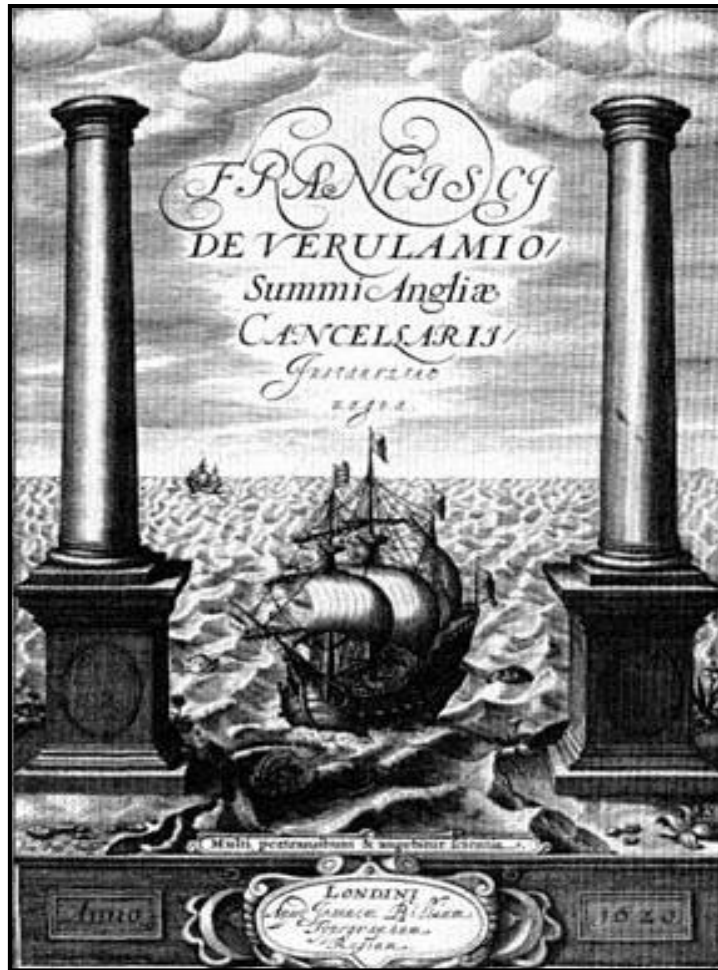


Figure 10. Ships trespassing the Pillars of Hercules.  
 Frontispiece of the first edition of Francis Bacon's *Instauratio Magna* (1620),  
 reproduced from Francis Bacon, *Novum Organum, With Other Great Parts of The Great  
 Instauration*, translated and edited by Peter Urbach and John Gibson, Chicago and La Salle,  
 Illinois, Open Court, 1994.

Francis Bacon proposed a detailed program for scientific development along with an embryonic idea for a national scientific association; he dealt with the relationship between religion and scientific knowledge and with the relation between politics and science, succeeding so in creating a complete matrix for the social consequences and implications of science. By highlighting a strong relation between science and politics, he outlined a reversed social matter of science which should have been, according to Bacon's theory thereof, the definitive propulsion to improve human's welfare. This social revolution was supposed to be staged with the contribution of an

organized community of scientists paid and financed by the sovereign or by public cultural and social associations able to reform society from its inside. Although Bacon thought that the improving of society had indeed to be the result of the progressive development of science, science and politics had better to be tightly separated for nothing, not even politics, had to control or bias mankind's scientific development. Politics had to be just the promoter of scientific research, without giving rise to any conditioning, leaving science, this way, free to find its own autonomous way of enhancement. The independence of science from political conditioning is one of Bacon's greatest contributions to the modern idea of science: the greatness of his conclusions is rendered to us by the fact that such an innovative yearned-for project has not yet been fulfilled.

The investigation about the relation, and the mutual exchanges, between religion and scientific knowledge led Bacon to hypothesise a scientific world, basically grounded on ethical values, with which a moral renewal could be set up. Nevertheless, it must be remarked how Bacon's scientific system has nothing to do with our contemporary secular concept of science: the rationality of his philosophy served, as a matter of fact, to a knowledge of moral progress. Most of all, it remains definitely undisputed how Bacon's most ambitious purpose was that of making his projects come alive into English contemporary society. Bacon's first attempt at describing his ideas about the deficiencies of current science can be found in his *Gesta Grayorum* (1594) where he set forth a cultural reform based on the development of a series of cultural and scientific associations which had to serve the public interest. Bacon's speech was a direct request to Elizabeth I about the creation of four great institutions: an extreme well-stocked library, full of ancient and modern books, a vast botanical and a big zoological garden which had to stock all the known varieties of plants and animals and a laboratory furnished with furnaces, instruments and alembics, useful to scientific

research. According to Bacon's opinion, every single step towards scientific progress had to be followed by improvements made within the cultural associations of the reign, within its schools and universities and within its circles of sages. Unfortunately, despite all his efforts, he did never succeed in realizing this project of his. His need for a new approach led Bacon to another programme of scientific development for the establishment of a new cultural course in England, addressed to James I, and published in 1605 under the title *The Two Books of Francis Bacon, of the Proficiencie and the Advancement of Learning, Divine and Human*. In the *Advancement of Learning* – a sober outline of the most obscure areas of knowledge in the English seventeenth century scientific background, – after a first preliminary beg for royal patronage, Bacon suddenly turned to the subject of his true interest: the appraisal of current knowledge in all fields and the steps that must be taken to best improve it. Among his foremost proposals, he sketched out a reform of the most important and representative English contemporary cultural associations and institutions (universities, schools, laboratories, libraries) besides the institution of new scientific organisations. Eager to criticise schoolmen, Bacon still aimed at avoiding any tendency towards anti-intellectualism, and was therefore careful to balance praise and blame, praise for learning rightly pursued, blame for the methods of his contemporary world. He just found it easy to show how the benefits of learning – a source of power, delight and usefulness to man, – rightly pursued, could improve the mind, ennoble the citizen and the state, and strengthen man's character. Indeed learning appeared to him none of those things, but simply because it was subject to abuse, pedantry, excessive reliance on authority, mysticism, ignorance, limitation of range, the pitfalls of human mind and, most of all, an overrated self-esteem of its practitioners.

*The Advancement of Learning* also comprises Bacon's vastest and most coherent exposition of his theory of communication in which he tried to review all branches of

human knowledge in order to identify those that were sound and to mark the deficient ones for improvement. Bacon distrusted ornament and was actually convinced that plain prose was the most suitable technique for scientific discourse; as a result, scientific and technical writings have typically come to refer to a distinctive prose style, most often, plain prose. Thus Bacon came alike to censure the alchemical style and helped to determine the distinction between the obscure, secretive strategies of communication typical of occult knowledge and the plain, open style which we nowadays recognise as being a distinguishable tract proper to the scientific prose. The core of Bacon's theory of communication is his criticism against those who "hunt more after words than matter" – the appealing against those contemporary followers of Cicero whose *decorum* exceeded their meanings:

So that these four cases concurring, the admiration of ancient authors, the hate of the schoolmen, the exact study of languages, and the efficacy of preaching, did bring in an affectionate study of eloquence and copie of speech, which then began to flourish. This grew speedily to an excess; for men began to hunt more after words than matter; and more after the choiceness of the phrase, and the round and clean composition of the sentence, and the sweet falling of the clauses, and the varying and illustration of their works with tropes and figures, than after the weight of matter, worth of subject, soundness of argument, life of invention, or depth of judgement.<sup>297</sup>

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<sup>297</sup> Francis Bacon, *Francis Bacon*, edited by Brian Vickers, Oxford-New York, Oxford University Press, 1996, p. 139. Cfr. James Stephens, *Francis Bacon and the Style of Science*, Chicago, University of Chicago Press, 1975, pp. 16-17: "Bacon begins his career as a philosopher with an attack on the Ciceronians of his time. The fine old art of the classical rhetoricians, men with admirable if outdated cultural ideals ad great learning, had been reduced by the Renaissance stylists to a theory of ornamentation. The new rhetoric of adornment ignored the knowledge to be delivered and turned the language into a tool for trickery in the marketplace and pedantic specializing in the classroom. It left the man who had new things to say without a reliable modern guide to the art of expression. Bacon's memorable summary of the abuses of Ciceronianism and Euphuism is one key to the rhetoric which he would propose." In his *The History of the Royal Society of London, for the Improving of Natural Knowledge* (1667), Thomas Sprat explained that the members of the Royal Society had been rigorous in their rejection of "all the amplifications, digressions, and swellings of style," and that he himself will create "fairer, and more moving Images: to represent *Truth*, cloth'd with Bodies; and to bring *Knowledge* back again to our very senses, from whence it was first deriv'd to our understandings" (Thomas Sprat, *History of the Royal Society*, edited with critical apparatus by Jackson I. Cope and Harold Whitmore Jones, St. Louis, Washington University Press, 1966, p. 112). Within the seventeenth century debate over the reform of the educational system in England, Samuel Hartlib's interest in the reformation of language teaching occupied a focal position. Hartlib was chiefly committed to the development in the teaching of

Further in his *Advancement of Learning*, Bacon came even to bash the Renaissance theory of *macrocosm* and *microcosm*, which laid at the basis of the Hermetic theory of the harmony of the world:

the ancient opinion that man was Microcosmus, an abstract or model of the world, hath been fantastically strained by Paracelsus and the alchemists, as if there were to be found in man's body certain correspondences and parallels, which should have respect to all varieties of things, as stars, planets, minerals, which are extant in greater world."<sup>298</sup>

Even though man was still firmly placed at the centre of Baconian philosophy, for he was "the servant and interpreter of nature," his major task was not that of subjecting nature to his will, but that of understanding that the strengthening of his means came through his adaptation to it: "Man, the servant and interpreter of nature, does and understands only as much as he has observed, by fact or mental activity, concerning the order of nature; beyond that he has neither knowledge nor power."<sup>299</sup> According to Bacon's opinion, being an interpreter and minister of nature meant to take it under true control, using only practice and mind, thus avoiding magical means to penetrate nature by using senses and mysticism. Nevertheless, Baconian philosophical system clearly appears much indebted to past irrational doctrines since the age he lived in remarkably defined the edge between yore and modern times. Therefore, as plainly argued by Paolo Rossi: "l'ideale baconiano della scienza era nato su un terreno ambiguo e difficile: di accettazione e di rifiuto delle filosofie naturalistiche e della tradizione e

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Latin which he regarded as fundamental to give a more balanced distribution of teachings in the grammar schools. On this subject see especially Charles Webster, *Samuel Hartlib and The Advancement of Learning*, Cambridge, Cambridge University Press, 1970, Introduction, pp. 11-21, hereinafter referred to as Webster, *Hartlib*: "Language-learning was conceived as an immediate aid to an ordered scientific understanding of nature (*Ibid.*, p. 20).

<sup>298</sup> Francis Bacon, *Francis Bacon*, edited by Brian Vickers, cit., p. 208.

<sup>299</sup> *Novum Organum*, I, 1, in Francis Bacon, *The Instauration Magna Part II: Novum Organum and Associated Texts*, cit., p. 65.

delle tecniche proprie della magia e dell'alchimia.”<sup>300</sup> What had to be analysed – nature – and its analyser – man – became thus the centre of Bacon’s scholarship, characterized and enriched with new meanings: he truly believed to have uncovered a new method that would make possible the knowledge of, and the power over, nature. Conversely, Bacon’s aim at discarding idolatrous mystifying past philosophies was replaced by an overlapping in goals between his new science and Hermeticism. As a matter of fact, the social catalytic role that the Hermetic tradition had been having for hundreds of years in the European culture ended up to be the same that scientific knowledge would have had from then on: new matters fulfilled old requirements, for man had always had the need for creating fake idols.

Beginning with his *Advancement of Learning* (1605) and then eventually developed into the Latin *De dignitate et augmentis scientiarum* (1623), Bacon set out a vision of a cooperative, disciplined effort to reform knowledge and fully managed to harness the power of nature. Later in 1620, his methodological precepts were soundly spelled out in the *Novum Organum* where he described the resulting benefits he expected if his method was effectively to be carried out. A major part of the *New Organum* was thus devoted to sketch out a systematic process of knowledge by which one could cautiously move first from particulars to a modest level of generality and then by stages to higher levels, until eventually one reached the most comprehensive

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<sup>300</sup> Rossi (ed.), *Scritti filosofici*, cit., Introduzione, p. 11. Cfr. Linden, *Darke Hieroglyphicks*, cit., p. 105: [Bacon has been] the first English writer to give alchemy an impartial hearing through careful consideration of its physical and metaphysical foundations; yet at the same time he was keenly interested in its practical aspects and potential benefits to mankind. For a deep enquiry into the relationship between Bacon and the occult, the following secondary sources are of great interest and value: Joshua C. Gregory, “Chemistry and Alchemy in the Natural Philosophy of Sir Francis Bacon, 1561-1626,” in *Ambix*, Vol. 2 (1938), pp. 93-111; Harold Fisch, “Bacon and Paracelsus,” in *Cambridge Journal*, 5 (1952), pp. 752-758; Rossi, *Francis Bacon*, cit.; Lynn Thorndike, “The Attitude of Francis Bacon and Descartes Towards Magic and Occult Science,” in E. Ashworth Underwood (ed.), *Science, Medicine and History: Essays on the Evolution of Scientific Thought and Medical Practice Written in Honour of Charles Singer*, Oxford, Oxford University Press, 1953, pp. 451-454; Muriel West, “Notes on the Importance of Alchemy to Modern Science in the Writings of Francis Bacon and Robert Boyle,” in *Ambix*, Vol. 9 (1961), pp. 102-114; Virgil K. Whitaker, *Francis Bacon’s Intellectual Milieu*, Los Angeles, University of California Press, 1962.

generalizations of them all. As explained by the fifth introductory aphorism<sup>301</sup> of the *Novum Organum*, Bacon acknowledged that “operative” studies presently conducted by mechanics, mathematicians, physicists, alchemists, and magicians alike had met with “scant success” as a result of poor experimental methods. Thus, the Baconian tradition emphasised induction through observation, which was directed towards naturally occurring phenomena; however, an even higher premium was placed on the contrivance of experiments, for “nature’s secrets betray themselves more through the vexations of art than when they do in their usual course.”<sup>302</sup> Bacon actually distinguished between assertions and proofs, on the one hand, and questions and answers, on the other. The latter method, Bacon hypothesised, was prejudicial to learning, for it might engender “disputations and doubts.” Accordingly, sciences ought better to proceed by direct statements and the presentations of recorded data: in like manner, the use of confutation in the communication of scientific knowledge should be sparing.

Furthermore, Bacon’s removal from his working position, due to a charge of corruption in 1621, seemingly closed for good his chances of carrying out his theories in contemporary society. The closedown of his political career ended up to be decisive for the failure of his purpose of establishing new effective cultural paths. However, it did not determine the complete drop-out of his task of describing the best possible society ruled by science. Bacon’s utopian vision of the *New Atlantis* (posthumously published in 1627) was his extreme attempt to persuade the sovereign to accept his proposals for a

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<sup>301</sup> *Novum Organum*, I, 5, in Francis Bacon, *The Instauration Magna Part II: Novum Organum and Associated Texts*, cit., p. 67: “As far as works are concerned, the mechanic, mathematician, physician, alchemist, and magician are all used to getting involved with nature, but all (as things stand at the moment) with ineffectual effort and scant success.”

<sup>302</sup> *Novum Organum*, I, 98, in Francis Bacon, *The Instauration Magna Part II: Novum Organum and Associated Texts*, cit., pp. 155-157: “[...] For we find nothing in natural history duly examined, verified, counted, weighed and measured. But loose and vague observation yields unreliable and untrustworthy information. [...] For just as in affairs of state we see a man’s mettle and the secret sense of his soul and affections better when he is under pressure than at other times, so nature’s secrets betray themselves more through the vexations of art than when they do in their usual course. So we should have good hopes of natural philosophy once natural history (which is its basis and foundation) has been better organised, but none at all before.”

new England. This time he exposed his projects beginning not from what should be done to establish the new scientific civilisation, but from the description of the perfect land of Bensalem, “the very eye of this kingdom,”<sup>303</sup> in which everything about mankind’s progress was already accomplished. The scientific character of Bacon’s utopia is glaringly obvious: as a matter of fact Bensalem, a society aimed at achieving Bacon’s longed-for social renewal, was “dominated by scientists, guided by science, and dependent on science for the millennia of progress which it is alleged to have experienced.”<sup>304</sup> What actually distinguishes Bacon’s work from other classical political utopias is its peculiar scientific character and its binding together utopian and methodological issues. As Howard B. White noticed: “[...] there were two societies in Bacon: the society in which science would rule and the society which was needed for men to construct the society in which science would rule.”<sup>305</sup> This second case was Bacon’s biggest failure, for – as previously hinted at – he never succeeded in making England a nation able to host a new scientific *instauratio magna*. Otherwise, he did come off the fictional creation of the perfect society ruled by, and sired to, science: it was the *New Atlantis*, his greatest project and his “own answer to the ancient quest for the best political order.”<sup>306</sup> Moreover, *Solomon’s house* – “the noblest foundation [...] that ever was upon the earth; and the lantern of this kingdom” – was the total sum of a long series of influences from the Holy Bible, passing through the medieval magic tradition and the Renaissance re-reading of classical literature and philosophy. “Dedicated to the study of the works and creatures of God,”<sup>307</sup> it was the symbol of the fruitful collaboration between the members of Bensalem’s scientific community and therefore the symbol of all Baconian philosophy.

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<sup>303</sup> Francis Bacon, *New Atlantis*, in *Francis Bacon, selected and edited by Arthur Johnston*, cit., p. 165.

<sup>304</sup> White, *Peace Among the Willows*, cit., p. 105.

<sup>305</sup> *Ibid.*, p. 12.

<sup>306</sup> *Ibid.*, p. 102.

<sup>307</sup> Two last quotations from Francis Bacon, *New Atlantis*, in *Francis Bacon, selected and edited by Arthur Johnston*, cit., p. 171.



The geographical isolation of the island of Bensalem was due to a Flood which raged on that land for a long, long time producing the death of most animals and people who slowly began to re-populate the continent after the end of the cataclysm. Actually, the Flood which Bacon refers to, is not the Biblical Flood of Noah but a second Flood: past influences acquired new meanings and began to shape new forms. The undisputable Biblical character of the *New Atlantis* is marked by the pervasive sound of the Biblical Flood which echoes throughout the whole book and by the evocative name of the Biblical king Solomon attached to the greatest king of the isle and to the name of its most important institution. Another glaring Jewish influence relies in the meaning of the name of the isle used by the islanders themselves – Bensalem, – which in Hebrew means ‘perfect son.’ The story of the isle is in fact a proper utopia which speaks about the inheritor of the mythical Jerusalem thus allowing the identification of Bensalem with the New Jerusalem of the Biblical prophecies.<sup>308</sup> Nevertheless, the greatest influence undergone by the *New Atlantis* seems to have been that of magic tradition and, since Bacon would not have directly hinted at magic clues himself, one must read in between the lines<sup>309</sup> to guess them out. As a matter of fact, according to Robert M. Schuler, “The Rosicrucian movement was a formidable religious, political, and educational force in seventeenth-century Europe, touching, in England, major figures like Elias Ashmole and Isaac Newton, as well as countless lesser ones; moreover,

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<sup>308</sup> See White, *Peace Among the Willows*, cit., p. 135.

<sup>309</sup> Cfr. Stanton J. Linden, “Francis Bacon and Alchemy: The Reformation of Vulcan,” in *Journal of the History of Ideas*, cit., p. 549: “Not content to rely on the stereotyped portrayals of alchemy and alchemists in literature – though undoubtedly aware of them – Bacon is notable for his rationalistic thoroughness and objectivity in treating the subject. From a study of the many references to alchemy scattered throughout his works there emerges a new complexity and ambiguity of attitude: in regard to alchemy he is scarcely the *buccinator novi temporis* any more than he is a sympathizer with “medieval” superstitiousness. We can arrive at his final assessment of the art only by placing his references to it within the context of his views on the relationship between the divisions of the human mind and their corresponding disciplines, his views on experimentation, on reliance on authority, the composition of all bodies, and the operations of nature.”

alchemy was an inherent part of Rosicrucianism.”<sup>310</sup> Among those figures, we can also number Francis Bacon.

Though no real proof<sup>311</sup> of the existence of that secret society survived, the legendary mysterious Rosicrucian sect, seemingly originated in a German Lutheran milieu, wanted to deepen the study of esoteric alchemy and its religious significance as postulated by Martin Luther. Interestingly enough, in the following passage, Luther associated the ultimate aim of the *Art* to that of Biblical eschatological exegesis:

I very much like the science of alchemy which is, indeed, the philosophy of the ancients. I like it not only because, by melting metals, and decocting, preparing, extracting, and distilling herb and roots, it produces profits; but also because of its allegorical and secret meaning. This is quite excellent and touches upon the resurrection of the dead at the Last Day. For, just as in a furnace the fire extracts and separates the various parts of a substance, and carries upwards its spirit, life, sap and strength, leaving behind at the bottom the unclean matter, the dregs, like a dead, worthless corpse; so God, at the day of Judgment, will separate everything with fire, the righteous from the unrighteous. The Christians, the righteous, will ascend to Heaven, where they will enjoy everlasting life; but the wicked and the unrighteous, like dross and dirt, will remain in Hell, and there they will be damned.<sup>312</sup>

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<sup>310</sup> Robert M. Schuler, “Some Spiritual Alchemies of Seventeenth-Century England,” in *Journal of the History of Ideas*, cit., p. 294. The outstanding importance of the role played by the Rosicrucian movement in the shaping of Newton’s alchemical mind will be later further investigated. The crucial figure in the spreading of the Rosicrucian doctrine in England is embodied by Thomas Vaughan, the supposed translator of the Rosicrucian manifestos. See White, *Peace Among the Willows*, cit., p. 135.

<sup>311</sup> Curiously enough, in his ‘Introduction’ to the Italian edition of Arnold’s *Histoire Des Rose-Croix*, Umberto Eco remarks that: “non solo non esistono prove storiche dell’esistenza dei Rosa-Croce, ma per definizione non possono esistere.” He then argues that: “Al massimo si può usare l’assenza di prove come l’unica prova evidente” (Umberto Eco, “Arnold e i Rosa-Croce,” Introduction, in Arnold, *Rosa-Croce*, cit., pp. 5-14, on p. 7 and note 3 on the same page).

<sup>312</sup> Martin Luther, *Tischreden oder Colloquia*, (published 1556), quoted in P. G. Maxwell-Stuart (ed.), *The Occult in Early Modern Europe. A Documentary History*, Basingstoke, Macmillan, 1999, p. 202. Cfr. Linden, *Darke Hieroglyphicks*, cit., p. 192.

The publications<sup>313</sup> of the *Fama Fraternitatis Rosae Crucis* (1614), the *Confessio Fraternitatis* (1615) and the *Chymical Wedding of Christian Rosenkreutz* (1616) brought about great excitement throughout Europe by declaring the existence of a secret society of alchemists and sages who wanted to transform and to improve the fields of science, religion and politics – the *Fraternity of the Rose Cross*. The Rosicrucians were used to practice the techniques of alchemy, as their publications let us guess, and hints at occult and mystical philosophies are scattered throughout all their works. The debate among scholars about the birth of the Rosicrucian movement reached its intellectual peak with the studies<sup>314</sup> of Frances A. Yates and Paul Arnold. Of great interest for their employment as critical sources within the horizon of my Newtonian alchemical/millennaristic criticism, the philological criticisms of Arnold's *Histoire des Rose-Croix* (1955) and of Yates' *Rosicrucian Enlightenment* (1972) are opposed to each other both in terms of premises and final conclusions about the nature of the mysterious sect. Frances Yates' research is mainly focused on establishing direct connections between the Rosicrucian manifestos and the revolutionary Bohemian movements of the

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<sup>313</sup> Though already circulating in the form of manuscripts across Europe from 1610, the *Fama Fraternitatis Rosae Crucis* was published at Kassel only in 1614. It constituted actually the second part of the manifesto whose first part was the German translation of chapter 77 of Traiano Boccalini's *Ragguagli di Parnaso* entitled "by order from Apollo, a general Reformation of the World is published by the Seven Wise Men of Greece, and by other Literati." It is the Rosicrucian manifesto in which the alchemical doctrine of the *elixir* becomes fused with the utopian vision of a global reform of the European society. The *Confessio Fraternitatis* was published at Kassel while the *Chymical Wedding of Christian Rosenkreutz* was published at Strasbourg. Johann Valentin Andreae is allegedly recognized as the author of these Rosicrucian publications. Besides his autobiography (Johann Valentin Andreae, *Autobiographie*, bearbeitet von Frank Böhling; übersetzt von Beate Hintzen, Stuttgart-Bad Cannstatt, Frommann-Holzboog, 2012), a reliable account of Andreae's life could be found under the related entry in Wouter J. Hanegraaff (ed.), *Dictionary of Gnosis & Western Esotericism*, 2 vols., cit., I, pp. 72-75; other valuable criticisms on Andreae's life and philosophy are: Paul Arnold, *Storia dei Rosa-Croce*, traduzione di Giuseppina Bonerba, Milano, Bompiani, 2003<sup>6</sup>, pp. 31-90, hereinafter referred to as Arnold, *Rosa-Croce*; John Warwick Montgomery, *Cross and Crucible: Johann Valentin Andreae (1586-1614)*, *Phoenix of the Theologians*, 2 vols., The Hague, M. Nijhoff, 1973. My referring editions of Rosicrucian works are: Johann Valentin Andreae, *Christianopolis*, introduced and translated by Edward H. Thompson, Dordrecht-Boston-London, Kluwer Academic Publishers, 1999; Johann Valentin Andreae, *Le nozze chimiche di Christian Rosenkreutz*, edited by Elsa Aichner, Milano, SE, 1997; Johann Valentin Andreae, *Rosenkreuzerschriften*, bearbeitet, übersetzt, kommentiert und eingeleitet von Roland Edighoffer, Stuttgart-Bad Cannstatt, Frommann-Holzboog, 2010.

<sup>314</sup> My referring editions of these works are: Arnold, *Rosa-Croce*, cit.; Frances A. Yates, *The Rosicrucian Enlightenment*, London and Boston, Routledge & Kegan Paul, 1972, henceforth referred to as Yates, *Enlightenment*.

Thirty Years' War. Moreover, she actually tried to prove the entire Rosicrucian phenomenon to be a direct offshoot of John Dee's influence over the development of late-Renaissance European mystic conscience besides taking into considerable account Michael Maier's and Robert Fludd's alchemical scholarships. Her research ranged then from the cultural environment of Rudolph II's royal court in Prague to the royal wedding in 1613 of Princess Elizabeth, daughter of James I of England, with Frederick V, Elector Palatine of the Rhine, up to the secrets of the English 'Most Noble Order of the Garter.' Considerably apart in tone and argumentations from Yates' study, Arnold's survey on the breadth of the Rosicrucian myth sifts the common roots between medieval and Renaissance mystical philosophies suggesting that the whole Rosicrucian worldview could be read as a compendium of ancient doctrines. Accordingly, he emphasised the role of Campanella, Joachim of Fiore, and Paracelsus in the establishing of a literary eschatological tradition which the Rosicrucian manifestos would belong to as well. Those texts did revive a whole series of soteriological and eschatological theories, of apocalyptic prophecies and esoteric doctrines throughout ecstatic experiences bound to the hope for a forthcoming *parousia*. Needless to say, I think it more plausible that if Newton showed some sort of interest<sup>315</sup> for the Rosicrucians' alchemical theosophy, as he allegedly did, this must have happened within the framework of their millenaristic views as far as they were shared by the members of the Hartlib circle whom Newton was quite in a close contact with.

Translated into English for the first time<sup>316</sup> by Ezekiel Foxcroft, a Fellow of King's College at Cambridge, the *Chymical Wedding of Christian Rosenkreutz* is doubtlessly the Rosicrucian publication which Bacon is more related and indebted to.

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<sup>315</sup> The discourse about Newton's commitment to Rosicrucian alchemical theosophy will be further developed in chapter II, paragraph 2.5.

<sup>316</sup> 'Eugenius Philalethes' was the pseudonym adopted by Thomas Vaughan (1621/2 - 1666) – twin brother of the Hermetic poet Henry Vaughan and cousin of John Aubrey, grandson of Dr. William Aubrey – in his turn John Dee's cousin. He has doubtlessly played a key role in the enhancement of seventeenth-century English alchemical conscience.

The protagonist of Andreae's allegorical short treatise, Christian Rosenkreutz – as an authentic alchemist, – got along the way of the exploration of supernatural forces ruling over the sensible world which are, however, subdued to overarching laws governing the natural phenomena originated by those invisible powers revealing themselves in nature. Although Bacon did never directly touch upon the *Fraternity of the Rose Cross*,<sup>317</sup> his acquaintance with the elusive society clearly emerges in the *New Atlantis* by some crossed references<sup>318</sup> which can be irrefutably related to Rosenkreutz's *Chymical Wedding*. As a matter of fact, sundry images and stereotyped allegories and symbols, scattered spuriously throughout Bacon's work, reveal a tight relationship with the Rosicrucian imagery as it is depicted in the *Chymical Wedding*. Those symbols in the *New Atlantis* I am referring to are namely: the name of the king of the isle – Solomon, – besides the allegorical images, steeped in the mystical symbolism of the Jewish Kabala, of the crux, the arch, and the columns. The scientific character and, most of all, the tone of relief with which Bacon describes the *College of Six Days' Works* do effectively resound the ultimate aims of the *Fraternity of the Rose Cross*. Yet even if I do not agree with Frances A. Yates when she affirms that the *New Atlantis* is ruled by the Rosicrucians,<sup>319</sup> it is impossible to deny the correspondences between the purposes of Bensalem's scientific research and the *magisterium*-in-progress of Andreae's dreamlike alchemical castle. Moreover, we must highlight how important the religious issue is

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<sup>317</sup> Cfr. Yates, *Enlightenment*, cit., p. 127.

<sup>318</sup> One most important crossed reference is the biblical recall of the cherubim's spread wings in Exsodus 25: 20. Through the mediation of the Rosicrucian formula "Sub umbra alarum tuarum Iehova" (*Fama Fraternitatis* in Yates, *Enlightenment*, cit., p. 251), Bacon does portray a similar image: "This scroll was signed with a stamp of cherubim's wings, not spread, but hanging downwards; and by them a cross." Furthermore, just as Christian Rosenkreutz in his *Chymical Wedding* is described as wearing a "white linen clothing" embellished with "a bloody-red ribbon" and with a "hat with four red roses" on his head (Andreae, *Nozze chimiche*, cit., p. 18; my translations), so in the *New Atlantis* a man wears a turban which "was white with a small red cross on the top. He had also a tippet of fine linen" (all quotations referred to the *New Atlantis* are from Francis Bacon, *New Atlantis*, in *Francis Bacon, selected and edited by Arthur Johnston*, cit., p. 162 and p. 164). Thus, the typical and characteristic colours of the Rosicrucian fraternity – the white and the red – seems to play the same key role within the *New Atlantis* because they were chosen by Bacon to characterise, and thence determine, the most important personalities of the isle (Cfr. Yates, *Enlightenment*, cit., p. 126).

<sup>319</sup> See Yates, *Enlightenment*, cit., pp. 125-129.

within the critical framework of both works. The religion of the *New Atlantis* shares much with the pious Christianity proper to the Rosicrucian publications since they both strongly emphasize the benevolent and useful character of the activities which had to accompany religious practice. Although many are the resemblances between Baconian and Rosicrucian theosophical worldviews, it is also glaring, at the same rate, how they distinguish themselves on the level of their relationship with Hermeticism: Bacon rejected the secrecy and the extreme symbolism of the magic tradition, proposing instead a soberer philosophy, whereas Rosicrucianism fixed its own attention on mystery and secrecy. The utopian thought was the logical conclusion of Rosicrucian philosophy. Johann Valentin Andreae's *Reipublicæ Christianopolitanæ Descriptio* (1619)<sup>320</sup> set out the application of the Rosicrucian ideals to the model of a utopian city where scientific commitment was felt like a religious vocation and craftsmen were all wise men devoted to the study of natural sciences, alchemy, math and medicine. Notwithstanding the previously mentioned influences, the most interesting parallelism that could be drawn between the Rosicrucian sphere of influence and Bacon's philosophical production is the comparison between Andreae's utopian work – *Christianopolis* (1619), – and Bacon's *New Atlantis*. *Christianopolis* and the *New Atlantis* shared much of their content: both isles, whereon the utopian civilities get discovered, are found after a shipwreck; the societies described in both works are dominated by science and at their core stands a scientific association; religion with its charitable and welfare-oriented character represents the real social glue. It seems therefore clear how Bacon and the exponents of Rosicrucianism came to the same solution: a utopian dream was the only possible resolution of their projects.

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<sup>320</sup> Published at Strasbourg, *Reipublicæ Christianopolitanæ Descriptio* is the book which shows the influence of Campanella's *Civitas Solis* on the Rosicrucian thought. It must be highlighted that Andreae also published German translations of some of Campanella's poems.

The success gained by the *New Atlantis* is of a twofold nature: the fortune it had among critics and modern philosophers and the role it entailed in the development of the first English scientific association – the *Royal Society*. Bacon’s project was resumed by the founders of the royal association and made live in their own new program for the establishment of modern science as recorded by Thomas Sprat in his *History of the Royal Society*. He actually underlined how the aims of the Society were those of overtaking the past and erasing the mistakes of the ancients, undertaking brand-new paths of scientific research, and understanding the true meaning of nature to better man’s life conditions – all themes closely familiar to Baconian philosophy. According to Eleanor Dickinson Blodgett, Bacon’s contribution to the founding of the Royal Society has not only been “nominal,” for he provided the hypothetical example – *Salomon’s House* in his *New Atlantis* – which the members of the Invisible College may have referred to as model for their royal institution:

by 1608 [Bacon] had perceived the importance to science of cooperation in research, had seen the suitability of a collegiate organization as an agency for carrying on scientific investigation, and had jotted down specific details of plans, problems, and equipment which show that his mind was occupied with the practical aspects of his ideal. Although the opportunity to establish a college of research in an English university never came to Bacon, the concept of such an institution persisted until it became the soul of his Utopia-Salomon’s House, or the College of the Six Days’ Work, credited with having inspired the founding of the Royal Society.<sup>321</sup>

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<sup>321</sup> Eleanor Dickinson Blodgett, “Bacon’s New Atlantis and Campanella’s Civitas Solis: A Study in Relationships,” in *PMLA*, Vol. 46, No. 3 (Sep., 1931), pp. 763-780, stable URL: <http://www.jstor.org/stable/457860>, pp. 763-764. Cfr. William T. Lynch, *Solomon’s Child. Method in the Early Royal Society of London*, Stanford, Stanford University Press, 2001, p. 21: “[...] Baconianism served as a convenient public image for the Royal Society, glossing over internal methodological disagreements. In short, the Royal Society’s Baconianism is constructed as more nominal than real. I argue that this approach misses an opportunity to explore just how shared “nominal” commitments may shape “real” practice.” Moreover, in her study on the influence of Campanella’s *Civitas Solis* on the *New Atlantis*, Blodgett remarks the indirect link between the foundation of the Royal Society and the Italian monk-philosopher: “That this affinity exists is obvious. If, indeed, the connection between the two is not a conscious one, the coincidence of time, theme, and treatment testifies to the wide currency of the idea of a scientific basis for knowledge in the seventeenth century, and shows how inevitable empiricism was as an outgrowth of Renaissance thinking. On the other hand, if Campanella’s *Civitas Solis* actually provided Bacon with the immediate incentive to lay aside temporarily his work on the *Instauratio Magna* and to set

James P. Zappen argues that “there is no direct evidence that the founders of the Royal Society were closely familiar with *The Advancement of Learning*”<sup>322</sup> though we can allegedly agree that they held Bacon, and his philosophy, in great respect as remarked by Thomas Sprat:

From these and all long Errors of the way,  
In which our wandring Prædecessors went,  
And like th’old Hebrews many years did stray  
In Desarts but of small extent,  
Bacon, like Moses, led us forth at last,  
The barren Wildernss he past,  
Did on the very Border stand  
Of the blest promis’d Land, [...]<sup>323</sup>

Scholars have always largely agreed that the Royal Society of London has been a fundamental institution in the development of modern science which it actually helped determine. From around 1645, a group of natural philosophers including Robert Boyle, William Petty, John Evelyn, Sir Robert Moray, and Christopher Wren began meeting and corresponding with the purpose of discussing natural philosophy and advancing technology by sharing Bacon’s most important philosophical principles: “the ethos of the institution cohered around what was determined as the founding methodology of Bacon and the so-called Baconian science.”<sup>324</sup> This group called the Invisible College (also known as “Philosophical College”), “seeking to permanently establish earlier more

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down, in the New Atlantis, his conception of a commonwealth as it ought to be, we may thank the Italian monk for having contributed indirectly to the founding of the Royal Society” (Eleanor Dickinson Blodgett, *Bacon’s New Atlantis and Campanella’s Civitas Solis: A Study in Relationships*, in *PMLA*, cit., p. 780). See also Thomas Sprat, *History of the Royal Society*, cit., Introduction, p. xii: “Joseph Glanvill commented that Lord Bacon’s “Salomon’s House in the NEW ATLANTIS was a Prophetick Scheam of the ROYAL SOCIETY.” Our age has amply documented the assertion. Bacon forecast the triumph of the new empiricism ; legions of propagandists urged his adoption in the universities or in scientific pseudo-monasteries throughout the forties and fifties ; and the Royal Society gave it a focus and a symbol.”

<sup>322</sup> Cfr. James P. Zappen, “Francis Bacon and the Historiography of Scientific Rhetoric,” in *Rhetoric Review*, Vol. 8, No. 1 (Autumn, 1989), pp. 74-88, stable URL: <http://www.jstor.org/stable/465682>, p. 244.

<sup>323</sup> Thomas Sprat, *History of the Royal Society*, cit., *To the Royal Society*, V.

<sup>324</sup> Diana B. Altegoer, *Reckoning Words: Baconian Science and the Construction of Truth in English Renaissance Culture*, Madison, N.J., London, Fairleigh Dickinson University Press, 2000, p. 113.



informal meetings of natural philosophers critical of the still-dominant scholastic philosophy of the universities,<sup>325</sup> would be eventually given royal sanction as the Royal Society by Charles II in 1662.<sup>326</sup> Finally, to best sum up Bacon's outstanding role in the enhancement of human knowledge, I would like to quote Piero Stefani who, in his survey on the Biblical influences on the development of West culture, thus describes Francis Bacon's legacy to the contemporary world:

Nella cultura anglosassone l'influsso di Bacone fu grande, sia per il suo metodo di ricerca basato sull'esperienza e l'induzione, sia per il suo interesse per le applicazioni pratiche delle scoperte, sia, infine, per il suo auspicio di costruire società scientifiche basate sulla collaborazione reciproca dei loro membri. Un'ulteriore sua eredità fu la convinzione che l'aumento del sapere veniva confermato dalle profezie bibliche, tema, quest'ultimo, che non poteva non essere fecondo nella cultura anglosassone in cui la familiarità con le Scritture era diffusa.<sup>327</sup>

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<sup>325</sup> William T. Lynch, *Solomon's Child. Method in the Early Royal Society of London*, Stanford, Stanford University Press, 2001, p. 20.

<sup>326</sup> For an exhaustive survey on the history of the Royal Society see especially: Thomas Birch, *The History of the Royal Society of London*, 4 vols., London 1756-1757; John F. Fulton, "The Rise of the Experimental Method: Bacon and the Royal Society of London," in *Yale Journal of Biology and Medicine* 3 (1931), pp. 299-320; Sir Harold Hartley (ed.), *The Royal Society: Its Origins and Founders*, London, Royal Society, 1960; William T. Lynch, *Solomon's Child. Method in the Early Royal Society of London*, Stanford, Stanford University Press, 2001; *Notes & Records of the Royal Society of London* (<http://rsnr.royalsocietypublishing.org/>); Thomas Sprat, *History of the Royal Society*, cit., Jackson I. Cope and Harold Whitmore Jones, (eds.), Saint Louis, Washington University Studies, 1958; *The Record of the Royal Society of London*, 3<sup>rd</sup> ed., London, Oxford University Press, 1912; *The Record of the Royal Society of London for the Promotion of Natural Knowledge*, 4<sup>th</sup> ed., London, Morrison & Gibb, 1940.

<sup>327</sup> Piero Stefani, *Le Radici Bibliche della Cultura Occidentale*, Milano, Mondadori, 2004, p. 197, henceforth quoted as Stefani, *Radici Bibliche*.

## 2.3 The Pansophic Knowledge of Samuel Hartlib and Jan Comenius

What I have argued about the pansophic character of Newton's knowledge may be fully grasped only in the light of his great forerunners who had first envisaged a reformed system of knowledge in order to revive European intellectual and social dimensions of life. Nonetheless, a very important clarification about Newton's pansophic cipher has to be premised now. What Newton borrowed from other leading personalities of his age was the idea that every single branch of human knowledge could somehow be useful in establishing a new course of culture: "His goal was the knowledge of God, and for achieving that goal he marshalled the evidence from every source available to him: mathematics, experiment, observation, reason, revelation, historical record, myth, the tattered remnants of ancient wisdom."<sup>328</sup> Otherwise, what distinguishes him from the core of "classical" pansophy is that he never sketched out a comprehensive scheme for thorough reform of education and philosophy but he actually substituted this revolution in education with his rules for interpreting the Apocalypse which he absolutely found more useful for men to align themselves with God's plan for mankind taking after<sup>329</sup> one of Samuel Hartlib's early correspondent and Francis Bacon's admirer – Joseph Mede, along with his *Clavis Apocalyptica*.

The Cambridge Platonist Joseph Mede (1586-1638), the "dean' of English Millenarianism,"<sup>330</sup> has been one crucial figure in the shaping of Newton's millenarianism.

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<sup>328</sup> Dobbs, *The Janus Faces of Genius*, cit., p. 7.

<sup>329</sup> See Mamiani (ed.), *Trattato sull'Apocalisse*, cit., Introduzione, pp. XIV. The works of Joseph Mede were first published in 1663-1664 by J. Worthington in two volumes entitled *Works, corrected and enlarged according to the Author's own Manuscripts*. According to Harrison, Newton owned the third edition of these volumes, see Harrison, *Library*, cit., p. 189.

<sup>330</sup> Popkin (ed.), *Millenarianism and Messianism*, cit., Introduction, p. 5. Reference studies on Mede's life and works are: Katherine R. Firth, *The Apocalyptic Tradition in Reformation Britain 1530-1645*, Oxford, Oxford University Press, 1979, chapter VII; Richard H. Popkin, *The Third Force in Seventeenth-century Thought*, cit.

The publication of his *Clavis Apocalyptica* in 1627 (the first English translation appeared only later in 1643), the year after Hartlib's formative period at Cambridge (1625-1626), represented a major source of inspiration for Newton as he himself clears out in Yahuda MS. 1.1, f. <8r>:

It was the judiciously learned & conscientious M<sup>r</sup> Mede who first made way into these interpretations, & him I have for the most part followed. ffor what I found true in him it was not lawful for me to recede from, & I rather wonder that he erred so little then that he erred in some things. His mistakes were chiefly in his Clavis, & had that been perfect, the rest would have fallen in naturally.

Mede's was one first attempt to find an interpretative key to the *Apocalypse* by relating all the events prophesied in *Daniel* and *Revelation* in a synchronic system of correspondences which would allow the identification of contemporary events with those forecasted in the biblical scenario. Moreover, he introduced some non-biblical sources<sup>331</sup> to best understand the social and religious background of Middle Eastern societies as they are narrated in the Bible. As revealed to him by the angel's gloss in *Revelation* 17: 8,<sup>332</sup> Mede recognized that "key to the *Apocalypse*" in a methodized way

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<sup>331</sup> See Popkin, *The Third Force*, cit., pp. 181-182. Popkin emphasises the importance of these non-Biblical sources and recognises the importance of the Arabic writer Achmed in the development of Mede's millenaristic reasoning. Newton considered Joseph Mede's work to be so important within the development of millenaristic knowledge that he thought himself to be the true heir of Mede as he explained in Yahuda MS. 1.1, f. <1r> where he explicitly referred to Achmed: "Now although these interpretations by their analogy with one another & resemblance to the things signified, may seem plain enough, yet that nothing be wanting to establish them, I shall further show their consent with the scriptures, & also with the translation of the Chalde Paraphrast & with the ancient doctrin of the Eastern interpreters (of Dreams ) as it is recorded by Achmet an Arabian out of the ancient monuments of Ægypt Persia & India. For since these nations anciently bordering upon the Hebrews had great affinity with them both in Language & manners, & therefore wee scruple not to learn from them the use of words & phrases in the scripture, much less need we scruple to learn from them the use of figurative expressions wherin their severall nations were much better agreed than in the language of the common people. For the Prophets without doubt spake in a dialect then commonly known to the more understanding sort of men, & many of their types & figures which are unusuall & difficult to us appear by these records of Achmet to have been very familiar to those Eastern nations; at least among the interpreters. And therefore esteeming it pertinent to show the consent of our interpretations with the doctrin of these interpreters next after their consent with the scriptures: I proceed."

<sup>332</sup> *Revelation* 17: 8: "The beast that thou sawest was, and is not; and shall ascend out of the bottomless pit, and go into perdition: and they that dwell on the earth shall wonder, whose names were not written in

of interpretation and calculation which should allow him to establish precisely when the reign of Christ on Earth would begin but also to date some foreshadowing events like the fall of Antichrist and the conversion of the Jews<sup>333</sup> which he deemed to be imminent. One revealing element which enabled Mede to firmly believe in the forthcoming Doomsday was the turbulent politic situation which Europe was going through: the raging of the Thirty Years' War, the final tragic stages<sup>334</sup> of the reign of Charles I in England and the related strengthening of the Puritan mind were all omens portending those foreshadowing events discussed above. He was convinced that the visions of the *Revelation* were not, in the book, chronologically ordered according to their fulfilment and, therefore, his correct interpretation of the prophecies needed to gain the right synchronism of past events and of those that had still to come forth. "His *Clavis Apocalyptica* offered a different interpretation of the book of Revelation grounded upon its linguistic structure"<sup>335</sup> – an interpretation which was somehow supposed to avenge

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the book of life from the foundation of the world, when they behold the beast that was, and is not, and yet is." Cfr. Michael Murrin, "Revelation and two seventeenth century commentators," in C. A. Patrides and J. Wittreich (eds.), *The Apocalypse in English Renaissance Thought and Literature*, Ithaca, New York, Cornell University Press, 1984, pp. 125-146, on p. 126; main edition henceforth referred to as Patrides and Wittreich (eds.), *The Apocalypse*. Murrin's essay constitutes an excellent survey on Mede's exegetical approach.

<sup>333</sup> Cfr. Christopher Hill, "Till the Conversion of the Jews," in Popkin (ed.), *Millenarianism and Messianism*, cit., pp. 13-14: "The conversion of the Jews in the 16<sup>th</sup> and 17<sup>th</sup> centuries was part of a package of ideas about the approaching end of the world and the millennium. [...] Protestants took Antichrist to be the Pope, and various different but diverging calculations pointed to the years 1650-1656 for his destruction, the gathering of the Gentiles, the conversion of the Jews and their return to Palestine. [...] The conversion of the Jews and the spreading of Christianity to all nations were necessary conditions without which the millennium could not take place." Besides Marvell's *To His Coy Mistress*, of which Christopher Hill's essay quoted above represents a brilliant criticism, there can be found many examples in English literature related to the conversion of the Jews. Of great interest is to highlight how even Francis Bacon imagined converted Jews to find shelter in his *New Atlantis* (1627). Moreover, within the broader framework of English Hermeticism, a quotation from Henry Vaughan becomes undoubtedly of remarkable importance: in his *Silex Scintillans* (first edition 1650; enlarged second edition 1655) he wrote that the conversion of the Jews "sure it is not far," letting us thus guess that he shared the belief in the imminence of greater things to come. Cfr. Thomas, *Decline of Magic*, cit., p. 167.

<sup>334</sup> Cfr. Margarita Stocker, *Apocalyptic Marvell: the Second Coming in Seventeenth Century Poetry*, Brighton (Sussex), The Harvester Press, 1986, hereinafter referred to as Stocker, *Apocalyptic Marvell*, p. 1: "Particularly in the crisis of the Civil War, the doctrines and the historical methodology of current eschatological belief helped to determine men's analyses of the conflict, providing them with an explanation of the causation and events of that war."

<sup>335</sup> Jonathan Edwards, *Apocalyptic Writings*, edited by Stephen J. Stein, New Haven and London, Yale University Press, 1977, Editor's Introduction, p. 5. Cfr. Michael Murrin, "Revelation and two seventeenth century commentators," in Patrides and Wittreich (eds.), *The Apocalypse*, cit., p. 126: "Mede turned to philological study and from this deduced his structural system."

the confounding of speech of Babel by the regaining of the lost, mourned-after Edenic language.

Mede's students at Cambridge included renowned personalities like John Milton, Henry More, Samuel Hartlib and John Dury who all largely agreed with the Biblical precept expressed in *Daniel* that, as the end of time approaches, knowledge shall increase, "the wise will understand, while the wicked will not."<sup>336</sup> Especially<sup>337</sup> Hartlib and Dury were chiefly committed to the establishment of a universal plan for educational reform which they esteemed would have eventually given rise to an unrivalled cultural revolution in Europe. Largely due to the sufferings of contemporary historical gains, they dreamed of a utopic science-based society which would flourish to regain Adam's Edenic mastering of Nature lost at the Fall. By means of implementing their great forerunner Francis Bacon's theories on natural science, they actually urged to prepare themselves and the society for the glorious days of the Millennium through their detailed social reformation. The development of education, politics and scientific knowledge would have eventually helped mankind to fathom out the new Heavens and the new Earth established by Christ after Doomsday, as forecasted in *Daniel* 12: 10. Notwithstanding the fact that Hartlib's and Dury's speculations, like many others alike, bore no fruit by the time of their acknowledgement, they represented however an outstanding achievement in the history of social philosophy. As a matter of fact, the importance of Hartlib's pansophic worldview increases its value if compared to

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<sup>336</sup> Cfr. Popkin (ed.), *Millenarianism and Messianism*, cit., Introduction, p. 5. Cfr. Batfroi, *Alchimia Cristiana*, cit., pp. 60-61: "Ireneo Filalete, in un testo del XVII secolo, invitò il mago alchimista al pellegrinaggio sacro in Terra Santa, che è la terra filosofale dell'Opera: "E tu, quando avrai visto la sua stella, seguila sino alla culla, e lì, rimuovendo ciò che è sordido, vedrai un bell'infante. Scrutando il cielo chimico, e scorgendo l'Astro, il saggio gioirà, ma il folle non ne farà nulla e non si instruirà nella saggezza, quand'anche vedesse il polo centrale volto all'esterno e marcato con il segno riconoscibile dell'Onnipotente."

<sup>337</sup> Some valuable general reference studies on these great figures are: Mark Greengrass, Michael Leslie and Timothy Raylor (eds.), *Samuel Hartlib and Universal Reformation: Studies in Intellectual Communication*, Cambridge, Cambridge University Press, 1994; Thomas H. H. Rae, *John Dury: Reformer of Education*, Marburg, Lahn, N. G. Elwert, 1970; G. H. Turnbull, *Hartlib, Dury, and Comenius: Gleanings from the Hartlib Papers*, Liverpool-London, University of Liverpool Press, 1947.

Newton's *scientia integralis*. In my opinion, a parallel between Newton's mind and the reforming projects of his age would then lead to the conclusion that, far beyond the innovative programs of the Hartlibians, Newton's chose to align his mind to the long forgotten *prisca sapientia* of the fathers:

Newton was convinced that he and his contemporaries were entering into the last age, the very age prophesied in the Bible. The rediscovery of the *prisca theologia* by Newton and his contemporaries was a crucial sign of the beginning of the end.<sup>338</sup>

Furthermore, if a comparison is supposed to be made between Newton's pansophia and other cultures alike, I think it most plausible to state that his glancing backwards to ancient knowledge may lead us to evoke Roger Bacon's universal plan for social reform. To support this last statement of mine, a quotation from Antonella Sannino's essay on Bacon *Compendium Studii Philosophiæ* shall be satisfactory enough:

La nozione di sapere rivelato gioca nella meditazione baconiana un ruolo fondamentale e ad essa si accompagna l'idea di una *scientia* che, rispondendo alla realtà dei *simplices*, operi trasformazioni dal punto di vista culturale e sociale. [...] Il concetto chiave di sapere rivelato salvaguarda l'unità delle scienze; non a caso, nella seconda parte dell'*Opus Maius*, Bacone mostra come una sola sia la perfetta sapienza, la teologia, che è contenuta nelle scritture ed è stata divulgata per mezzo del diritto canonico e della filosofia.<sup>339</sup>

Of Prussian origins, Samuel Hartlib (1600-1662) moved definitely to England at the very beginning of the 1630s after the upheavals of the Thirty Years' War (1618-1648) on the Continent and he actually achieved "a central role in English intellectual

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<sup>338</sup> Arthur Quinn, "On Reading Newton Apocalyptically," in Popkin (ed.), *Millenarianism and Messianism*, cit., p. 182.

<sup>339</sup> Sannino, "*Compendium Studii Philosophiæ*," in *Studi Filosofici*, cit., pp. 31-32.

life during the Puritan revolution.”<sup>340</sup> In the establishing of his own philosophy, he was heavily influenced by Francis Bacon’s utopic ideas on science and society and by Comenius’ plan for an educational reform. Along with them, Hartlib was truly convinced<sup>341</sup> that only through a universal social reform Europe would usher in the Golden Age of the Millennium forecasted in the Biblical prophecies. Moreover, he shared Francis Bacon’s plan for a great co-operative effort to marshal empirical knowledge and to emancipate religion from the trammels of strict orthodox Catholicism. Thus, in due course, man would be able to regain the dominion over nature which had been lost at the Fall. Most importantly, Hartlib’s thought somehow represented a corollary of the protestant search for spiritual regeneration and, as Charles Webster put it, “secular wisdom with consequent material power of the Baconian and spiritual regeneration of the puritan provided conditions for the imminent realisation of the Kingdom of God, in the form of the earthly paradise, fulfilling the biblical prophecies of the New Eden and the New Jerusalem.”<sup>342</sup> Firmly believing that his aim was sanctioned by providence as appropriate to the last stages of human history, Hartlib tended to operate guided by a deep sense of religious obligation which led him to the conclusion that a thorough reform of knowledge was the only ultimate way to purge minds of stubbornness and conceit. From an historical point of view, the ending of a period of social, political, and religious experiment did not coincide with the ceasing of people’s trust in divine providence; it did, however, reduce the opportunity for a rapid and complete alteration of things of the kind for which Hartlib had once hoped. Consequently, Hartlib never really succeeded in establishing the reformed institutions

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<sup>340</sup> Webster, *Samuel Hartlib*, cit., Introduction, p. 2.

<sup>341</sup> Cfr. Webster, *Samuel Hartlib*, cit., Introduction, p. 65-66: “The essential originality of the Hartlib circle was development of a system of education based on a fusion of the progressive renaissance pedagogical ideas and the empirical philosophy of Bacon. The Hartlib circle gave the first detailed educational expression to Bacon’s experimental philosophy, providing the foundation for the main stream of English thought on educational reform in future centuries.”

<sup>342</sup> Webster, *Samuel Hartlib*, cit., Introduction, p. 3.

for investigations and learning after which he yearned for; however he brought together an increasingly important group of intellectuals – the so-called *Hartlib Circle* – who, during the Puritan Revolution and afterwards, longed to give a new course to European culture.

To give a precise definition of the Hartlib circle is everything but an easy task for it was not a society with a membership regularly gathering, but a more diffuse group of individuals, widely dispersed geographically both in England and on the Continent. Among its members, the Hartlib circle enlisted outstanding personalities such as Robert Boyle, William Petty, John Dury, Thomas Henshaw, George Starkey, Frederick Clodius, Johann Morian, Benjamin Worsley, and John Pell. It is then of great interest to remark how Robert Boyle probably developed his considerable enthusiasm for natural science, particularly chemistry, through his association with the Hartlib circle, in which he had long been playing a key role. Boyle, maybe more than any other personality of his age, helped in creating the scientific image of the early Royal Society. He actually helped to overcome the early Baconianism of the Hartlib circle along with its mystical and alchemical elements, making it a viable tool for the rational and experimental study of proto-chemistry. As previously recorded, some of the leading personalities which Hartlib was in contact with just sporadically came to visit him in England after his moving to London, yet there were also several of Hartlib's friends who remained in England and felt able to take part in the circle's attempt to establish a new course of civil life. As a matter of fact, they strove to carry out a zeal for improvement into the foundation of important institutions such as the Royal Society and effectively helped to shape their early practical activities.

Hartlib himself hoped to benefit from some of the members of his circle but he also managed to recruit indigent exiles or scholars who he supported out of the funds raised primarily from the government. Taken as a group, the members of the circle



provided Hartlib with a wide network of informants both in England and across Europe, even including North America. Samuel Hartlib was assiduous in seeking out new contacts and, beginning from the late 1620s up to the early 1660s, he effectively began corresponding and meeting with hundreds of different people in order to discuss points of educational theory, theology or natural philosophy. The broader discussions taking place within the Hartlib circle were chiefly centered around the theme of “improvement” which was developed into several different aspects, often inspired by the Holy Scriptures, and branched out to include political and religious as well as practical issues. Hartlib’s group was highly interested in gaining Parliamentary support especially for the purpose of carrying out religious and social reforms, and they shared the belief that knowledge ought to be made available for the common benefit of mankind. Accordingly, they strove to develop detailed plans for co-operative scientific research, educational reform, agrarian improvement, and social enhancement following the way formerly paved by Francis Bacon.

As far as the role played by the Hartlib circle within the horizon of Newtonian criticism is concerned, it must be remarked how the members of the heterogeneous group were ultimately inspired<sup>343</sup> by the Biblical promises about the regaining of human perfection at the end of time, and by the belief that contemporary wars and disasters raging over the Continent were clear omens portending the end of human history. This common belief about the imminent Doomsday, shared by Newton as well, led Hartlib and *his friends to seek some sort of “collaboration” with providence to hasten the improvement of the condition of humanity by means of alchemical theories and praxis.*

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<sup>343</sup> It is important to remember that the Hartlib circle was not the only group in England aspiring to social reform. Other important socially oriented groups were the Levellers, the Diggers and the Fifth Monarchists though they were expressions of radical ideas rooted in a Puritan milieu. On the subject see especially Bernard Capp, “The Political dimension of apocalyptic thought,” in Patrides and Wittreich (eds.), *The Apocalypse*, cit., pp. 93-124; Keith Thomas, *Religion and the Decline of Magic*, cit., pp. 169-171.

Actually, the members of the Hartlib circle found outstanding resemblances between alchemical transmutations and human stages of social development which led them to hypothesise the possibility of transmutation in chemical philosophy as the key to solve out the mysteries of the universe and to deem the examination and dissemination of such knowledge to be of great usefulness for public communication. Moreover, another major interest of the circle was to foster the use of the new Paracelsian chemical medicine because they “were committed philosophically to a spiritual alchemy, yet their humanitarianism prompted them to search for new chemical medicines for the relief of man’s diseases.”<sup>344</sup> *Hartlib and his friends searched for means to prolong human life, in particular through alchemical research and the practice of chemical medicine. The alchemists whose works and theories were mostly shared by the members of the group were Thomas Vaughan (namely “Eugenius Philalethes”)* and certainly one of Newton’s favourite alchemical writers: the anonymous Eirenæus Philalethes, whose works were introduced from New England and began to circulate in the circle through the mediation of George Starkey. According to Westfall,<sup>345</sup> Eirenæus Philalethes’ alchemical treatises had already been circulating among the Hartlibians before they publication and Newton was therefore granted to have access to them in the late 60’s, some ten years before they were printed. The primary role played by the Hartlib circle in the process of development of Newton’s alchemical conscience has been strongly stressed by Westfall. According to him, during the mid-60’s Ezekiel Foxcroft, a supposed follower of the group originally gathered around Samuel Hartlib, lived at King’s College. It is proved that Newton had become acquainted with Foxcroft’s translations of Rosenkreutz’s *Chymical Wedding* which he referred to as “Mr. F.” and, through the mediation of the Hartlibians, it can reasonably

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<sup>344</sup> Dobbs, *The Foundations of Newton’s Alchemy*, cit., pp. 63-64.

<sup>345</sup> See Richard S. Westfall, “The Role of Alchemy in Newton’s Career,” in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., p. 193 and note 15 on p. 307.

be argued that: “Whether or not Ezekiel Foxcroft was Newton’s initial contact, a considerable number of manuscript treatises that were not available in published form among his papers testify that he was in touch with alchemical circles over a period of at least thirty years.”<sup>346</sup> What is of outstanding importance as far as the aim of this study of mine is concerned, is that Isaac Newton was doubtlessly deeply influenced by the alchemical and philosophical ideas of the Hartlib circle. He actually collected sundry manuscripts secretly handed down by the members of the group and copied them out. It is really on one of these documents that my reasoning will be now focused on.

As we approach nearer to the core of this work of mine, it is important to evaluate the existent studies on Newton’s alchemical mind. Needless to say, the two most important researchers into the field have been Betty Jo Teeter Dobbs and Karin Figala whose works clash at times the ones with the others and they indeed end up to be complementary. Dobbs chiefly aimed at discovering the implications of the practical alchemical experiments carried out by Newton in his central ages who she believed deeply influenced his scientific research especially in terms of the conclusions about gravity he arrived at: “both Westfall and the present writer have argued that Newton came to view gravity as an active principle by analogy with the active alchemical agent.”<sup>347</sup> Elsewhere she noted how “it was the secret of this spirit of life that Newton

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<sup>346</sup> See Richard S. Westfall, “The Role of Alchemy in Newton’s Career,” in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., p. 193.

<sup>347</sup> Betty Jo Teeter Dobbs, “Newton’s Alchemy and His ‘Active Principle’ of Gravitation,” in Scheurer and Debrock (eds.), *Newton’s Legacy*, cit., p. 73. Cfr. Betty Jo Teeter Dobbs, “Newton’s Alchemy and His Theory of Matter,” in *Isis*, cit., p. 512: “Newton used alchemy as a critical counterweight against the inadequacies of ancient and contemporary atomism, inadequacies regarding cohesion and activity, life and vegetation, and the dominion and providence of God. His final formulations on the nature of matter and the powers associated with it grew naturally out of alchemical, theological, metaphysical, and observational concerns.” On the same thematic see also Dobbs, *The Foundations of Newton’s Alchemy*, cit., pp. 210-213. Richard Westfall’s reference books, also quoted by Dobbs in “Newton’s Alchemy and His ‘Active Principle’ of Gravitation” (note 63, p. 80), are: Richard S. Westfall, *Force in Newton’s Physics. The Science of Dynamics in the Seventeenth Century*, London: Macdonald; New York: American Elsevier, 1971; pp. 323-423; *Idem*, “Newton and the Hermetic Tradition,” in *Science, Medicine and Society in the Renaissance. Essays to honor Walter Pagel*, ed. By Allen G. Debus (2 vols.; New York: Science History Publications, 1972), II, pp. 183-198.

hoped to learn from alchemy”<sup>348</sup> stressing that alchemists actually broadly conceived the idea of an “animating vegetative principle” effecting the activation of matter. This alchemical spirit was commonly associated by alchemists with God’s light of Genesis which was imagined to be pressed into service to help with the rest of creation thus constituting a microcosmic model of Divine generation which furnished the basic example for alchemical transmutations. According to one of the basic axioms of alchemy which postulated all things being derived from the original chaos of the undifferentiated prima materia, Newton recorded in sundry passages<sup>349</sup> scattered through his whole alchemical manuscripts that the mode of acting of the alchemical agent was first to putrefy or turn matter into chaos, then to proceed to the creation of new forms. As remarked by Dobbs: “The chaos is the essential analogical element linking the alchemical work to cosmogony on the one hand and to spontaneous and sexual generation on the other.”<sup>350</sup>

Although it is now allegedly known that Newton transcribed and composed “well over half a million words”<sup>351</sup> on alchemy, contemporary scholars has mainly focused on the nature of a single short document, first published by Betty Jo Teeter Dobbs in 1975 as Newton’s own composition, the so-called *Clavis*, or Key. This manuscript develops a series of alchemical theories about a process for obtaining an amalgam of antimony, mercury, silver, and gold, aimed at achieving alchemists’ *summum bonum* – the elixir, the philosophers’ stone, the alchemist’s merging with God’s essence. According to Dobbs, the *Clavis* would provide a basic key for understanding the thought behind much of Newton’s practical alchemy, especially the notions of “attractive magnets” and alchemical “mediation” implicit in his work on the

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<sup>348</sup> Dobbs, *Alchemical Death & Resurrection*, cit., pp. 1-2; see also *Ibid.*, Conclusion, pp. 24-25.

<sup>349</sup> See Keynes MS. 12 A, ff. Iv-2r; and especially Dibner MSS. 1031 B, f. 5r, v.

<sup>350</sup> Dobbs, *Alchemical Death & Resurrection*, cit., p. 14.

<sup>351</sup> William R. Shea, “Introduction: Trends in the Interpretation of Seventeenth Century Science,” in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., p. 6.

“star regulus” of antimony. But, according to William R. Newman, “it is absolutely impossible that Newton could have composed the *Clavis*, as Dobbs maintains”<sup>352</sup> though she was not the only scholar to have seen Newton’s mark in the *Clavis*: Richard S. Westfall also ascribed<sup>353</sup> the composition to Newton. Karin Figala, as previously anticipated, has been one of Dobbs’ most profound critics since she attributed the *Clavis* to the anonymous mid-seventeenth century alchemist Eirenæus Philalethes though she imagined to find “in the *Clavis* Newton’s ductus which can be picked out particularly from the exact working instructions which can at any time be repeated in the laboratory.”<sup>354</sup> More recently, however, Figala disavowed any possible Newtonian input in the manuscript, and referred to it simply as to “the *Clavis*’ manuscript (Keynes MS. 18) ascribable to Philaletes.”<sup>355</sup> Actually, Figala primarily objected to the Dobbs-Westfall debate that the document does not contain Newton’s characteristic additions and corrections and should therefore be a copy (either of Newton’s or of someone else’s hand). She also argued that the alchemical process described in the *Clavis* was ascribed to Eirenæus Philalethes in other seventeenth-century texts. Moreover, according<sup>356</sup> to Karin Figala, Newton himself allegedly attributed the process to Philalethes in later writings.

Insofar as the contribution by Dobbs and Figala in the establishment of the pansophic character of Newton’s knowledge is taken for granted, it must be however remarked that the limit of both their studies relies on the confinement of the alchemical

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<sup>352</sup> William R. Newman, “Newton’s ‘Clavis’ as Starkey’s ‘Key,’” in *Isis*, Vol. 78, No. 4 (Dec., 1987), pp. 564-574, stable URL: <http://www.jstor.org/stable/231919>, p. 564.

<sup>353</sup> See Richard S. Westfall, “The Role of Alchemy in Newton’s Career,” in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., p. 207: “Sometime around the mid ‘70s, Newton composed or transcribed a paper entitled *Clavis*. The paper carries no explicit mention of its author, and it is impossible to state with finality that it was or was not Newton’s. nevertheless, its intimate connection with Newton’s notes on the preparation of the star regulus, and its use of the proportion 4 to 9 at which Newton arrived, make it extremely likely at the very least that Newton did compose it.”

<sup>354</sup> Karin Figala, “Newton as Alchemist,” in *History of Science, History of Science*, Vol. 15 (1977), pp. 102-137, on p. 108.

<sup>355</sup> Karin Figala, “Die exakte Alchemie von Isaac Newton,” in *Verhandlungen der Naturforschenden Gesellschaft in Basel*, Band 94 (1984), pp. 157-228, on p. 183: “dem *Philaletes* zuzuschreibenden «Clavis»-Manuskript (Keynes Ms. 18);” my translation.

<sup>356</sup> See Karin Figala, “Newton as Alchemist,” in *History of Science*, cit., p. 107.

sphere of influence to Newton's scientific research. One most diffused error on judging Isaac Newton's personality and scholarship is imaging the existence of sundry different sides of him without conceiving the impossibility that each of these sides would come to influence the others and *vice versa*. An example of this is given by F. Sherwood Taylor who, speaking about Newton's alchemical attitude, remarked that he was "in the fullest sense an alchemist. He conducted alchemical experiments, he read widely and universally in alchemical treatises of all types, and he wrote alchemy, not like Newton, but like an alchemist."<sup>357</sup> This idea that "Newton the scientist" had to be something apart from the alchemist who carried out for all his life practical experiments and deep alchemical studies is actually deceiving and absolutely misleading for the task of sketching out a portrait as more realistic as possible of that great mind. In order to do so, it is the alchemical attitude in his apocalyptic writings that has to be found out and some further inquiring into the pansophic cultural background of Newton's age would now be of great help.

Being at the basis of heterogeneous philosophies of many Renaissance mystics and Neoplatonists, the idea of 'pansophia' was firmly rooted in the intellectual background of the sixteenth century. Furthermore, it also had some affinities with the encyclopaedist tradition, the culminating figure of which was Jan Comenius' teacher Johann Heinrich Alsted. Writers of both the encyclopaedist and mystical traditions adopted the term 'pansophia' to describe a comprehensive system of knowledge envisaged also by reformers such as Campanella or Francis Bacon, both of whom considerably influenced Comenius' philosophy. Above all, the Czech educationalist Jan Amos Komenský (Comenius; 1572-1670) regarded Francis Bacon as the greatest herald of the new age of learning; yet, he persistently attacked Bacon's secular and cautious towards social and scientific reform. Due to its extremely extended labours, Bacon's

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<sup>357</sup> F. Sherwood Taylor, "An Alchemical Work of Sir Isaac Newton," in *Ambix*, Vol. 5, (1956), pp. 61-64, on p. 62.

inductive method was overcome by Comenius who decided to adopt a syncretic method to describe the correspondences of the Neoplatonic harmony of the Cosmos. He was convinced that a comprehensive body of knowledge could be drawn from a concordance between three main paths of knowledge: the senses, reason and revelation. Thus, the senses ought to provide an inductive understanding of nature, reason a knowledge of innate principles, revelation an interpretative guide to the Holy Scriptures – a threefold division which somehow recalls and sends back to Newton’s guiding principles in his search for divine truth.

Though mostly working independently on the Continent, Comenius proposed a somehow logical development of the educational and social reforms advanced by Samuel Hartlib whom he had been in touch with for most of his life. The most important of Comenius’ inputs to the development of Hartlib’s theories was his suggestion that the key to the encyclopaedic understanding of nature, which he had been the first to term ‘pansophia,’<sup>358</sup> should result from a revolution in language teaching. Eagerly embraced by Hartlib, pansophia provided a unifying principle for his revolutionary ideas on the advancement of learning. In particular, he hoped that Comenius might move definitively to England to work specifically on pansophical projects and reform. As has been previously hinted at, according to Comenius, his pansophy had to be a comprehensive unique system of knowledge in which senses, reason, and the Scriptures would be harmonized thanks to a universal language which would eventually undo the original confusion of the Tower of Babel – recalling Mede’s aim at reconstructing the prophecies starting from a linguistic revolution. Moreover, what should capture the scholars’ attention is Comenius’ physical theory being based on the principles of Divine creation as it is recorded in the Genesis and on his interpretation

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<sup>358</sup> During the seventeenth century, a whole series of publications about pansophic ideals appeared. Among them it is worth to remember a Rosicrucian publication by Theophilus Schweighart, *Speculum sophericum rhodostauroticum* (1618), subtitled *Arbor pansophiae*; Peter Lauremberg’s *Pansophia, sive paedia philosophica* (Rostock, 1633).

of the book of Revelation. These two features immediately recall Roger Bacon's *scientia integralis* in which his pansophic conception of knowledge ruled in revelation and alchemy in a complex moral matrix to grant salvation to mankind. We can therefore reasonably ascribe some of Newton's ideas about the Divine origin of the physical world to the same pattern which also Comenius' principles were indebted to, besides placing the focal position of the importance of language in the philosophies of them both within the broader framework of an increasing contemporary debate on language. What is otherwise missing in a comprehensive analysis of Newton's millenarianism is the measure with which alchemy has passed into his prophetic commentary. But which are the most useful models to carry out such a critical analysis? One best chance is surely rendered to us by inquiring into the contemporary literary mediation of alchemical images and metaphors, a congruous number of which we will also find scattered throughout the whole bulk of Newton's manuscripts.



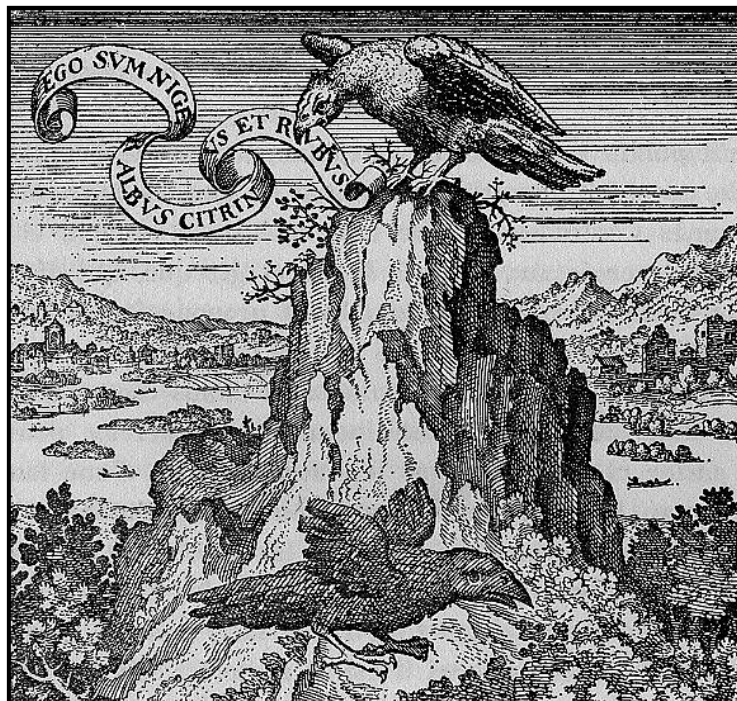
## 2.4 Literary Alchemy and Hexameral Literature: the Heterogeneous Nature of Alchemical Imagery

The last field of alchemical influence useful to guess the ways in which alchemy may have come to influence Newton's millenarianism is that of literary alchemy. Remarkably, the criticism acting on a literary level has to be referred to two different kinds of patterns: most diffuse metaphors and analogies scattered heterogeneously throughout lyrics related to alchemical imagery and the proper genre of hexaemeric literature. To the first field we can ascribe recurring symbols such as birds (the *phoenix*, the *dove* and the *eagle*); *Sun* and *Moon*; the *hermaphrodite* and the serpent *ouroboros* – these are particularly worthy to be analysed insofar as Newton's own adaptation of their symbology is concerned too. Considered separately, the birds are among the most common symbols in alchemical literature and are largely used to represent substances and stages of the *Magnum Opus* along with their matching counterpart developments of the alchemist's soul. Capturing the alchemists' experience of spiritualization, the *phoenix*, a mythological creature of unrivalled beauty, was already discussed by ancient authors such as Herodotus, Ovid, the elder Pliny, and sundry others philosophers of antiquity. The fabulous *phoenix* was thought to live for hundreds of years, and even more, only eventually to self-sacrifice on its self-built nest transformed into a funeral pyre. From its ashes a new young phoenix was supposed to arise to begin a new cycle of life completely transformed and no longer dependent upon its physical body. According to the alchemical interpretation thereof, the phoenix stood for the achievement of the philosopher's stone – thus lying at the spiritual core of the alchemical process. It therefore represented the final gain in a cluster of bird images representing the main phases of the *Great Work*: the *nigredo*, symbolized by the dark

crow or, at times, by the raven; the stage of *cauda pavonis* pictured by the peacock; the dove or the swan, symbols of the whitening of the matter during the *albedo*; the last stage of *rubedo* eventually represented by the phoenix – an image of inner renewal and spiritual resurrection.<sup>359</sup>

Emblem 43.

Hear the garrulous vulture, who in no wise deceives you.



Epigram 43.

The vulture perches on the mountain peak,  
Ceaselessly crying, "I am white and black;  
Yellow and red am I, and do not lie,"  
The raven is the same, who wingless flies  
In dark of night and in the light of day,  
For of your art both this and that are chief.<sup>360</sup>

<sup>359</sup> One revealing short poem on the alchemical-Christian nature of the phoenix is ascribable to an unknown Saxon poet of the VIII century; see "La Fenice," in S. and R. Piccolini, *Biblioteca*, cit., III, pp. 206-207: "Il rogo è acceso [...] [...] e la Fenice/ brucia con i suoi anni; il fuoco morde il suo fragile corpo;/ dalla sua vita l'anima condannata si diparte;/ la fiamma del rogo arde la carne e le ossa;/ ma poi nel tempo dovuto una nuova vita vi torna/ quando le ceneri iniziano ancora [...] [...] [...] la sua carne/ è tutta rinnovata, nata ancora, pura d'ogni peccato."

<sup>360</sup> Godwin (tr.), *Atalanta Fugiens*, cit., p. 191. Latin original text in Maier, *Atalanta Fugiens*, cit., p. 232: "Emblema XLIII: Audi loquacem vulture, qui neutiquam te decipit. Epigramma XLIII: "Montis in excelso consistit vertice vultur/ Assiduè clamans; Albus ego atque niger,/ Citrinus rubeúsque feror, nil

Accordingly, the *phoenix* became an early Christian symbol of resurrection evolving later into a more specific allegory of Christ's resurrection. Furthermore, the symbolism of the feminine alchemical principle of the dove, emblem of gentleness and faithful love, and that of the eagle, an allegory of the masculine and its strength, has quite a different iconography. The two symbols seem, at times, to overlap in meaning and ideal representation since they both are referred to as the mercurial alchemical spirit as John Donne, sensibly, seems to hint in his *Canonization* where the eagle and the dove are represented as two independent, sexually differentiated bodies joined alike as in the alchemical conjunction of the *hieros gamos*. Compounded in Donne's collection of *Songs and Sonnets*, *The Canonization*<sup>361</sup> is one of the poems in which alchemical themes and symbols are far more strongly originally developed. The alchemical core of the whole poem is represented by the third stanza which, thanks to its being emblematic and allusive, could be set apart in tone and content from both the exasperated speaker's defence of his love from the encroachment of the affairs of the world in the first two stanzas and the poet's quite conciliatory mode after the canonization of his love brought about in the last two stanzas. Stanza III thus occupies a pivotal position<sup>362</sup> within the economy of the poem:

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mentior : idem est/ Corvus, qui pennis absque volare solet/ Nocte tenebrosâ mediâque in luce diei./ Namque artis caput est ille vel iste tuæ." The emblem is counted as figure n°11 in the series compounded in my thesis.

<sup>361</sup> The reference book for the text of *The Canonization* is *The Penguin Book of Renaissance Verse: 1509-1659*, edited by H. R. Woudhuysen, Harmondsworth, Penguin Books, 1993, pp. 333-334.

<sup>362</sup> One major study on the subject is Sergio Rufini, *Scritture Anamorfotiche*, Napoli, Edizioni Scientifiche Italiane, 1992.

Call us what you will, wee are made such by love;  
 Call her one, mee another flye,  
 We're Tapers too, and at our owne cost die,  
 And wee in us finde the'Eagle and the dove;  
 The Phoenix riddle hath more wit  
 By us, we two being one, are it.  
 So, to one neutrall thing both sexes fit,  
 Wee dye and rise the same, and prove  
 Mysterious by this love.

(ll. 19-27)

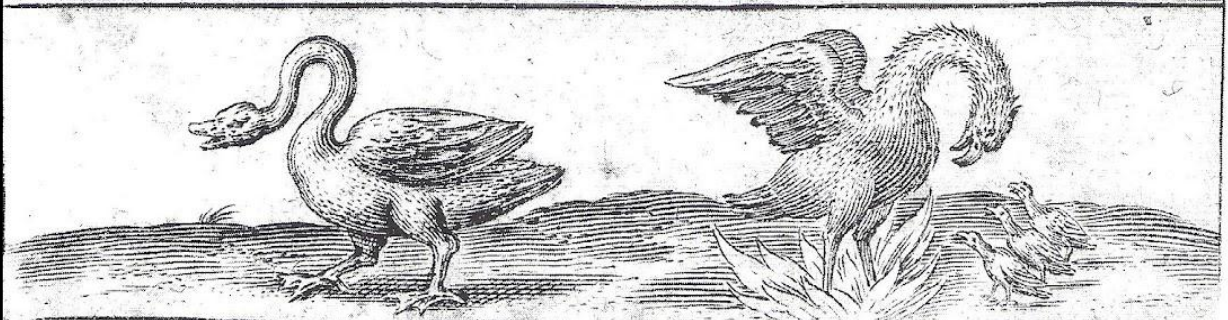
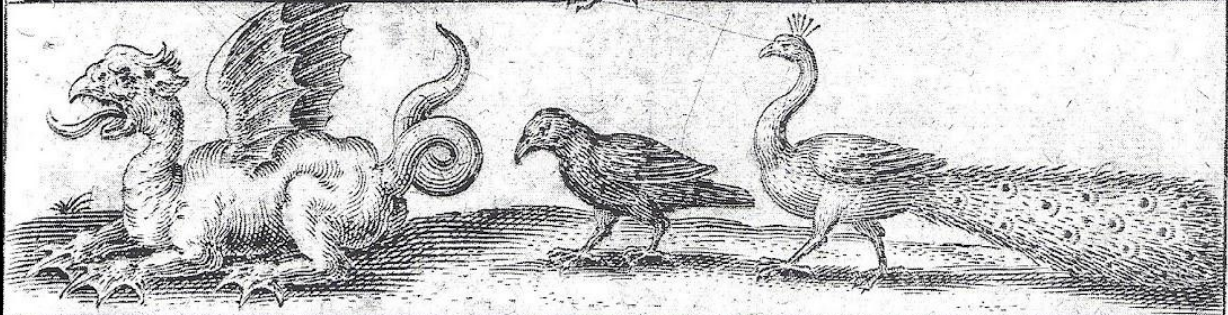
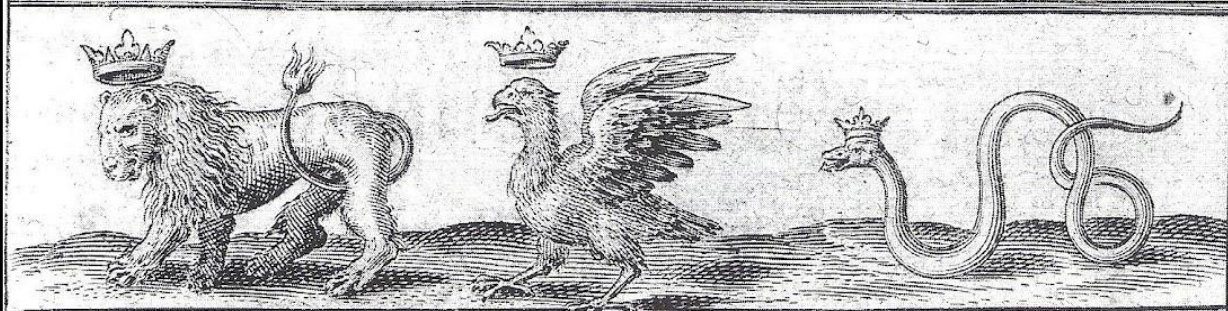
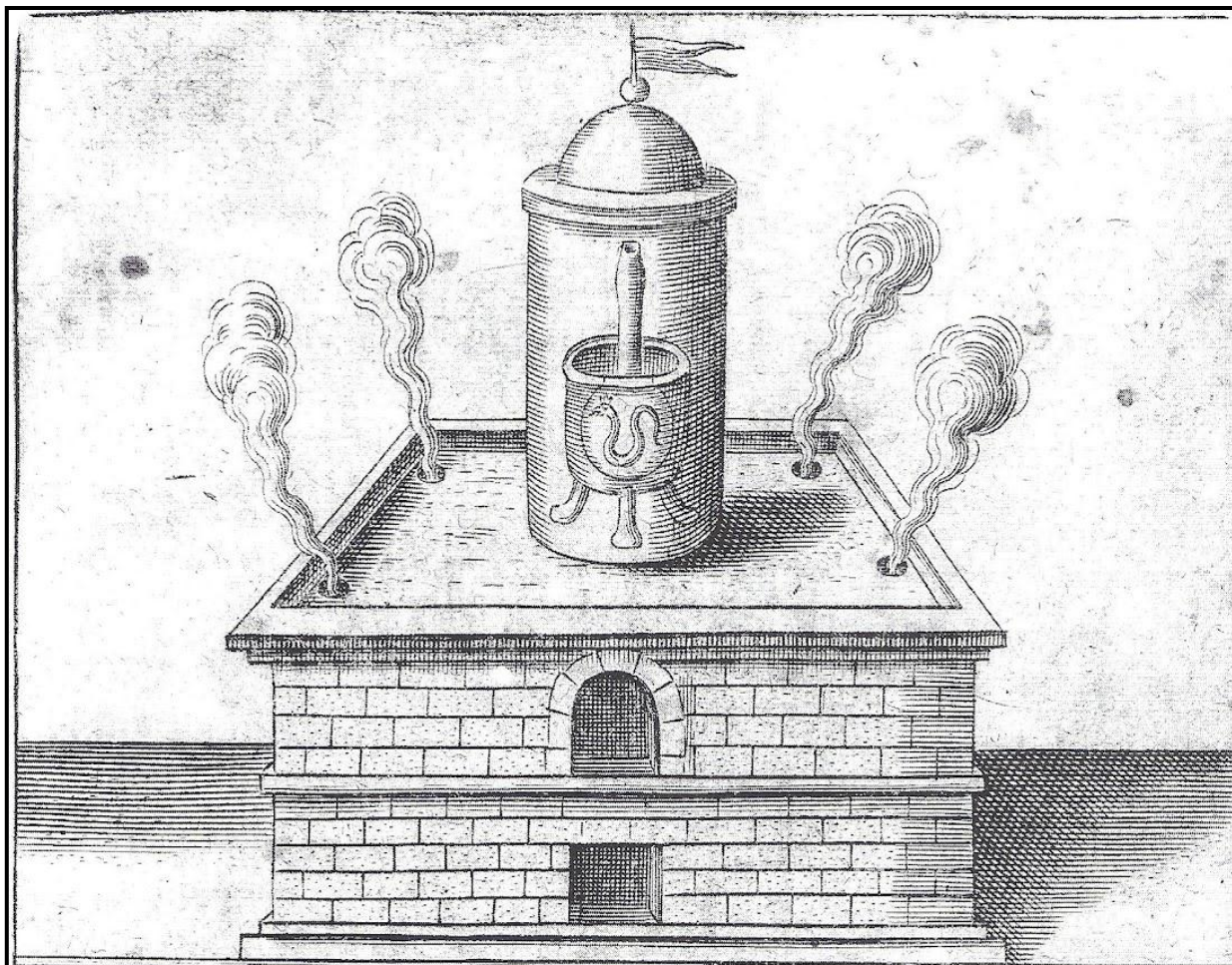
The pattern of the whole stanza is one of death and resurrection in which the alchemical regeneration is applied to the union of the two lovers. All the three main stages of the alchemical process are displayed within those lines: death, or *putrefactio* stage, represents the starting situation of the lovers who, after the crucial intermediate phase of the *coniunctio*, could experience the last stage of *exaltatio*, in which their elixir of love is actually distilled. Nevertheless, it could be remarked that the alchemical interpretation of the whole stanza rests entirely on the symbolic meanings of the three birds<sup>363</sup> – the eagle, the dove and the phoenix – and the tight interaction between them. The double nature of Donne's lovers is thus mirrored within the bisexuality of the hermaphrodite as outlined by Emblem XXXIII of Michael Maier's *Atalanta Fugiens*:

The hermaphrodite, lying dead in the darkness, needs fire.<sup>364</sup>

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<sup>363</sup> Edgar Hill Duncan, in his *Donne's Alchemical Figures*, quoted a passage from Paracelsus that combines eagle and phoenix and suggests the death-regeneration theme in a manner quite parallel to Donne: "in the space of forty days, you can...produce the Alchemical Phoenix. But it should be noted well that the Sulphur of Cinnabar becomes the Flying Eagle, whose wings fly away without wind, and carry the body of the Phoenix to the nest of the parent, where it is nourished by the element of fire, and the young ones dig out its eyes (Edgar Hill Duncan, "Donne's Alchemical Figures," in *English Literary History*, 9, 1942, pp. 257-285, on p. 270).

<sup>364</sup> "Emblema XXXIII. Hermaphroditus mortuo similes, in tenebris jacens, igne indiget;" my translation (Maier, *Atalanta Fugiens*, cit., p. 184). Cfr. "Epigramma XXXIII: Ille biceps Gemini sexus, en funeris instar/ Apparet, postquam est humiditatis in ops:/ Nocte tenebrosa siconditur, indiget igne,/ Hunc ille praestes, & modo vita redit./ Omnis in igne latet lapidis vis omnis in auro/ Sulphuris, argento Mercurii vigor est" (*Ibidem*).



**Plate 1. The alchemical *athanor* with symbolic animals.**

Michael Maier, *Tripus Aureus*, reproduced here from Stanislas Klossowski de Rola, *The Golden Game. Alchemical Engravings of the Seventeenth Century*, London, Thames & Hudson, 1988, p. 124.

As a matter of fact, in the third stanza of *The Canonization* everything that is accounted for the separate identities of the two lovers must be eradicated: their “two-ness” – the eagle and the dove – must be replaced by the “one-ness” of the phoenix. From this death of the isolated selves arises therefore a new mysterious hermaphrodite creature, which is therefore worthy of canonization. Speaking about the merging of the two separate souls of the lovers, Stella Revard argues that: “that union annihilates the differences between war and peace, male and female, for love makes the two, now become one, indistinguishable in feeling and being.”<sup>365</sup> Accordingly:

it is said that [the hermaphrodite] lies in the darkness because it is abandoned in the heart of a cold and dull night, it therefore dwells in the Black, symbol of coldness; thence it must be lead back to the White with the strongest intensity of fire which, if higher raised, leads it to Red. [...]. Therefore the fire which destroys everything, constitutes otherwise this; it brings death to everything, to this life. Here comes the only Phoenix restored by fire, renewed by flames, which comes out from ashes starting a new life. [...]. The hermaphrodite of which philosophers do speak has a double nature, masculine and feminine; changing the one into the other under the influence of heat. Verily, from woman it changes into man.<sup>366</sup>

Another outstanding adaptation of alchemical symbols is the one put forth by Thomas Vaughan in one of his treatises; here, two of the most emblematic symbols of alchemy – the Dragon and the Serpent (representing respectively sulphur and mercury), – are converted to a new use. Both symbols had a Christian origin but, through the

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<sup>365</sup> Stella Revard, “Donne and Propertius: Love and Death in London and Rome,” in *The Eagle and the Dove: Reassessing John Donne*, edited by Claude J. Summers and Ted-Larry Pebworth, Columbia, University of Missouri Press, 1986, p. 75.

<sup>366</sup> “Si dice che [l’ermafrodito] giace nelle tenebre perché è abbandonato nel cuore d’una notte fredda e opaca, cioè dimora del Nero, simbolo del freddo; di là va ricondotto al Bianco con grandissima intensità di fuoco che, se ancora aumentata, lo porta al Rosso. [...]. Perciò il fuoco che distrugge ogni cosa, costruisce invece questa; a tutto apporta morte, ed è a ciò la vita. E’ quivi l’unica Fenice ripristinata dal fuoco, rinnovata dalle fiamme, ch’esce dalle ceneri tornando a nuova vita. [...]. L’Ermafrodito di cui parlano i filosofi ha una duplice natura, maschile e femminile; l’una si muta nell’altra sotto l’influsso del calore. Invero, da donna si muta in uomo;” my translation (Michael Maier, *Atalanta Fugiens*, cit., pp. 185-186).

thought and re-elaboration of mystical poets, they started to convey new meanings. According to this new view, the alchemical Serpent became the Christian allegory of Satan seen as the false serpent tempting man to eat from the forbidden tree:

but 'tis not this *subtill* Dragon, but *Bonus ille Serpens*,  
that *good, Crucified Serpent*, that can give us both this  
*Knowledge*, and this *Title*.<sup>367</sup>

In one of his *Fifty Sermons*, Donne speaks of “this Serpent, this creeping Serpent”, and of “the other Serpent, the crucified Serpent” thus recalling and sending to the tone of Vaughan’s lines:

that creeping Serpent, Satan, is war, and should be so; the  
crucified Serpent Christ Jesus is peace, and shall be so for  
ever. The creeping Serpent eats our dust, the strength of  
our bodies, in sickness, and our glory in dust, the dust of  
the grave: The crucified Serpent hath taken our flesh, and  
our blood, and given us his flesh, and our blood, and  
given us his flesh, and his blood for it.<sup>368</sup>

These first few examples have just served the purpose of introducing the problem of alchemical iconology in the field of literature. The transfer in meaning of these symbols from their alchemical context of reference to Christian allegories is what render them suitable to be accounted for an alchemical reading of Newton’s interpretations of the Biblical Word. In early modern Europe, alchemy was often pursued by devout disciples as a semi-religious doctrine and consequently sundry alchemical symbols overlap in meaning with Christian allegories – especially those about life, death and resurrection. Moreover, the Reformation dramatically enhanced the alchemists’ apocalyptic

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<sup>367</sup> Thomas Vaughan, *Magia Adamica...Whereunto, is added Coelum Terrae. By Eugenius Philaletes.*, London, 1650, p. 40, quoted in Elizabeth Holmes, *Henry Vaughan and the Hermetic Philosophy*, New York, Russell and Russell, 1967, p. 29.

<sup>368</sup> John Donne, *Fifty Sermons*, London, 1648, quoted in Elizabeth Holmes, *Henry Vaughan and the Hermetic Philosophy*, cit., p. 29.



expectations about the imminence of Doomsday and alchemy increasingly started to be perceived as a divine doctrine enshrining the secrets of perfection and immortality, of life, death and resurrection and final salvation. The tight connection between alchemy and a forthcoming divine *parousia* heightened the expectations of alchemical success, leading thus, in the sixteenth and seventeenth centuries, to a considerable increase of the reputation of alchemical philosophy.<sup>369</sup> Related to this development of alchemical-Christian analogies we can enlist a millenaristic literary genre, that of hexæmeric literature, which constitutes the second pattern of alchemical literary field useful to enlighten alchemical features in Newton's prophetic texts. The literary genre of hexæmeron is the exposition of the six days of creation as they are recorded in the book of Genesis. The two fundamental texts<sup>370</sup> which each alchemical analogy relied on to justify its transfer of meanings were the *Genesis* and the *Tabula Smaragdina*: the former provided the theological description of the divine creation of the universe whereas the latter introduced the necessary alchemical explanation thereof. Gerhardt Dorn, in the sixteenth century, was the first to write a fully developed alchemical hexæmeron – a chemical commentary on the six days of creation which proposed (proto)chemistry as the key doctrine to unlock the secret book of Genesis though he “was not unique in viewing the creation process as alchemical or chemical in nature, nor was he the first to discuss various aspects of Genesis as chemical theology.”<sup>371</sup> The narration in the

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<sup>369</sup> Cfr. Jung, *Aion*, cit., p. 173: “‘Mater Alchimia’ could serve as the name of a whole epoch. Beginning, roughly, with Christianity, it gave birth in the sixteenth and seventeenth centuries to the age of science, only to perish, unrecognized and misunderstood, and sink from sight in the stream of the centuries as an age that had been outlived.”

<sup>370</sup> Cfr. Georg Luck, *Arcana Mundi. Magic and the Occult in the Greek and Roman Worlds*, Baltimore, The John Hopkins University Press, 1985, p. 361, henceforth referred to as Luck, *Arcana Mundi*: “Alchemy, the forerunner of chemistry, was an occult philosophy or science that sought to bring the macrocosm (the universe) into a close relationship with the microcosm (the human being). It was based on the magical law of sympathy and contained elements of astrology, mysticism, religion, and theosophy. [...] What were the main purposes of alchemy? The transmutation of baser metals into silver and gold; the creation of an elixir of life to prolong it; the creation of a human being (*homunculus*).”

<sup>371</sup> Michael T. Walton, “Alchemy, Chemistry, and the Six Days of Creation,” in Stanton J. Linden (ed.), *Mystical Metal of Gold: Essays on Alchemy and Renaissance Culture*, New York, AMS Press, 2007, p. 233. Cfr. Pereira (ed.), *Alchimia*, cit., p. XXIX: “[...] la trasformazione alchemica non è semplicemente la

*Genesis* of the week of divine creation actually provides a general prefiguration of the course of all human history, besides constituting a meaningful allegory of alchemical processes. This analogy basically rested on two parallels: one between the chaotic *prima materia* of the alchemists and the original chaos of creation, the other drawn between the glorious achievement of the *Stone* and the divine beatitude of Christ's reign on Earth in the Millennium:

And he shall send Jesus Christ, which before was preached unto you: Whom the heaven must receive until the times of restitution of all things, which God hath spoken by the mouth of all holy prophets since the world began.<sup>372</sup>

Some further investigation in the field of literary alchemy would then prove of much usefulness. Just like any other branch of knowledge, the development of the alchemical tradition has been characterized by its own extensive body of literature. I have already cleared out that the alchemical art comprised a long series of human behaviours and a variety of aspects of human endeavours, ranging from the practical to the mystical, whose heterogeneity was well reflected by the many facets of alchemical literature: indeed, “alchemy was no one thing.”<sup>373</sup> By supplying alchemists' descriptions of methods and practical results, alchemical literature became at first complementary to the practice in laboratory and helped then to broaden alchemical knowledge by promoting comparison between different perspectives. Notwithstanding that at the dawning of alchemy the very first written accounts, which have come down to us, reflected a chief interest in the (proto)scientific side of alchemical processes, the development of alchemical literature has also focused upon esoteric alchemy, within

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conoscenza di sé o il mutamento interiore, ma la possibilità della coniunctio con il “mondo del primo giorno della creazione.”

<sup>372</sup> Acts 3: 20,21.

<sup>373</sup> Richard S. Westfall, “The Role of Alchemy in Newton's Career,” in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., p. 215.

whose context all alchemical changes symbolized a deeper psychological reality connected to a mystical investigation of nature, for alchemists conceived their task as the imitation of nature to be carried out in their furnaces. Largely due to the alchemist's moral and psychological development, alchemical literature results to be of a dual nature with, however, only a minority of works which can confidently be classified as belonging completely to either of the respective fields of chemistry or psychology. Remarkably, just as there were different alchemical currents and a multitude of alchemists who practiced them, so there was a spate of varieties in alchemical writing styles which evolved from the individual author's personality and orientation towards his subject and his purpose of writing. Besides the fundamental contribution to the development of a proper alchemical corpus of literature of the earliest<sup>374</sup> alchemical texts, the decisive role played during the Renaissance by the cultural innovation of Paracelsus' iatrochemistry led to the flourishing of new alchemical literary genres. Among them, of particular interest is the appearance of an allegorical-didactic alchemical tradition in poetry whose development was chiefly due to the publication around 1550 of the *Rosarium Philosophorum*, a broad collection of alchemical sayings organized around the most renowned iconographical cycle of the whole alchemical tradition – a series of etchings representing the chemical wedding and the birth of the hermaphrodite. A primary reason for writing alchemical poems might be actually termed “literary,” in so far as certain different verse forms could be found appealing by alchemical versifiers to best render their ideas. Accordingly, various typologies of alchemical poems could be identified; the most important ones, worthy to be recalled, are: alchemical sonnets, epigrams and emblem-poems, riddles and songs, allegorical dream-vision poems; autobiographical narrative about the search for the philosopher's

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<sup>374</sup> See Schuler (ed.), *Alchemical Poetry*, cit., p. XXVI: “Altogether, four poems in Byzantine Greek are known; each is attributed to a separate author, but all are probably the work of one Heliodoros, who was for the most part paraphrasing in verse the prose treatises attributed to Stephanos of Alexandria (ca. 610-641 A.D.).”

stone and alchemical testaments; verse dialogues and verse epistles; recipes and didactic verse treatises.

Though the earliest known alchemical poems were composed in the Hellenistic milieu of seventh-century Alexandria, it was only in the fourteenth and fifteenth centuries that alchemical poetry started to be perceived as a recognized genre among adepts and scholars committed to the *Art*. Alchemical poems lacked however the advantage of a universally recognized generic code; nevertheless, alchemists who sought patronage often resorted to verse when dedicating or composing their works, seemingly in the belief that verse-form could add dignity and grace that would facilitate acceptance of their subject and of themselves. The most important reason for the adoption by alchemists of the verse-form as leading literary genre lay, however, in the age-old association between poetry, magic and the sacred which was mostly based on the Neoplatonic theories of both poetry and music and the link between the two of them. In the Renaissance, the belief in the evocative power of the musical word could be found within the works of Heinrich Khunrath, Robert Fludd and Michael Maier where alchemical theory and Ficinian musical magic intermingle and become fully amalgamated. According to Robert M. Schuler,<sup>375</sup> alchemical poetry is a subdivision of scientific poetry and a marginalized genre. The major stages of scientific poetry were ancient scientific and philosophical poetry (the Presocratics; Parmenides, Empedocles; Lucretius; Virgil's *Georgics*); medieval scientific and philosophical poetry; the vernacular didactic poetry of the Middle Ages (on alchemy, astrology, agriculture, medicine and practical lore); Renaissance Neo-Latin scientific poetry; Renaissance vernacular scientific poetry and verse translations thereof (Thomas Moffet and Fulke Greville are to be mentioned) and Augustan physic-theological poetry. Stanton J. Linden remarked that "all confirm alchemy's popularity as a subject for literary

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<sup>375</sup> See Schuler (ed.), *Alchemical Poetry*, cit., pp. XVI-XVIII.

treatment”<sup>376</sup> and, as a matter of fact, alchemical references could be found in a wide range of literary genres and modes: from epic and mock epic up to comedy, pastoral, masque and tragedy, from sacred and secular poetry up to didactic and moralistic prose as well as satire and the literature of roguery. Alchemical references were not limited within the boundaries of a few genres thus further enhancing its versatile character and its being “particularly attractive and adoptable to literary treatment.”<sup>377</sup>

alchemical language and ideas appear in three kinds of writing in English: quasi-scientific, satirical, and religious. In the first category there is the account of the *operatio* quite frequently versified. A collection of such verse was printed in 1652 by Elias Ashmole under the title *Theatrum Chemicum Britannicum*. Most of this verse [...] attempts to reveal to the select few, and conceal from the vulgar, secrets of alchemical theory and practice.<sup>378</sup>

Literary authors of the late Middle Ages and of the early modern period were usually more interested in the distinctly human aspects of alchemy rather than focusing upon its theory and history. As a matter of fact, in some of their texts mainly centered around the analogy between alchemy and religion, images with strongest symbolic value started to come along with the written word. The twofold nature of the alchemical process, aimed at achieving both material and spiritual perfection, perfectly suited the literary necessity of describing and inquiring into the deep and complex universe of man for it provided a whole series of images and metaphors which best interpreted the tricky wide range of man’s attitudes, behaviours and emotions. Writers and poets were exclusively committed to the esoteric side of alchemy which provided them a whole series of images and references most suitable for inquiring into man’s soul and the

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<sup>376</sup> Linden, *Darke Hieroglyphicks*, cit., p. 4.

<sup>377</sup> *Ibid.*, p. 6.

<sup>378</sup> Alan Rudrum, “The Influence of Alchemy in the Poems of Henry Vaughan,” in *Philological Quarterly*, XLIX, 4, October, 1970, p. 469.

mysteries of the world; the alchemical exoteric counterpart was only regarded as a reliable source for drawing specific terms, allegories and analogies. One most important distinctive feature of seventeenth-century literary alchemy has however to be premised now. Though it was deemed as particularly fitting to literary adaptation, alchemical knowledge, along with its vast imagery, underwent a twofold treatment by poets' attitude towards it: a satirical approach versus a respectful employment of alchemical subject. Allegedly, the diversification between lampooned<sup>379</sup> alchemy and non-satirical mode increasingly characterized literary alchemy from the late sixteenth century onwards and throughout the seventeenth century when it underwent a marked and general change starting so to be accounted as one major reference system of knowledge by poets of the time. The mocking attitude, which reached backwards to Chaucer and extended through Jonson, was replaced by a new pattern of alchemical imagery primarily focused on change, purification, moral transformation, and spirituality. The fusion of alchemy, eschatology (Christian doctrine concerning the Last Things, Death, Judgment, Heaven, Hell, the Second Coming of Christ), and millenarianism represented therefore an important part of this emerging tradition. There was the shared belief<sup>380</sup> in an approaching millennium instituted by divine intervention which will restore Edenic paradise on Earth bringing about a new and radically better state of existence for the Elect, as prophesied in the Holy Scriptures.

Undoubtedly, the turning point of alchemical literature is represented by the publication in 1633 of both John Donne's *Songs and Sonnets* and George Herbert's *The Temple* which marked the appearance of alchemy in a multitude of new forms, uses and adaptations thereof. Nevertheless, the most original contribution to poetic alchemy

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<sup>379</sup> Cfr. Stanton J. Linden, "Francis Bacon and Alchemy: The Reformation of Vulcan," in *Journal of the History of Ideas*, cit., p. 548: "Always, however, the alchemist of literature is a wily charlatan who cheats his gullible victims with promises of vast and easy fortunes."

<sup>380</sup> For a definition of millenarianism see especially Margaret C. Jacob, "Millenarianism and Science in the Late Seventeenth Century," in *Journal of the History of Ideas*, Vol. 37, No. 2 (Apr. – Jun., 1976), pp. 335-341, on p. 336.

relies on Donne's breaking-through employment of alchemical imagery which consistently became a basis for metaphor in representing a great variety of generally positive human qualities and characteristics. John Donne<sup>381</sup> (1572-1631) employed alchemy in a variety of ways, for he wrote poems treating alchemy satirically (*The Sunne Rising* and *Loves Alchymie* have always been read as the two most harsh examples of satire against alchemy, even though some sort of lampooning attitude towards the alchemical art can also be found in *The Comparison*, *The Bracelet* and *The Cross*); poems revealing alchemical ideas about the nature, attributes, and production of gold; poems with explicit references to the types of equipment, materials, and procedures that alchemists used in their experiments and, finally, poems chiefly concerned with the transmuting process and the making of elixirs and the philosopher's stone (in *The First Anniversarie* Donne depicted alchemy as being "true religious"). *The Sunne Rising*<sup>382</sup> starts abruptly, in a writing style typical for Donne:

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<sup>381</sup> For a detailed account of John Donne's biography see John Donne, *Poesie*, edited and translated by Alessandro Serpieri and Silvia Bigliuzzi, Milano, BUR, 2007, Introduction; John Cary, *John Donne: Life, Mind and Art*, London, Faber & Faber, 1990. Here I do also provide an account of the chronological publication of Donne's most important works: *Songs and Sonnets*, published in 1633 but widely circulating during Donne's life; *The Anniversaries* (1611-1612), two long and very pessimistic poems on the decay and disintegration of the world; the *Holy Sonnets*, written over a number of years, both before and after his conversion to Anglicanism, which are all in the Petrarchan form; the *Devotions Upon Emergent Occasions* (1624), Donne's book of private prayers and devotions, written in 1623 on the occasion of a serious illness. And *Death's Duel* (1631), the last and most magnificent of Donne's 160 sermons, one of the masterpieces of seventeenth century macabre inspiration.

<sup>382</sup> The reference book for the text of *The Sunne Rising* is *The Penguin Book of Renaissance Verse: 1509-1659*, cit., p. 332.

Busie old foole, unruly Sunne,  
Why dost thou thus,  
Through windowes, and through curtaines call on us ?  
Must to thy motions lovers seasons run ?

(ll. 1-4)

The sun, the object of reverence of so much lyrical poetry, is here scolded for being a “busy old fool” (l. 1). A few lines below it is called “saucy pedantic wretch” (l. 5). This is not only a break from tradition, but also a break-away of the lover from the outside world: the poet can only think about his beloved, to the point of losing all his sense of proportion and time. He reduces the whole universe to his own smaller microcosm: the room, the bed where the two lovers lie. In the lover’s comparison of all things and values to his own exalted state, even the sun, which in the beginning was seen as a disturber of the lovers’ quiet, is in the end asked to participate in their new world. At the beginning of the third stanza the transforming power of their love is so great that, hyperbolically, they become the real world, in contrast to which the honour and wealth of the shadowy one is “mimique” and “alchimie.”

She’is all States, and all Princes, I;  
Nothing else is.  
Princes doe but play us; compar’d to this,  
All honor's mimique, All wealth alchemie.

(ll. 21-24)

In this case, “alchimie” is a term of disparagement which delimits all that is false, deceptive, and of little value from the true reality of the couple loving “all alike” (l. 9) within their bedchamber which thus becomes the centre of their whole universe.

In *Loves Alchimie*,<sup>383</sup> though the poet’s attitude towards romantic experience is precisely the opposite of that described in *The Sunne Rising*, the effect and meaning of

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<sup>383</sup> The reference book for the text of *Loves Alchimie* is John Donne, *Poesie*, edited and translated by Alessandro Serpieri and Silvia Bigliuzzi, cit., pp. 294-296.



the alchemical images are nearly identical in the two poems. In lines 1-6 the poet's reductive view of love is introduced through the association of lovers with miners: his own "deep digging" in "loves Myne," however, has produced only the painful realization that expecting to find a "centrique happnesse" in love is a mere illusion. The search for that happiness is an "imposture." In the next six lines, his disillusionment is further intensified by means of alchemical images:

And as no chymique yet th'Elixar got,  
But glorifies his pregnant pot,  
If by the way to him befall  
Some odoriferous thing, or medicinall,  
So, lovers dreame a rich and long delight,  
But get a winter-seeming summers night.

(ll. 7-12)

In these lines Donne encompassed some ideas of the satirical tradition against alchemical art: he stated the flat denial that any alchemist has ever obtained the "Elixar," which could miraculously cure all ills, prolong life indefinitely and transmute base metals; the womb-like vessel, which in the eyes of the ever-hopeful operator is worthy of praise when it accidentally produces anything, is parodied together with deceptive alchemical distillations. Thus, this impression of squalor and disappointment is directly linked to the lovers' "winter-seeming summers night,"<sup>384</sup> an image that recalls

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<sup>384</sup> Cfr. Stanton J. Linden draws a parallel between the lovers of Donne's *Loves Alchymie* with this passage of Francis Bacon's *De Augmentis Scientiarum*: "So they who are carried away by insane and uncontrollable passion after things which they only fancy they see through the clouds and vapours of imagination, shall in place of works beget nothing else but empty hopes and hideous and monstrous spectres. But this popular and degenerate natural magic has the same kind of effect on men as some soporific drugs, which not only lull to sleep, but also during sleep instil gentle and pleasing dreams. For first it lays the understanding asleep by singing of specific properties and hidden virtues, sent as from heaven and only to be learned from the whispers of tradition; which makes men no longer alive and awake for the pursuit and inquiry of real causes, but to rest content with these slothful and credulous opinions; and then it insinuates innumerable fictions, pleasant to the mind, and such as one would most desire,-like so many dreams." See Linden, *Darke Hieroglyphicks*, cit., p. 550: "The plight of these deluded men closely parallels that of the lovers in Donne's "Loves Alchymie" dreaming "a rich and long delight," but getting "a winter-seeming summers night."

descriptions of false alchemical hopes arising from diseased imaginations. What is to be remarked is that, in both *The Sunne Rising* and *Loves Alchymie*, only the exoteric side of alchemy, with its procedures and equipment, is satirized whereas no reference to the esoteric development engendered by the alchemical process within the soul of man is made. References to the spiritual side of alchemy could be found in some other poems of Donne in which, however, the employment of alchemical images has an aim completely different from the lampooning one proper to *The Sunne Rising* and *Loves Alchymie*.

As I have already argued, Donne's most complex and original use of alchemical themes and symbols occurred in *The Canonization* but also in *A Nocturnall Upon S. Lucies Day, Being The Shortest Day* which maybe contains Donne's wittiest and most original adaptation of alchemical subject matter.<sup>385</sup> Both poems treated strikingly different aspects and manifestations of love and, in each, alchemical terms and ideas are used to sharpen and intensify the moods of the speakers and to clarify their contrasting romantic experiences and attitudes towards love. The poem is a vivid expression of sorrow caused by the death of a woman close to Donne and it is totally dominated by the voice of the grief-ridden poet. In the poem, which is supposed to take place at midnight, in the day of the winter solstice, when the whole world seems to be suspended between death and life, Donne merges his considerable grief with the hypothesis of alchemy as the *medium* to vehicle his strife thus producing an elaborate and hyperbolic conceit which is expanded through most of the three central stanzas. What really bewilders in *A Nocturnall Upon S. Lucies Day* is that the alchemical metaphor acts upon an enhancement of the poet's sorrow showing, consequently, the destructive effects of a boundless love fixed in mortality: the *Opus Alchymicum* which Donne is undergoing is an *Opus contra naturam* which leads to death instead of

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<sup>385</sup> The reference book for the texts of *A Nocturnall Upon S. Lucies Day, Being The Shortest Day* and *The Canonization* is *The Penguin Book of Renaissance Verse: 1509-1659*, cit., pp. 412-413 and 333-334.

bringing life. The temporal setting of the poem provides a perfect mirror of the poet's psychological state for, in addition to its being "the yeares midnight" and being, accordingly, the rays of the sun visible for only seven hours, the melancholy of the poem is intensified through imagery that evokes the death of creation as well as of time:

Tis the yeares midnight, and it is the dayes,  
*Lucies*, who scarce seaven houres herself unmaskes,  
The Sunne is spent, and now his flasks  
Send forth light squibs, no constant rayes;  
The worlds whole sap is sunke:  
The generall balme th'hydroptique earth hath drunk,  
Whither, as to the beds-feet, life is shrunke,  
Dead and enterr'd; yet all these seeme to laugh,  
Compar'd with mee, who am their Epitaph.

(ll. 1-9)

Donne's alchemical references to alchemical ideas extends through much of the second, third and fourth stanzas. Addressing those whose love will bloom after the awakening of spring, the poet implores them to become the object of their study because he could be a perfect example of the effects of love:

Study me then, you who shall lovers bee  
At the next world, that is, at the next Spring:  
For I am every dead thing,  
In whom Love wrought new Alchimie.  
For his art did expresse  
A quintessence even from nothingnesse,  
From dull privations, and leane emptinesse  
He ruin'd mee, and I am re-begot  
Of absence, darknesse, death; things which are not.

(ll. 10-18)

The development of the inverted process of an *Opus contra naturam* becomes clear when the speaker, like the corrupted materials of the early stages of the *Magnum*

*Opus*, is putrefied (ruin'd) into a state of even greater nothingness<sup>386</sup> and then resurrected (re-begot) but, owing to the material from which he has been prepared, he is distilled into an elixir of love which, being the result of the potency of an inverted alchemical process of distillation, emerges as the *quintessence* of nothing, thus constituting the exact opposite of what *quintessence* was supposed to be in alchemy. The concept of this incredibly rarefied human annihilation is extensively developed in stanzas three and four:

All others, from all things, draw all that's good,  
 Life, soule, forme, spirit, whence they beeing have;  
     I, by loves limbecke, am the grave  
 Of all, that's nothing. Oft a flood  
     Have wee two wept, and so  
 Drownd the whole world, us two; oft did we grow,  
 To be two Chaosses, when we did show  
 Care to ought else; and often absences  
 Withdrew our soules, and made us carcasses.

But I am by her death, (which word wrongs her)  
 Of the first nothing the Elixer grown;  
     Were I a man, that I were one  
     I needs must know; I should preferre,  
     If I were any beast,  
 Some ends, some means; Yea plants, yea stones detest,  
 And love; all, all some properties invest;  
 If I an ordinary nothing were,  
 As shadow, a light, and body must be here.

(ll. 19-36)

The intense love of the two lovers resulted, at times, in weeping, in distractions by other things and in the absence of each other. The flood, produced by the lovers' tears, drowned the world and made the lovers two "Chaosses" and two "carcasses" of this tragedy of theirs. Here the element of water brings no salvation: the teardrops of strife streaming down the lovers' faces lead to death because everything in the poet's

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<sup>386</sup> The term "nothingness" is a neologism coined by Donne. For an accurate account of the possible meaning and implication of the words within of the *A Nocturnall Upon S. Lucies Day* see Silvia Bigliuzzi, *Nel Prisma del Nulla*, Napoli, Liguori Editore, 2005, pp. 155-158.

world could only resolve in annihilation after his beloved's death. In the last stanza the poet continues to speak, using non-alchemical terms, about the state of nothingness he has now become:

But I am None; nor will my Sunne renew.  
You lovers, for whose sake, the lesser Sunne  
At this time to the Goat is runne  
To fetch new lust, and give it you,  
Enjoy your summer all;  
Since shee enjoyes her long nights festivall,  
Let mee prepare towards her, and let mee call  
This houre her Vigill, and her eve, since this  
Both the yeares, and the dayes deep midnight is.

(ll. 38-45)

The whole poem can therefore be read as an entire *Opus contra naturam* which ends exactly there where it started from, that is to say at midnight hour, for the principle of *peripeteia* (i.e. reversal) is the major motif of the *Opus contra naturam* – the *Work* which must go backwards to go forwards. In the case of *A Nocturnall Upon S. Lucies Day*, the poet undergoes some kind of negative inner development during his own *Opus*, finding therefore himself stuck in his stillness which he is not able to overcome. Here, the *ouroboros*, which symbolically should symbolize the circularity of the alchemical process, becomes, through the performative power of Donne's word, real death. Moreover, the spatial and temporal evolution typical of the *Opus Alchymicum* is reduced to the stillness of Nature at midnight hour. The point in providing a literary background to a criticism towards Newton's alchemical millenarianism strictly relies on a parallel between his attitude towards the interpretation of the prophecies and the *Opus contra naturam* previously hinted at. The fact is that the situation Newton had to face before embarking on his journey of deciphering *Daniel* and the *Revelation* was actually recalling the chaos, confusion and stillness brought about by the process of decay underwent by mankind since the Fall. The only opposition to this reverse *Opus Magnum*

could be made by the Elect able to develop a proper alchemical process which will restore the good balance of nature. Newton actually considered himself *that* Elect for he “saw the Last Judgment in terms of the conclusion of an alchemical opus.”<sup>387</sup>

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<sup>387</sup> Hughes, *The Rise of Alchemy*, cit., p. 5. Cfr. Matt Goldish, *Judaism in the Theology of Sir Isaac Newton*, cit., p. 60: “Newton clearly saw himself as one of those given wisdom (though not prophecy) in these latter times to unravel the divine plan hidden in the writings of the prophets.”

## 2.5 Isaac Newton's Millenarianism: Some Further Considerations

This study of mine has led me so far to the establishment of some important cultural coordinates which it would be better to resume to outline the development of the discourse about Newton's alchemical mind in his interpretation of Biblical prophecies. The cultural background of Newton's time was a heterogeneous mixture of magic, lore, new scientific horizons plus a long series of connections between these fields. Though the influence of magic culture had long before started to fade away, the rise of the Rosicrucian movement in the seventeenth century engendered a revived fervour across Europe for alchemical-theosophical theories about the explanation of God's Word and works. The religious implications of these mystical currents were actually bound to some strict catholic dogmas, such as that of the Holy Trinity, which were interpreted and adapted in the light of alchemical symbolism. By terms of critical reduction to simplicity, it is now time to highlight Newton's heresies in order to best define his attitude towards the Rosicrucian fraternity.

Newton's heretical attitude towards Catholic dogmas could be divided into three most important points of break with established creed: his Arianism,<sup>388</sup> his equalling the Pope with Antichrist and the Catholic Church with the beast of the Apocalypse. Since ancient times, the obscure, lurking damned figure of the Antichrist was identified with the Apocalyptic beast<sup>389</sup> which seems to allude however, according to its original significance, to a pagan *eidolon* symbol of idolatry.<sup>390</sup> Yet allegedly, though at times identified with the Roman Empire, the focus of this idolatry seems to have been the personification of all mundane, corrupted human powers. As

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<sup>388</sup> Cfr. Richard H. Popkin, "Some Further Comments on Newton and Maimonides," in Force and Popkin (eds.), *Essays*, cit., p. 6: "Newton's rejection of Trinitarianism may also have involved his absorption of the Jewish notion of God as Lord in the full sense of dominator of all that is."

<sup>389</sup> See in particular the following passages: Rev. 11: 7; 13: 1-10; 14: 1; 16: 2,10,13; 17: 8-14; 19: 19-20.

<sup>390</sup> Cfr. Stefani, *Radici Bibliche*, cit., pp. 202-203.

attested in Luke 4: 5-6,<sup>391</sup> the overarching characteristic which equates all the heterogeneous interpretations of the apocalyptical beast would be the anathema cast against the political power overturning the leading message of the Bible. Newton's heresy relies in his historical interpretation of the beast and of other biblical figures and institutions alike, insofar as they would have betrayed the duty God's had endowed them with. Among those institutions, Newton enrolled the Roman Catholic Church, and the Pope – its earthly governor – became thus identified with the mischievous Antichrist. Nevertheless, to determine Newton's doubtful commitment to Rosicrucian alchemical theosophy his most revealing heretical attitude to be taken into account is his Arianism.

Though no overt admission<sup>392</sup> was made by Newton during his lifetime about his heretic beliefs, some passages from his unpublished manuscripts helped scholars to determine the nature and the status of his 'own religion.' To introduce this issue, I would like to quote here some passages from the manuscript SL255.7 (location unknown) entitled "Part of a study of Revelation." In this crumbled document, Newton introduces the vexed question about the divine nature of Jesus Christ by admitting that he yet adhered to the worshipping of the human side of 'the man Christ Iesus.' Christ is then said to be a 'king' subdued however to the authority of the Almighty 'King of Kings.' The passage runs as follows:

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<sup>391</sup> Luke 4: 5-6: "And the devil, taking him up into an high mountain, shewed unto him all the kingdoms of the world in a moment of time. And the devil said unto him, All this power will I give thee, and the glory of the: for that is delivered unto me; and to whomsoever I will I give it."

<sup>392</sup> Cfr. Snobelen, "Isaac Newton, Heretic," cit, p. 381. Other outstanding Snobelen's essays on Newton's heresy are Stephen D. Snobelen, "Isaac Newton, Socinianism and 'The One Supreme God,' in Martin Mulrow and Jan Rohls (eds.), *Socinianism and Cultural Exchange: the European Dimension of Antitrinitarian and Arminian Networks, 1650-1720*, Leiden, Brill, 2005; Snobelen, "'The True Frame of Nature,'" cit.



8 All The worship here given to Christ respects his humane nature. For it is given to him in the form of a Lamb who was slain for us, & who received this prophesy from God & by his death became worthy to receive it. He is here worshipped not as a God but as a King, the man Christ Jesus our Lord, not as God Almighty but as King of Kings & Lord of Lords who has redeemed his elect with his blood & made them kings & priests under him.<sup>393</sup>

Few lines below, Newton bluntly argues that Christ cannot be worshipped in the same way the Almighty has to be glorified with, because he does not partake in God's divine essence. God is one and all the honours must be therefore paid to Him. Moreover, a misunderstanding of the divine hierarchical order<sup>394</sup> of God and His Lamb would imply a misleading attitude towards the Almighty and a breach of the first commandment 'You shall have no other gods before me' (Exodus 20: 1; Deut. 5: 7):

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<sup>393</sup> Cfr. Yahuda MS. 15.7, "Drafts on the history of the Church (Section 7)," f. <154r>: "[...] the Son receiving all things from the father, being subject to him, executing his will, sitting in his throne & calling him his God, & so is but one God with the father as a king & his viceroy are but one king. For the word God relates not to the metaphysical nature of God but to his dominion. It is a relative word & has relation to us as the servants of God. It is a word of the same signification with Lord & King but in a higher degree. For as we say my Lord our Lord your Lord, other Lords, the King of Kings & Lord of Lords, other Lords, the servants of the Lord, serve other Lords so we say my God our God your God, other Gods the God of Gods, the servants of God, serve other Gods. And therefore as a father & his sons cannot be called one King upon account of their being consubstantial but may be called one King by unity of dominion if the son be Viceroy under the father: so God & his son cannot be called one God upon account of their being consubstantial." The manuscript is collected at Jewish National and University Library, Jerusalem; online address of the complete transcription of the manuscript: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00237>.

<sup>394</sup> The passage is transcribed from f. <2r>. Address of its online transcription: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00357>.

9 The Worship given to God & Christ in this prophesy is their peculiar proper incommunicable worship. To give glory & honour & thanks to the Lamb because he was slain for{illeg} us & hath redeemed us with his blood is a worship which cannot be given to God Almighty the creator of heaven & earth nor to any other but the lamb. To give glory & honour & thanks to him that sitteth upon the throne because he hath created all things, is a worship which cannot be given to the Lamb nor to any other but God Almighty the creator of heaven & earth. And to give it to any other would be a breach of the first commandment and having another God besides the God of the Jews the creator of all things, & a denial of that God.

In the same comprehensive lot SL255, originally auctioned off at Sotheby's, there was also one of the two manuscripts I have decided to entirely reproduce here which are, namely, SL255.3 and Keynes MS.11. These two documents are among the less known of all Newton's unpublished bulk, yet I deem them particularly revealing of Newton's profound commitment to religious issues. Both texts focus on the ontological status of God whose Trinity was challenged by Arius in the 4<sup>th</sup> century shortly before his condemnation as heretic during the first Council of Nicaea (325). The text belonging to lot n°255 is manuscript SL255.3<sup>395</sup> (unknown location) which is a fragment dealing with the denial of the Trinitarian nature of God by resuming the contents of Arius' doctrine. The text is fully reproduced according to the online transcription at the Newton Project Website.

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<sup>395</sup> SL255.3 (unknown location) is entitled: "Part 2 of a passage on Church history;" address of its online transcription: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00353>. The history of series of fragments corresponding to Sotheby Lot n° SL255 is far too troubled to be introduced here. For details about the record of the lot see: <http://www.newtonproject.sussex.ac.uk/catalogue/record/THEM00127>. Another Newtonian manuscript dealing with the Trinitarian nature of God is Yahuda MS. 19 entitled "Treatise on Church history with particular reference to the Arian controversy." Unfortunately, the document has not been so far digitalised to be uploaded on the website of the Newton Project.

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Epistle written against Eusebius & Theognis, Constantine saith that Christ the son of God the framer of all things, & giver of immortality was begotten, in respect of the faith in which we beleive: he was begotten, (or rather he came out, since he was always in the father,) to set in order those things which were made by him.

Arius & those with him in their Epistle which they sent to Alexander before the meeting of the council of Nice, wrote thus. The Son is not a being which first existed & was afterwards begotten or formed into a son; for your self, o blessed father, inthe middle of the Church & in the session [of the Presbytery] have often confuted them who affirmed these things. And a little after: But if this, I came out from him, & out of the womb, & out from the father be understood by some as a consubstantial part or an emission: the Father will be compounded & divisible & mutable, & also a body according to those men, & so far as they can effect, the incorporeal father will suffer those things which are proper to bodies. Alexander therefore, as I find by his Epistles, for avoiding these difficulties allowed no other generation of the son of God then what was from all eternity affirming that the father was always a father & the son was a natural son always coexisting with the father by a generation without beginning & coequal to him in all things except paternity, & incapable of mutation. And they that opposed Alexander relpied that according to this opinion the son was ἀγενετος unbegotten meaning that the necessary & eternal existence of the λογος ενδιαθετος was no generation. And this is the first instance that I meet with of calling the λόγος ενδιάθετος of the father the natural son of the father by an eternal generation. For had the opinion been older the objection against it would also have been older, namely that it made the son unbegotten & so amounted to a denial of the father & the son.

Keynes MS. 11<sup>396</sup> (King's College, Cambridge) is maybe one of Newton's most controversial manuscript. Dated back to the early 1700s, it is entitled "Twenty-three queries about the word ὁμοούσιος" and it resembles Newton's typical sharp writing style. Sharing Newton's statements in Yahuda Ms. 15.7, Keynes Ms. 11 displays a clear exposition of his doubts on the correct interpretation of the word ὁμοούσιος (*homooúsios*) – the term used since the First Council of Nicaea to justify the ontological Trinity of God. Properly meaning "of the same being or substance," the term was adopted to describe the same essence of God's and Christ's natures in order to uphold their "Trinitarian unity" with the Holy Ghost:

The Homousians made the father & son one God by a metaphysical unity the unity of substance: the Greek Churches rejected all metaphysical divinity as well that of Arius as that of the Homousians & made the father & son one God by a Monarchical unity, an unity of Dominion.<sup>397</sup>

After the first introductory query, Newton immediately begins an historical enquiry into the stages of the establishment of the 'ὁμοούσιος' as dogmatic logos of the Nicene creed. Actually, besides the value of his philological speculation, what this manuscript may suggest and confirm to us, is Newton's thorough commitment to the historical development of religious issues. An attitude which he applied to all the branches of his scholarship. Keynes MS. 11 runs as follows:

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<sup>396</sup> Keynes MS. 11, King's College, Cambridge; address of its online transcription: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00011>. An outstanding critical study on Newton's development of Arius' doctrine is Force, "Newton's God of Dominion," in Force and Popkin (eds.), *Essays*, cit.

<sup>397</sup> Yahuda MS. 15.7, f. <154r>.

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Quære 1. Whether Christ sent his Apostles to preach Metaphysick{s} to the unlearned common people & to their wives & children.

Qu. 2. Whether the word Ὁμοούσιος ever was in any Creed before the Nicene; or any Creed was produced by any one Bishop at the Council of Nice for authorizing the use of that word.

Qu. 3. Whether the introducing the use of that word is not contrary to the Apostles rule of holding fast the form of sound words.

Qu. 4. Whether the use of that word was not pressed upon the Council of Nice against the inclination of the major part of the Council

Qu. 5 Whether it was not pressed upon them by the Emperor Constantine the great a Chatechumen not yet baptized & no member of the Council.

Qu. 6 Whether it was not agreed by the Council that that word when applied to the Son of God should signify nothing more then that Christ was the express image of the father, & whether many of the Bishops in pursuance of that interpretation of the word allowed by the Council, did not in their subscriptions by way of caution add τούτεστιν ὁμοιούσιος?

Quære 7. Whether Hosius (or whoever translated that Creed into Latin) did not impose upon the western Churches by translating ὁμοούσιος by the words *unius substantiæ* instead of *consubstantialis* & whether by that translation the Latin Churches were not drawn into an opinion that the father & son had one common substance called in the Greek Hypostasis & whether they did not thereby give occasion to the eastern Churches to cry out ( presently after the Council of Serdica) that the western Churches were become Sabellian.

Qu. 8. Whether the Greeks in opposition to this notion & language did not use the language of three hypostases, & whether in those days the word hyposta{sis} did not signify a substance.

Qu. 9. Whether the Latins did not at that time accuse all those of Arianism who used the language of three hypostases & thereby charge Arianism upon the Council of Nice without knowing the true meaning of the Nicene Creed.

Q. 10. Whether the Latines were not convinced in the Council of Ariminum that the Council of Nice by the word ὁμοούσιος understood nothing more then that the son was the express image of the father. the Acts of the Council of Nice were not produced for convincing them. And whether upon producing the Acts of that Council for proving this, the Macedonians & some others did not accuse the Bishops of hypocrisy who in subscribing those Acts had interpreted them by the word ὁμοιούσιος in their subscriptions.

Qu. 11. Whether Athanasius, Hilary & in general the Greeks & Latines did not from the time of the reign of Iulian the Apostate acknowledge the father Son & holy Ghost to be three substances & continue to do so till the Schoolmen changed the signification of the word hypostasis & brought in the notion of three persons in one single substance.

Qu. 12. Whether the opinion of the equality of the three substances was not first set on foot in the reign of Iulian the Apostate by Athanasius Hilary &c.

Qu. 13. Whether the worship of the Holy Ghost was not first set on foot presently after the Council of Serdica.

Qu. 14 Whether the Council of Serdica was not the first Council which declared for the doctrine of the consubstantial Trinity & whether the same Council did not affirm that there was but one hypostasis of the father son & H. Ghost.

<1v>

Qu. 15 Whether the Bishop of Rome five years after the death of Constantine the great A.C. 341 did not receive appeals from the Greek Councils & thereby begin to usurp the universal Bishopric

Qu. 16 Whether the Bishop of Rome in absolving the Appellants from excommunication & communicating with them & did not excommunicate himself & begin a quarrel with the Greek Church.

Qu. 17 Whether the Bishop of Rome in summoning all the Bishops of the Greek Church to appear at the next Council of Rome A.C. 342 did not challenge dominion over them & begin to make war upon them for obtaining it.

Qu 18 Whether that Council of Rome in receiving the Appellants into Communion did not excommunicate themselves & support the Bishop of Rome in claiming appeals from all the world.

Qu. 19 Whether the Council of Serdica in receiving the Appellants into Communion & decreeing Appeals from all the Churches to the Bishop of Rome did not excommunicate themselves & become guilty of the schism which followed thereupon, & set up Popery in all the west.

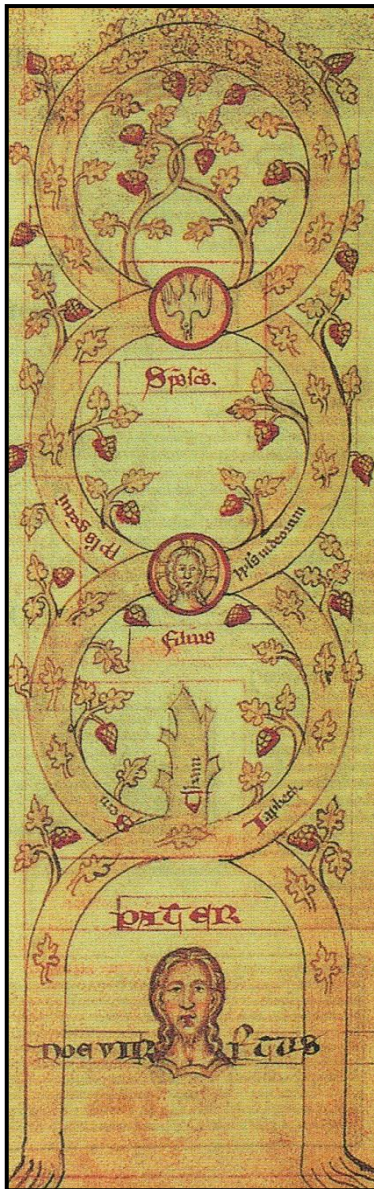
Qu. 20 Whether the Emperor Constantius did not by calling the Council of Millain & Aquileia A.C. 365, abolish Popery, & whether Hilary, Lucifer, were not banished for adhering to the authority of the Pope to receive appeals from the Greek Councils.

Qu. 21 Whether the Emperor Gratian A.C. 379 did not by his Edict restore the Vniversal Bishopric of Rome over all the west? And whether this authority of the Bishop of Rome hath not continued ever since

Qu 22 Whether Hosius Saint Athanasius, Saint Hilary, Saint Ambrose, Saint Hierome, Saint Austin were not Papists.

<2r>

Qu. 23 Whether the western Bishops upon being convinced that the Council of Nice by the word Ομοούσιος did



As far as Newton's Arianism is taken for granted,<sup>398</sup> we ought to reasonably reject the possibility that he might have somehow taken part in the spreading or enhancement of the Rosicrucian doctrine in England, though it was impossible for him to escape some alchemical influences which directly derived from the Rosicrucian-oriented personalities spinning around the Hartlib circle. Actually based on Newton's acquaintance<sup>399</sup> with Rosicrucian literature and proper manifestos, Frances A. Yates has suggested that his being a true religious man (which is far too different from being an orthodox Christian) might have pushed Newton to entertain "a hope that the 'Rosicrucian' alchemical way though nature might lead him even higher."<sup>400</sup> Notwithstanding the revolutionary role played by her works in expanding the limits of scholars' criticism and awareness about Renaissance magical

culture, Yates' produced proofs are too weak to be exhaustive. Otherwise, we can reasonably assume that, according to Paul Arnold's study on the breadth of the Rosicrucian myth,<sup>401</sup> Newton's interest for Rosicrucians' theosophy chiefly relied on their development of millenaristic and eschatological theories. Especially by recalling Joachim of Fiore's and Campanella's foreshadowing the forthcoming *parousia* of a

<sup>398</sup> Cfr. Snobelen, "The True Frame of Nature," in Brooke and Maclean (eds.), *Heterodoxy*, cit., p. 233: "By the middle of the decade, he had arrived at a view of God akin to that of the ancient heresy of Arianism."

<sup>399</sup> Only one edition of *The Chymical Wedding* is recorded in Harrison's catalogue. See Harrison, *Library*, cit., p. 229.

<sup>400</sup> Yates, *Enlightenment*, cit., p. 202. Cfr. Dobbs' opinion on Yates' chapter "Isaac Newton and Rosicrucian Alchemy:" Dobbs, *The Foundations of Newton's Alchemy*, cit., p. 19.

<sup>401</sup> Cfr. Chapter 2, paragraph 2.2.



Golden Age on Earth,<sup>402</sup> Newton shared the Hartlibians' belief that the Millennium was not far to come and that his understanding of the prophecies would prove so. Yet, as suggested by Katz and Popkin, the connections between heretical thought and millenaristic idea were profound since commitment to the return of Christ the King on Earth was subdued to the firm belief that the prophecies represented the true Word of God. Accordingly:

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<sup>402</sup> Joachim of Fiore (c. 1131-1202) can be considered the father of modern messianism. In his three major works (*Liber Apocalypsis*; *Liber Concordiæ*; *Liber Psalterii decem chordarum*), he describes his exegetical method of finding an interpretative key to the apocalyptic understanding of the prophecies. He argued that, throughout the biblical pages, series of numerical, lexical, and symbolical parallels could be drawn to reveal the secret meaning of the prophecies. Yet his greatest theoretical contribution to millenarianism relies in his subdivision of history into three stages at the end of which Christ would come to establish a Golden Age of peace and love on Earth. Some worthy critical references to Joachim's messianism are: Antonio Crocco, *Gioacchino da Fiore e il Gioachimismo*, Napoli, Liguori, 1976; Katz and Popkin, *Messianic Revolution*, cit. pp. xix-xxv; Marjorie E. Reeves, *Joachim of Fiore and the Prophetic Future*, London, S.P.C.K., 1976; Marjorie E. Reeves, *The Influence of Prophecy in the later Middle Ages: a Study in Joachimism*, Oxford, Clarendon Press, 1969; Delno C. West, *Joachim of Fiore: a Study in Spiritual Perception and History*, Bloomington, Indiana University Press, 1983; Ann Williams, *Prophecy and Millenarianism: Essays in Honour of Marjorie Reeves*, Essex, Longman, 1980. In the edition of 1733 of Newton's *Observations upon the Prophecies of Daniel, and the Apocalypse of St. John, the following passages is recorded*: "The folly of Interpreters has been, to foretel times and things by this Prophecy, as if God designed to make them Prophets. By this rashness they have not only exposed themselves, but brought the Prophecy also into contempt. The design of God was much otherwise. He gave this and the Prophecies of the Old Testament, not to gratify men's curiosities by enabling them to foreknow things, but that after they were fulfilled they might be interpreted by the event, and his own Providence, not the Interpreters, be then manifested thereby to the world." Here Newton clearly states that he was against the dating of Doomsday, finding the procedure completely useless (the quotation is from Part II, Chapter I: Introduction, concerning the time when the Apocalypse was written. Transcribed from the on-line published edition at the Newton Project Website: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00209>). About the vexed question about the dating of the Millennium see especially: Paul J. Korshin, "Queuing and waiting: the Apocalypse in England," in Patrides Wittreich (eds.), *Apocalypse*, cit., pp. 240-265; Stephen D. Snobelen, "'A Time and Times and the Dividing of Time': Isaac Newton, the Apocalypse and 2060 A.D.," in *The Canadian Journal of History*, Vol. 38 (December 2003), pp. 537-551; Stocker, *Apocalyptic Marvell*, cit. Cfr. P. Rattansi, "Newton and the Wisdom of the Ancients," in *Let Newton be!*, cit., pp. 185-201, on p. 181: "In Newton's mind, the task of the scholar was to show that biblical prophecies had been fulfilled in historical events. [...] Another of Newton's aims was therefore to correct those of his contemporaries who kept fixing dates for Christ's return. Until the event occurred, the prophecies pertaining to it could well remain obscure. This was an important point for Newton, since it meant that the existence of such obscurity was no argument against a true religion. All would become in due course." The image here reproduced is counted as n°12 in the cluster of figures compounded in my thesis. It represents Joachim of Fiore's three ages of the world and is taken from Alexander Roob, *Alchimia & Mistica*, Köln, Taschen, 1997, p. 75.

Despite the natural modern tendency to consider those who believe in the imminent coming of the Messiah as in some way deviant from the main line of Christian belief, in a very real sense it is precisely these people who have kept faith with the original message of the New Testament. Indeed, anyone who believes that the Bible is the literal word of God can hardly do otherwise than to accept the millenarian concept – the notion that one day soon Jesus will return and establish on this earth a regime with His saints that will endure for one thousand years.<sup>403</sup>

Hence, what I argue is that, as far as Newton was concerned with the reestablishment of the *prisca sapientia* of the ancients, he was likewise trying to organize his alchemical mind around that body of knowledge which was esteemed to best render the true Word of God. The Hermetic idea that God was one and that he created the Universe out of his own substance will somehow resemble Newton's heretic idea that Christ and the Holy Ghost do not partake in the Almighty's divine nature:

Every sentient soul, at different times and in different organs of senses and motions, is the same indivisible person. There are parts that are successive in duration and coexistent in space, but neither of these exist in the person of man or in his thinking principle, and much less in the thinking substance of God. Every man, insofar as he is a thing that has senses, is one and the same man throughout his lifetime in each and every organ or his senses. God is one and the same God always and everywhere.<sup>404</sup>

Another outstanding parallel between Newton's idea of God and the Hermetic theory thereof can be drawn between a passage of the *General Scholium* to the third

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<sup>403</sup> Katz and Popkin, *Messianic Revolution*, cit. pp. xv-xvi.

<sup>404</sup> Cohen and Whitman, *The Principia*, cit., p. 941. Original Latin text: Koyré and Cohen (eds.), *Principia*, 3rd. ed., cit., pp. 761-762. Cfr. Treatise XI of Hermes' *Poimandres* in Ramelli (ed.), *Corpus Hermeticum*, cit., p. 309: "Ebbene, che esista qualcuno che crea queste cose, è chiaro; che poi questo qualcuno sia anche uno solo, è evidente in Massimo grado, dal momento che l'anima è una sola, una è la vita e una sola è la materia. Ora, questo Creatore, chi è? E chi altro potrebbe essere, se non l'unico Dio? A chi altri si addirebbe, infatti, creare viventi animati, se non a Dio soltanto? Dio, dunque, è Uno. Sarebbe assolutamente ridicolo: tu hai riconosciuto che il mondo è sempre, che il sole è uno, che la luna è una, che l'attività divina è una, e vorresti che Dio stesso fosse uno tra molti?"

book of the *Principia*, where Newton outlines his proofs for God's existence, and the eleventh Treatise of the *Poimandres*. In the *General Scholium*, Newton's ultimate aim is to stress God's transcendence and omnipresence and to advise his readers that human mind would not even be able to conceive, nor inclined to fully grasp, God's true nature:

He is eternal and infinite, omnipotent and omniscient, that is, he endures from eternity to eternity, and he is present from infinity to infinity; he rules all things, and he knows all things that happen or can happen. He is not eternity and infinity, but eternal and infinite; he is not duration and space, but he endures and is present. He endures always and is present everywhere, and by existing always and everywhere, he constitutes duration and space.<sup>405</sup>

This passage is to be compared with some lines from the *Poimandres*, Treatise XI, where the discourse of the Nous to Hermes is theologically aimed at describing God and the relations connecting him to the *All*:

[2] [...] "God, eternity, cosmos, time, becoming." [...] Eternity, therefore, is in god, the cosmos in eternity, time in the cosmos, and becoming in time. And while eternity has stood still in god's presence, the cosmos moves in eternity, time passes in the cosmos, but becoming comes to be in time."<sup>406</sup>

For these very reasons, I am firmly persuaded that Newton shared the view of a *prisca alchymia* – an Adamic alchemical proceeding which he esteemed suitable for his understanding of the Holy Scripture. Actually, the chain of links which fastens alchemy, Hermeticism, and the interpretation of the Bible provides one solid theoretical justification for an alchemical explanation of Newton's interpretation of the prophecies.

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<sup>405</sup> Cohen and Whitman, *The Principia*, cit., p. 941. Original Latin text: Koyré and Cohen (eds.), *Principia*, 3rd. ed., cit., p. 761.

<sup>406</sup> Treatise XI of Hermes' *Poimandres* in Copenhaver (ed.), *Hermetica*, cit., p. 304.

As plainly outlined by Katz and Popkin: “The implications of hermeticism for the messianic idea were profound, for the chief message of its writings was that humankind not only can understand the world but can actually control it, at the very least by identifying the path that nature will take.”<sup>407</sup>

Newton’s millenarianism rose in the Reformation milieu which considerably prompted the attention given to those prophetic passages of *Daniel* and *Revelation* which hence became also suitable to be literally interpreted. Actually, one of the most distinctively millenaristic views was that, when it happened, the Millennium would be heralded by a series of sensational and revealing events. These would be the Conversion of the Jews,<sup>408</sup> the Defeat of the Turk, the Fall of Rome, and the restoring of the reign on Earth of Christ with the glory of his saints, either for a thousand years (Revelation 20: 4) or for ever (Daniel 7: 18-27).<sup>409</sup> Accordingly, Newton’s attitude<sup>410</sup> towards biblical exegesis could be explained as follows.

Bound by the conviction that the concealed message of the Bible was exclusively hidden in the prophetic texts, he deemed the other books to be relatively or scarcely important to unveil God’s essential theosophical message. His commitment to biblical exegesis resulted then in an historical approach to the study of a great part of the Old Testament which he evaluated in terms of past known historical facts.<sup>411</sup> Thence,

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<sup>407</sup> Katz and Popkin, *Messianic Revolution*, cit., p. 5. “The most important new idea that paved the way for a reconstructed and improved messianism was the body of knowledge that is usually called hermeticism” (*Ibid.* p. 4).

<sup>408</sup> On the subject see especially Christopher Hill, “Till the Conversion of the Jews,” in Popkin (ed.), *Millenarianism and Messianism*, cit.; Stephen D. Snobelen, “‘The Mystery of This Restitution of All Things’: Isaac Newton on the Return of the Jews,” in James E. Force and Richard H. Popkin (eds.), *Millenarianism and Messianism in Early Modern European Culture, Vol. 3. The Millenarian Turn: Millenarian Contexts of Science, Politics and Everyday Anglo-American Life in the Seventeenth and Eighteenth Centuries*, Dordrecht, Kluwer Academic Publishers, 2001, p. 95-118.

<sup>409</sup> Cfr. Keith Thomas, *Religion and the Decline of Magic*, cit., p. 167.

<sup>410</sup> Cfr. Stefani, *Radici Bibliche*, cit., p. 201. Cfr. Richard H. Popkin, “Newton’s Biblical Theology and His Theological Physics,” in Scheurer and Debrock (eds.), *Newton’s Legacy*, cit., p. 89: “Newton, in explicating *Daniel* and *Revelation* offered a theory of progressive development in understanding the prophecies.”

<sup>411</sup> Cfr. Westfall, *Never at Rest*, cit., p. 329: “To Newton, the correspondence of prophecy with fact demonstrated the dominion of God, a dominion exercised over human history even as it is exercised over the natural world.” One most interesting parallel could be drawn between Newton’s and Roger Bacon’s

the millenaristic character of the prophecies would be “confirmed by carefully examining human history from the time of the writing of *Daniel* onward, and discovering how much of what happened is an exact fulfilment of the prophecies set forth in *Daniel* and *Revelation*.”<sup>412</sup> Just as he heretically interpreted the apocalyptic beast from an historical point of view, so did he share the belief that a correct understanding of the prophecies would herald the end of the world insofar as prophetic time equals time of history.<sup>413</sup> His historical/methodological approach reinforced his contention that Jewish history was designated by God to overtly reveal himself in time and space and that He gifted the Jews with the wonders of ‘the sacred cubit’ and the perfection of Solomon’s Temple. Yet the most important thing to recall<sup>414</sup> now is that in biblical theology Newton aligned himself with the pristine doctrine of the two Books – the Book of Nature and the Holy Scriptures. The former was to be discovered primarily by human experience and studied through scientific research whereas the latter was to be revealed by an interpretative key to the apocalyptic understanding of the prophecies in *Daniel* and *Revelation*. Textual problems aside, the two books share a juxtaposition in contents by means of literary homogeneity and allegorically forecast, in a far too difficult manner, what will happen to mankind up to the apocalyptic doom of human history. Furthermore, in Yahuda MS 1.1, Newton beseeches those sceptical about the rate and mode of approaching God’s message in *Daniel* and *Revelation* by offering them some assurance about the righteousness of that exegetical task:

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historical approaches to millenaristic study. Cfr. Sannino, “*Compendium Studii Philosophiae*,” in *Studi Filosofici*, cit., p. 33: “La presenza di attese escatologiche e millenaristiche nel pensiero di Bacone è stata studiata dal Bigalli, che ha mostrato come l’*Opus Maius* esprima verso l’apocalisse e la palingenesi un interesse storico, secondo la posizione del francescanesimo, e non semplicemente esegetico-dottrinale.”

<sup>412</sup> Richard H. Popkin, “Newton’s Biblical Theology and His Theological Physics,” in Scheurer and Debrock (eds.), *Newton’s Legacy*, cit., p. 88.

<sup>413</sup> Cfr. Richard H. Popkin, “Newton’s Biblical Theology and His Theological Physics,” in Scheurer and Debrock (eds.), *Newton’s Legacy*, cit., p. 88: “His energies went into a post-facto analysis of historical events, to show that, after they occurred, the wise can see that they are the very events predicated in passages in the prophetic works. Insofar as they are the predicated events, this shows that history is Providential history.”

<sup>414</sup> Cfr. chapter I, especially paragraph 1.2.

I would not have any discouraged by the difficulty & ill success that men have hitherto met with in these attempts. This is nothing but what ought to have been. ffor it was revealed to Daniel that the prophesies concerning the last times should be closed up & sealed untill the time of the end: but then the wise should understand, & knowledg should be increased. Dan 12.4, 9, 10. And therefore the longer they have continued in obscurity, the more hopes there is that the time is at hand in which they are to be made manifest. If they are never to be understood, to what end did God reveale them?<sup>415</sup>

Accordingly, as forecast by *Daniel* 10: 21; 12: 4-9, “many shall run to and fro, and knowledge shall be increased” though “it should not be understood before the last age of the world, and therefore it makes for the credit of the Prophecy, that it is not yet understood.” Newton himself pointed out that these passages in *Daniel*, plus many others alike, let guess that a true understanding of the prophecies would not take place until the times of the end, and even then only gradually. The great success in interpreting Biblical prophecies made by Mede and his followers, along with the increase of human knowledge prompted by the Scientific Revolution, suggested Newton that the world was approaching the end of time and that Doomsday was therefore not too far off.

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<sup>415</sup> Yahuda MS. 1.1, f. <1r>.

## Chapter III

### Alchemy and Science in Newton's *Opticks*

And God saw that the light, that *it* was good: and God divided the light from the darkness.

*Genesis 1: 4*

The very first embryonic idea for the outcome of this third chapter originally came to me after reading some particularly interesting studies about alchemy and optics developed by Urszula Szulakowska.<sup>416</sup> In her “*The Alchemy of Light*,” she remarks and pioneers a discourse about one of the most distinctive features of sixteenth and seventeenth century European culture: “the metaphysical concept of the divinity and generative power of light.”<sup>417</sup> Counterbalanced by its literary adaptations of hexaemic texts, the Almighty’s pervading rays of divine light, through the vision of the Holy Ghost, were seen as a means of union with God which, in its turn, finds resemblance within the pages of some seventeenth century Cambridge Platonists – whose ascendancy<sup>418</sup> Newton should have strongly perceived since his acculturation occurred in that context. As a matter of fact, the intellectual situation at Cambridge represented a late echo of the Florentine Platonism of the Renaissance, both schools being characterized by a deep devotion to ancient theology and philosophy. Chiefly concerned

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<sup>416</sup> My three reference editions of Szulakowska’s studies are: Urszula Szulakowska, “Geometry and Optics in Renaissance Alchemical Illustration: John Dee, Robert Fludd and Michael Maier,” in *Cauda Pavonis*, New Series, Vol. 14, No. 1 (Spring 1995), pp. 1-12, hereinafter quoted as Szulakowska, “Geometry and Optics;” Szulakowska, *The Alchemy of Light*, cit.; Urszula Szulakowska, *The Sacrificial Body and the Day of Doom*, Leiden-Boston, Brill, 2006, henceforth quoted as Szulakowska, *Sacrificial Body*.

<sup>417</sup> See in particular Szulakowska, *The Alchemy of Light*, cit., Introduction, pp. XI-XXII.

<sup>418</sup> Cfr. Webster, *From Paracelsus to Newton*, cit. p. 2. See also Arthur Quinn, “On Reading Newton Apocalyptically,” in Popkin (ed.), *Millenarianism and Messianism*, cit., pp. 182-185.

with the identification of principles necessary to any adequate system of the physical world that would have to be recognized as the manifestation of a spiritual being, the Cambridge Platonists allegedly considered white pure light as the manifestation of the spiritual breath of God pervading the cosmos:

So that *Reason* is the Pen by which Nature writes this Law of her own composing; This Law 'tis publish by Authority from heaven, and Reason is the Printer.<sup>419</sup>

Such historical currents enhanced very personalised interpretations of the Holy Scriptures, in which God and man's soul merged through the indwelling light of the Spirit; moreover, these waves of thought were extremely strengthened within Hermetic and Neoplatonic circles where they allegedly underwent massive influences of alchemical nature. According to the first lines of *Genesis*, this theosophical system envisaged God creating the cosmos out of his own everlasting sparkling light which pervaded then the whole universe. Szulakowska points out how the debate among scholars resulted in a common neglect of the contribution of alchemical theories to these distinctive and revolutionary theological movements, at best orienting their interest in some quotations from the works of Heinrich Khunrath (1560-1605), Michael Maier (1568-1622) and Robert Fludd (1574-1637). Yet, their Hermetic-Paracelsian metaphysics of light revolutionised contemporary alchemy insofar as they stressed the importance of the alchemical secret meaning of the rays of sun, moon, and the stars. Despite Allen G. Debus' extensive study on the relation between Paracelsian metaphysics of light and Fludd's alchemical knowledge, scholars and historians of alchemy allegedly set aside discourses concerning the pivotal role played by the

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<sup>419</sup> Nathanael Culverwel, *An Elegant and Learned Discourse of the Light of Nature*, Toronto, University of Toronto Press, 1971, p. 65.



imagery of light in the evolution of sixteenth-century West alchemy. As plainly explained by Szulakowska, the aim of her study relied on an attempt to focus “on Renaissance ideas of the generative power of the light of the sun, stars and planets,”<sup>420</sup> basically reviewing Dee’s, Fludd’s and Khunrath’s body of theories.

As a matter of fact, since Hellenistic times, alchemists had chiefly relied on the effects of the stars, though a coherent knowledge of astral virtues began to develop only beginning from the late fourteenth century, appearing in its full expression in the comprehensive work of Paracelsus and in a later adaptation by John Dee. Besides them, it was the harsh polemic brought about in alchemical circles by Khunrath that ceased the oblivion on the implications of the power of light in the *Art*. Remarkably, Khunrath assumed, as the founding axiom of his alchemical philosophy, that Christ embodied the properties of the philosopher’s stone thus transmuting the soul through his Eternal Light of Wisdom. Hence, by the early seventeenth century, the alchemical understanding of celestial rays and natural light evolved into a proper religious and theurgical ritual. Indeed, then, “late Renaissance alchemists developed a conceptual structure which could be called an ‘alchemy of light,’ a syncretic philosophy integrating the discrete intellectual and mystical currents of Pythagorean geometry, Neoplatonism, medieval optics, Paracelsian alchemy and cabbalism.”<sup>421</sup> I think that Newton’s optical theories, along with his related theory of colours, partook, at least in terms of divine justification to it, to the worldview postulated by this “alchemy of light.” An alchemical explanation of the generative power of light according to Newton’s scholarship, could be set up as piece, in Newton’s scientific chessboard, matching his explanation of God’s ruling over the mechanical forces as he purports in the *General Scholium*. Though I have no claim to inquire into the specific formulas of Newton’s optical laws – nor would this be of any

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<sup>420</sup> Szulakowska, *The Alchemy of Light*, cit., Introduction, p. XII. The study of alchemical geometry is particularly pioneered by Szulakowska in Szulakowska, “Geometry and Optics,” cit.

<sup>421</sup> *Ibid.*, Introduction, p. XIII.

help in determine the plausibility of my arguments, – I share anyway the belief that an analysis of some alchemical features in Newton’s scientific works, especially in the *Opticks*, would enhance the legitimacy of the study of his prophetic manuscripts according to his alchemical mind. The theoretical link for the justification of this last hypothesis of mine is strictly derived from Mamiani’s reasoning<sup>422</sup> about the inner connections established among the different branches of Newton’s knowledge. According to him, a reductive reading of the whole written production of Isaac Newton could be easily avoided by placing his scientific works in the service of the analysis of his non-scientific papers; thence it is possible to draw one meaningful parallel between Newton’s optical research and the alchemical view – the “alchemy of light” – implied in it, in so far as the latter helped to establish the former. As remarked by Hurlbutt, “Newton’s science was intrinsic to practically all of his considerations on theology,”<sup>423</sup> and, since the pansophic cipher of his knowledge could be allegedly taken for granted, we can assume that his theology was, all the same, intrinsic<sup>424</sup> to all his scientific research and results. This third chapter, though short, intends to provide an overlook on this subject and suggest some considerations which may seem to warrant elsewhere further consideration.

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<sup>422</sup> I have already quoted in the “Introduction” (note 23 on p. 9) the passage in which Mamiani accounts for the importance of a new approach of Newtonian criticism towards the analysis of Newton’s bulk of written works. To favour an easier reading of the chapter, I do anyway reproduce here the previously quoted lines: “Il problema dei rapporti tra scienza e religione è stato affrontato troppo timidamente dagli studiosi di Newton: [...] altri ancora hanno tentato di trovare un qualche legame (influenze, orientamenti, tic...) tra la sua ricerca scientifica e quella non scientifica (teologica, cronologica, alchemica ecc.). Quest’ultima via, che apparentemente è la più proficua, è forse la più infida, a causa della lettura riduttiva che spesso comporta: si leggono, quando si leggono, gli scritti religiosi (o alchemici, o cronologici ecc.) in funzione di quelli scientifici. Una storiografia di questo tipo ammette tacitamente, senza prova alcuna, l’esistenza di universi culturali rigidamente isolati e collocabili in una precisa gerarchia” (Mamiani (ed.), *Trattato sull’Apocalisse*, Introduzione, p. XVI).

<sup>423</sup> Robert H. Hurlbutt, *Hume, Newton, and the Design Argument*, Lincoln, University of Nebraska Press, 1965.

<sup>424</sup> Cfr. Richard S. Westfall, “Newton’s Theological Manuscripts,” in *Contemporary Newtonian Research*, cit., p. 139: “Having studied the entire corpus of his theological papers, I remain unconvinced that it is valid to speak of a theological influence on Newton’s science.” As a matter of fact, I do not agree with Westfall’s choice of studying Newton’s theology and science separately as highlighted by Force: “If any leakage across wavelengths, it is Newton’s science which colors his theology and not vice-versa” (Force, “Newton’s God of Dominion,” cit., p. 77).

The idea of the divinity of light had been handed down from the most ancient times to the Hellenistic philosopher Plotinus, as well as to various Hermetic groups. The term “Hermeticism” was originally adopted to refer to the late Hellenistic preaching of Hermes and his followers. This theosophical system had emerged by the second century BC in Egypt, though at first it did not encompass Western alchemy which comprehensively developed only from the very first Christian century onwards; alchemical literature being added<sup>425</sup> to the earlier Hermetic corpus by the second century AD. Historically separately developed from Neoplatonism, Hermeticism had been ruthlessly criticized by Plotinus for its superstitiousness and inconsistent theology. Notwithstanding Plotinus’ animosity towards the Hermeticists, Renaissance philosophers allegedly accommodated both systems within their vision of a *prisca theologia* – the same body of knowledge which Newton sought to re-establish through his natural philosophy. One main source for Newton’s proper “alchemy of light” can be identified with some passages of the *Poimandres*, namely paragraphs 4 to 7. Here are some very important lines which can best sound out the concept of the powerful knowledge of the divine light:

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<sup>425</sup> Cfr. Copenhaver (ed.), *Hermetica*, Introduction, pp. xxxii-lix.

[4] [...] I saw an endless vision in which everything became light – clear and joyful – and in seeing the vision I came to love it. After a little while, darkness arose separately and descended – fearful and gloomy – coiling sinuously so that it looked to me like a <snake>. Then the darkness changed into something of a watery nature, indescribably agitated and smoking like a fire [...]. [5] But from the light...a holy word mounted upon the <watery> nature, and untempered fire leapt up from the watery nature to the height above. The fire was nimble and piercing and active as well [...]. [6] Poimandres then said to me, [...] “I am the light you saw, mind, your god,” [...], “who existed before the watery nature that appeared out of the darkness. [...]” [...] “Understand the light, then, and recognize it.” [7] [...] I saw in my mind the light of powers beyond numbers and a boundless cosmos that had come to be. The fire, encompassed by great power and subdued, kept its place fixed. [...].<sup>426</sup>

The knowledge-endowed force of divine light which echoes through the lines of the *Poimandres* finds its symbolical alchemical counterpart in the activation of matter, a common concept in early modern Europe. Actually, light represented the power of God to activate or reactivate lifeless matter and, according to its alchemical usage, it was closely akin to the iconographic tradition of representing the divine power by degrees of light power.<sup>427</sup> According to Dobbs, “the accepted paradigm for generation in the vegetable kingdom was somehow different, for there an analogy was made between the seeds of plants and the male animal’s ‘seed’ or ‘sperm,’ with the earth herself assigned the female role of receptive womb.”<sup>428</sup> The belief that death and decay brought new life was grounded on the Biblical authority of John’s Gospel: “Except a corn of wheat fall into the ground and die, it abideth alone: but if it die, it bringeth forth much fruit.” As a matter of fact, many alchemists quoted these lines from John to vouchsafe somehow their necessity for enacting stages of death and

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<sup>426</sup> Copenhaver (ed.), *Hermetica*, <Discourse> of Hermes Trismegistus: Poimandres, pp. 1-2. Cfr. Scarpi (ed.), *Poimandres*, cit., pp. 45-47; see also notes 9-10-11 on pp. 77-78.

<sup>427</sup> On the subject see especially Dobbs, *Alchemical Death & Resurrection*, cit., pp. 7-8.

<sup>428</sup> John 12: 24.

putrefaction. Accordingly, on this unformed matter, “the spirit of God moved, and, as the light had come upon the first creation, the alchemical matter was “illuminated” and endowed with the personality of life and growth.”<sup>429</sup> This source of powerful generation and re-generation was searched for by Newton throughout all the years he devoted to alchemical praxis: the “vital agent” he fancied to discover was effectively supposed to enlist all the properties ascribable to alchemical light. Allegedly, we can thence assume that a major focus of interest in Newton’s “experimental demonstration that sunlight is actually a composition of heterogeneous spectral rays rather than being perfectly homogeneous”<sup>430</sup> relies on his searching after the Hermetic/alchemical meaning of its deepest nature. Furthermore, the previously quoted passages of *Poimandres* enhance another major parallel between Newton’s studies on the colours of the rainbow and their figurative employment in the explanation of the *Apocalypse*. The association of the divine light of knowledge with the destructive power of fire is firmly rooted within the alchemical tradition. Red, with all his shades, was the colour associated with the transformative power of the alchemical fire which, through its burning action, was thought to bring renovation and new life to the *prima materia* after the accomplishment of the *rubedo* stage. It is hence plausible that Newton’s identification of the woman arrayed in purple and scarlet in *Revelation* 17: 4 with the Church of Rome and the apocalyptic destruction of the earth by fire in *Revelation* 20: 9 may refer to this alchemical pattern of metaphor. At this stage of my reasoning it will be useful to reckon some hints at Newton’s scientific legacy to better understand the value of the alchemical quest in it.

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<sup>429</sup> Dobbs, *Alchemical Death & Resurrection*, cit., p. 15.

<sup>430</sup> William R. Newman, “Newton’s Early Optical Theory and His Debt to Chemistry,” in *Lumière et vision dans les sciences et dans les arts: de l’Antiquité au XVIIe siècle*, textes réunis par Michel Hochmann & Danielle Jacquart, Genève, Droz, 2010, pp. 283-307, on p. 283, henceforth referred to as, Newman, “Early Optical.”

Scientists and historians allegedly agree that the ‘Newtonian Revolution’ represents the peak of the Scientific Revolution. Accordingly, his comprehensive scientific knowledge can be divided into three<sup>431</sup> major parts according to the three most distinctive fields of research he was committed to. In mathematics, Newton (along with Leibniz) invented the calculus – the differential as well as the integral calculus – which constitutes the language of the exact sciences. He pioneered the use of infinite series, and he introduced methods of calculation and approximation still nowadays shared and used. This was his first revolution. The second revolution was constituted by his optical research. In the *Opticks*,<sup>432</sup> first published in 1704, Newton established the heterogeneity of sunlight and reformulated understanding of the nature of colour. A third revolution was Newton’s codification of the science of mechanics, a subject that he dignified with the name of rational mechanics, along with his three laws of motion, which remain fundamental to that subject. The crowning achievement of Newton’s codification of the principles of rational mechanics and their subsequent re-elaboration was the publication of “the greatest highth of Knowledge that humane nature has yet arrived to”<sup>433</sup> – that is, the *Mathematical Principles of Natural Philosophy (Philosophiæ Naturalis Principia Mathematica)* first published in Latin in 1687 and reissued in revised editions in 1713 and 1726. Actually, it was in the third “book” of this treatise that Newton set forth the principle and law of universal gravitation and elaborated his “system of the world.” The theoretical point of contact between the *Opticks* and the *Principia* is constituted by the

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<sup>431</sup> This distinction was first proposed by Cohen and Westfall. See Cohen and Westfall (eds.), *Newton*, cit., Introduction, pp. xi-xii.

<sup>432</sup> Major important studies on the history of optical studies and on Newton’s *Opticks* are: Bruce S. Eastwood, *Astronomy and Optics from Pliny to Descartes*, London, Variorum Reprints, 1989, henceforth referred to as Eastwood, *Astronomy and Optics*; Casper Hakfoort, “Newton’s optics: the changing spectrum of science”, in *Let Newton Be!*, cit., pp. 81- 99; David C. Lindberg, *Theories of Vision From Al-Kindi to Kepler*, Chicago, The University of Chicago Press, 1976, henceforth quoted as Lindberg, *Theories of Vision*; *Lumière et vision dans les sciences et dans les arts: de l’Antiquité au XVIIIe siècle*, cit.; David Park, *The Fire Within the Eye*, Princeton, Princeton University Press, 1997; Vasco Ronchi, *The Nature of Light. An Historical Survey*, translated by V. Barocas, Heinemann, London, 1970, henceforth quoted as Ronchi, *The Nature of Light*.; A. I. Sabra, *Theories of Light From Descartes to Newton*, London, Oldbourne, 1967, henceforth referred to as Sabra, *Theories of Light*.

<sup>433</sup> John Aubrey’s definition of Newton’s *Principia*.

texts appended to the editions following the attack<sup>434</sup> for alleged atheistic implications Newton's science had received. Foreshadowed by the publication<sup>435</sup> in 1672 of the theory of light and colours, the *Opticks* first appeared in 1704 with sixteenth *Queries* appended to the text. In the second edition, which appeared in 1717 and was re-issued in 1718, the *Queries* had increased to thirty-one, and the additions included the two essentially chemical *Queries* numbered thirty and thirty-one. As a matter of fact, the *loci classici* for Newton's "scientific theism" are represented by the *General Scholium* to the *Principia* and by some passages in *Queries* 28 and 31 appended to the *Opticks*. As highlighted by Shea, "The next step is to ask whether Newton's disparagement of occult qualities in the famous Query 31 of the *Opticks* is more political than real, and whether it could have stemmed from a desire to repel the charge of obscurantism rather than from the fear of becoming an obscurantist."<sup>436</sup> In order to try to find out an answer to this question, it would be very useful to review and to add some final considerations to Newman's essay "Newton's Early Optical Theory and His Debt to Chemistry" in which the author shows "that a consideration of alchemy, or rather "chymistry," also adds an important new dimension to Isaac Newton's early optical discoveries and their presentation."<sup>437</sup>

What Newman maintained in his study is that 'chymistry' provided the young Newton with an important heuristic method which he unfolded in his theory that white light is a heterogeneous mixture composed of immutable spectral colours. Though he

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<sup>434</sup> Cfr. Casper Hakfoort, "Newton's optics: the changing spectrum of science," in *Let Newton Be!*, cit., p. 82: "The development and reception of Newton's optical work was full of confusion and controversy, but it also revealed fundamental changes in early modern science." Actually, the three most important scientists who challenged Newton's theories were Robert Hooke, Ignatius Pardies, and Christian Huygens.

<sup>435</sup> Newton's first published account of his theory of the prismatic colours was contained in a letter to the Secretary of the Royal Society, Henry Oldenburg, dated 6 February 1671/2. According to Thomas Birch, the letter was read before the Society in Newton's absence on the eighth of the same month (see Thomas Birch, *The History of the Royal Society of London*, cit., vol. 3, p. 9) and then printed in the *Philosophical Transactions*, N°80, 19 February 1671/2. Some further accounts on the subject could be found in Ronchi, *The Nature of Light*, cit., pp. 160-163; Sabra, *Theories of Light*, cit., Chapter IX, pp. 231-250.

<sup>436</sup> William R. Shea, "Introduction: Trends in the Interpretation of Seventeenth Century Science," in Righini Bonelli and Shea (eds.), *Reason, Experiment, and Mysticism*, cit., p. 7.

<sup>437</sup> Newman, "Early Optical," cit., p. 284.

neglected the chance that Newton might have found anything approximating his optical theory in his (al)chemical sources, Newman argues, however, that the earliest descriptions of Newton's theory occur embedded among extensive notes on chymistry taken by Newton himself from Robert Boyle. As proves to his statements, Newman argues that the fact that Newton was thinking about the composition of white light in Boylean terms was borne out especially by the terminology he employed in the description of the experiments of his optical lectures. The manuscripts Newman is referring to are Newton's Cambridge notebook CU Add. 3996 entitled *Certain Philosophical Questions*, probably c.1664, and CU Additional MS. 3975, probably 1665-1666; what is most interesting is that Newton labelled both of these short treatises "Of Colours."

The theological core of Newton's theory of light and colours strictly relies on his description of the composition of white light before and after the process of refraction. After remarking that sunlight itself is refracted by the atmosphere and reflected by clouds, Newton states the following:

Yet, since the sun's direct light is perceived to be white, and that color is not one of the primitives but may be shown to be generated by a mixture; and since there is no sensible difference between original light and that which is compounded from diversely colored rays, it must not be doubted that both are of the same nature.<sup>438</sup>

According to Newton, the perceptible identity of the whiteness of sunlight and of the resynthesized white light acts as a warrant of their real identity. On the subject, Newman argues that the "fact that both the direct white light of the sun and the artificially recompounded white light color bodies with the same colors, refract into the

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<sup>438</sup> The edition of Newton's *Opticks* I refer to is Isaac Newton, *The Optical Papers of Isaac Newton*, edited by Alan Shapiro, Cambridge-New York, Cambridge University Press, p. 505, henceforth referred to as Shapiro (ed.), *Optical Papers*.



same spectrum, and cannot be sensibly distinguished from one another provide sufficient evidence that they are indeed identical.”<sup>439</sup> The alchemical interpretation engendered by the theory of the “alchemy of light” is that the primordial sparkle of divine light (which brought forth life on Earth), after having being ruined into the chaotic *prima materia* of the origin, would have its status of *albedo redintegrata*<sup>440</sup> – as Newton named it, – restored back only after having undergone the transmutation in colours of the *Opus magnum*. Hence, since we attach this alchemical theory to Newton’s explanation of the nature of light, even an explanation of each single colour according to alchemical patterns acquires more meaning. Remarkably, the period by which Newton allegedly took up his alchemical studies – the 1670s – matches with the few years he devoted to optical research and this overlapping in time enhances somehow a possible displacement of aims and methods from one field to the other.

To conclude this short overlook at the alchemical implications of Newton’s optics, it would be useful to recall Newman’s conclusion and have his final assertions expanded by some further consideration. According to his analysis:

The origins of analytic-synthetic tradition in ‘chymistry’ lie in the Geberian alchemy of the late Middle Ages, which attempted to demonstrate that metals and minerals are composed of heterogeneous particles retaining their substantial identity while undergoing the separation and recombination that results in phenomenal change. It becomes therefore possible to see Newton’s experimental decomposition and redintegration of white light as owing a significant debt to a practical and theoretical tradition of alchemical analysis and synthesis whose origins recede well into the Middle Ages.<sup>441</sup>

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<sup>439</sup> Newman, “Early Optical,” cit., p. 302.

<sup>440</sup> Shapiro (ed.), *Optical Papers*, p. 162, line 9; and p. 516, line 16.

<sup>441</sup> Newman, “Early Optical,” cit., p. 305.

As I have argued in the previous chapters, Newton is much indebted to the alchemical tradition of the Middle Ages especially as far as the figure of Roger Bacon is concerned. It should be therefore no surprise to discover that Bacon's master, Robert Grosseteste, wrote a great deal<sup>442</sup> about optical science and that the nature of these works of his, especially his use of sources, complements his metaphysical position. He gives, in his *De Luce*, a scientific account of Creation in terms of a geometrical optical atomism, which has strong roots in Plato's *Timæus* and which finds resonances within his great *Hexaëmeron* dealing with God's spirit shaping the formless *prima materia*. As synthesised by Lindberg,<sup>443</sup> four major strands could be highlighted within Grosseteste's philosophy of light: (1) the epistemology of light; (2) the metaphysics or cosmogony of light; (3) the etiology of light; (4) the theology of light, which explains theological truths by means of light metaphors. At the same rate, Roger Bacon's works on optics are a direct derivation from Grosseteste's ones to which they can be compared especially in terms of metaphysical justification of the optical theories they proposed. Another link<sup>444</sup> between Isaac Newton and Roger Bacon could thus be reasonably established to broaden the field of a criticism encompassing their two pansophic systems of the world. To best conclude this short interlude-like chapter, before starting the alchemical analysis of Newton's prophetic manuscripts, I find it very appealing to suggest a definition attached by Jeremiah Hackett to Roger Bacon's personality. The definition, originally a quotation by Winston Churchill, trickily describes Newton's *persona* in as much suitable a way as it fits Roger Bacon's figure. Therefore, they still both appear to us "a riddle, wrapped in a mystery, inside an enigma."<sup>445</sup>

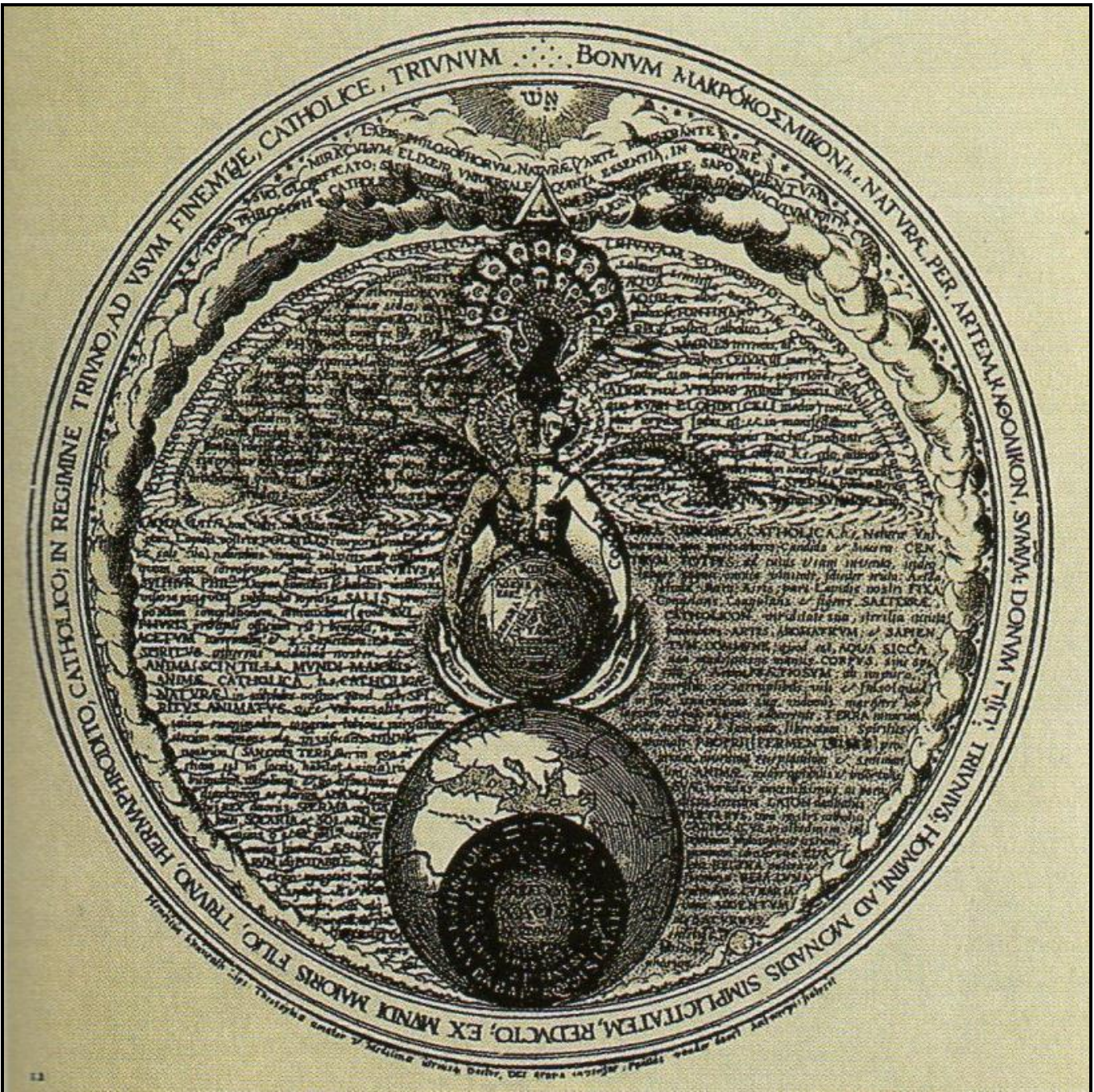
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<sup>442</sup> Some worthy reference books for the study of Grosseteste's optics are: Eastwood, *Astronomy and Optics*, cit.; Lindberg, *Theories of Vision*, cit., pp. 94-102.

<sup>443</sup> Lindberg, *Theories of Vision*, cit., p. 95.

<sup>444</sup> Cfr. David Park, *The Fire Within the Eye*, cit., p. 108: "Why would anyone dedicated to the purification of theology and the rightness of his Church spend time on optical studies? Considering this question helps one understand the minds of European Christians until well into the seventeenth century." Remarkably, Park is referring to Roger Bacon's studies on optics.

<sup>445</sup> Hackett, "The Reception of Roger Bacon," cit., p. 149.



**Plate 3. The *Opus Magnum* as an eyeball.**

Heinrich Khunrath, *Amphitheatrum Sapientiæ Æternæ*, 1602, reproduced here from Stanislas Klossowski de Rola, *The Golden Game. Alchemical Engravings of the Seventeenth Century*, London, Thames & Hudson, 1988, p. 40.

## Chapter IV

### Newton's Archetype of the Apocalypse

Entia non sunt multiplicanda præter necessitatem.  
*William of Ockham*

Since we have come at this key point of my discourse, I feel obliged to devote some introductory lines to briskly review the main outcomes my reasoning has so far come to. The certain premise to any further development in my criticism actually relies on recalling that Western alchemy had always been grounding its knowledge on an entangled system of symbols. Some of these (Christ the *lapis*; the *King/Sun*, the *Queen/Moon* and their alchemical marriage – the *coniunctio*) have been previously broached in chapter I while others (a whole cluster emblematic birds – the *eagle* and the *dove*, the *raven*, the *phoenix*) have been in chapter II and in chapter III alike (the recurrent use of the colours to identify the *Magisterium's* stages). Actually, when arranged in different patterns, according to different elements, all these symbols evolve into quite a complex frame of meanings which makes their employment as critical media of Newton's millenarianism extremely difficult. As a matter of fact, at the core of this alchemical criticism lies however another series of symbols which will be thenceforward the focus of my study. Those are, namely: the serpent *ouroboros*, the colours representing the stages of the *magisterium*, the alchemical ram as *agnus dei*, the redeeming blood of Christ, the 'dew.' Obviously, some further developments in a critical comment of those symbols previously hinted at, wouldn't be missing in these final chapters so as to best portray Newton's alchemical millenarianism. Furthermore, besides the value of some unrivalled symbolical parallels, as far as my opinion is

concerned, a juxtaposition in terms between some alchemical methodological attitudes and Newton's own exegetic method would unveil a true contamination in means between those two branches of Newtonian scholarship. And, hence, the role alchemy played in the establishment of his pansophia would be easier gauged:

Newton understood alchemy to be one of the most, if not the most, important of his many studies, for if all went well he could demonstrate God's action in the world in an absolutely irrefutable fashion by demonstrating the operations of the nonmechanical vegetable spirit, and thus lay the specter of atheism to rest forever more.<sup>446</sup>

Nevertheless, before properly undertaking our journey into Newton's exegetical maze, I deem of primary importance to state some further considerations about the mode and rate of my study. As overdue premise to these, I would like to introduce here a previously unquestioned, though most interesting, issue about the alchemical implications of Newton's statement in the *General Scholium* that "in him are all things contained and moved."<sup>447</sup> Resembling the worldview posited by the *macrocosm-microcosm* theory, Newton's words are surprisingly equalled by a line from Andrew Marvell's *Upon Appleton House, to my Lord Fairfax*: "Things greater are in less contain'd."<sup>448</sup> Newton's and Marvell's lines, antithetical in terms, match however in meaning: each of them seems to be the synthesised definition of the two realms encompassed by the Hermetic theorisation of the cosmos of man and God. The *General*

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<sup>446</sup> Betty Jo Teeter Dobbs, "Newton's Alchemy and His Theory of Matter," in *Isis*, cit., p. 521. Cfr. P. Rattansi, "Newton and the Wisdom of the Ancients," in *Let Newton be!*, cit., pp. 185-201, on p. 178: "Newton was against "religious enthusiasm of the kind that had manifested itself in the proliferation of puritan sects, which had earlier threatened the stability of society. [...] Newton's religion was shorn of mysticism: one worshipped God by obeying his commandments. Newton was also against atheism, and the licentiousness which he believed went with it."

<sup>447</sup> Cohen and Whitman, *The Principia*, cit., p. 941. Original Latin text: Koyré and Cohen (eds.), *Principia*, 3rd. ed., cit., p. 761.

<sup>448</sup> Andrew Marvell, *Upon Appleton House*, VI, l. 44. My reference edition is Andrew Marvell, *Complete Poetry*, edited by Lord George de Forest, London, Dent, 1984. *Upon Appleton House, to my Lord Fairfax* is Marvell's longest poem and one of his last lyrics. Allegedly, the long poem could have been written most probably sometime between 1650 and 1653 during the three years Marvell spent at *Nunappleton House* as tutor to Mary, Lord Fairfax's daughter.

*Scholium* to the *Principia* is the *locus classicus* of Newton's acquaintance with God's omnipresence which appears to me as having a Hermetic origin: "all things have been & arose from one by ye mediation of one."<sup>449</sup> Besides the alchemical implications of a comparison in patterns between God's omnipresence in the *Scholium* and the pantheistic/holistic Hermetic *anima Dei*, the echo of Newton's "Lord God *Pantokrator*"<sup>450</sup> resounds louder within the folios of his millenaristic manuscripts.<sup>451</sup> By quoting plenty of texts<sup>452</sup> gathered in the Old Testament, Newton grounded his manifold references to the Almighty's omnipresence on the oldest Jewish tradition.<sup>453</sup> This might reveal how his idea of space as absolute and infinite would be partly derived from a theology much indebted to traditions of Biblical exegesis. John Brook remarks how Newton, in his early essay *De Gravitatione*, "argued that space is eternal in duration and immutable in nature, precisely because it is 'an emanative effect of eternal and immutable being.'"<sup>454</sup> Actually, it was through his pervasive, all-permeating presence

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<sup>449</sup> Newton's translation of Hermes' *Tabula Smaragdina* in Dobbs, *The Janus Faces of Genius*, cit., p. 274.

<sup>450</sup> Cohen and Whitman, *The Principia*, cit., pp. 940-941: "He rules all things, not as the world soul but as the lord of all. And because of his dominion he is called Lord God *Pantokrator*. For "god" is a relative word and has reference to servants, and godhood is the lordship of God, not over his own body as is supposed by those for whom God is the world soul, but over servants. The supreme God is an eternal, infinite, and absolutely perfect being; but a being, however perfect, without dominion is not the Lord God."

<sup>451</sup> Cfr. Force, "Newton's God of Dominion," in Force and Popkin (eds.), *Essays*, cit., p. 80: "Newton's voluntaristic God of Dominion, with his concomitant Arian Christology, directly influences his views on Biblical prophecy."

<sup>452</sup> Cfr. Betty Jo Teeter Dobbs, "Newton's Alchemy and His 'Active Principle' of Gravitation," in Scheurer and Debrock (eds.), *Newton's Legacy*, cit., p. 61: "Newton sometimes used the Hebrew *māqôm* (place) as an expression for God's omnipresence, and in the General Scholium cited many of the Old Testament texts upon which Jewish theologies of space were based. "In him are all things contained and moved," Newton said, citing the passages from Kings, Psalms, Job, and Jeremiah that the rabbis and Jewish philosophers had sponsored. In addition he cited texts from "Moses" in Deuteronomy, from John, and from Acts, thus bringing in the "sacred writers" from the most ancient Hebrew authority through Christ himself and earliest Christian antiquity." Cfr. Brian P. Copenhaver, "Jewish Theologies of Space in the Scientific Revolution: Henry More, Joseph Raphson, Isaac Newton and their Predecessors," in *Annals of Science* 37 (1980), pp. 489-548.

<sup>453</sup> On the Jewish theological implications of Newton's biblical scholarship see especially Richard H. Popkin, "Some Further Comments on Newton an Maimonides," in Force and Popkin (eds.), *Essays*, cit., pp. 1-7.

<sup>454</sup> John Brook, "The God of Isaac Newton," in *Let Newton Be!*, pp. 169-183, on p. 173. A translation of the manuscript has been done by William B. Allen and it is available on-line at: <http://williambarclayallen.com/translations.html>.

that God mastered and beheld reality as referred to by Newton himself with a quotation in the *General Scholium* of St Paul's speech in *Acts* 17: 27-28:

That they should seek the Lord, if haply they might feel after him, and find him, though he be not far from every one of us: For in him we live, and move, and have our being; as certain also of your own poets have said, For we are also his offspring.

Newton's large use of the word 'Παντοκράτορ'<sup>455</sup> in the *Scholium* provides a further, most revealing, link to his interpretation of the prophecies since the same term is introduced in the book of *Revelation*<sup>456</sup> to magnify the glory of God the Almighty on Earth. Yet allegedly, Newton's commitment<sup>457</sup> to the understanding of God's Word is almost entirely devoted to fathom out the true meaning of the prophecies and therefore his ultimate focus of interest relies in the interpretation of the book of *Revelation*.<sup>458</sup> Thence, if we are supposed to trace some close-tightening lines between his biblical reading and his scientific outcomes, these bonds are somehow to be sought between the *General Scholium* and the crowning book of his biblical commitment.

By shortly resuming the core of chapter II, it is now important to briefly skim through the prophetic scenario of Newton's age. During the last decades of the sixteenth century, the idea of the imminence of Doomsday was largely diffused and heterogeneous millenaristic views offered different answers to the problem of recognizing the revealing omens of Christ's second coming. Moreover, it was thought that a progressive scientific development and the recovery of Adamic wisdom would have come to herald the dreadful, bloody ultimate battle with the Antichrist. The

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<sup>455</sup> In the first Latin edition Newton writes the Greek term for 'Pantokrator.' See Koyré and Cohen (eds.), *Principia*, 3rd. ed., cit., vol. II, p. 760.

<sup>456</sup> Cfr. Rev. 1: 8; 4: 8; 11: 17; 15: 3; 16: 7; 19: 6; 21: 22. See especially Rev. 19: 16: "And he hath on *his* vesture and on his thigh a name written, KING OF KINGS, AND LORD OF LORDS."

<sup>457</sup> Cfr. Stefani, *Radici Bibliche*, cit., p. 199.

<sup>458</sup> Cfr. Westfall, *Never at Rest*, cit., p. 329: "[...] he considered the prophecies to be the very heart of divine revelation."



devastations of the Thirty Years' War on the Continent and the final, tragic stages of the Civil War in England were considered signs of the forthcoming Millennium, engendering thus a spate of millenaristic writings. Besides these, intellectuals such as J. A. Comenius, F. Bacon, J. V. Andreae strove to establish a new cultural course in Europe. Largely due to the sufferings of contemporary historical gains, they dreamt of a great scientific development in contemporary society to usher in the Golden Age of man's recovering the mastering of Nature he lost at the Fall. This apocalyptic background was also the scenario of Francis Bacon's *Instauratio Magna*, probably the largest and most detailed of all the plans for human development of the age. Moreover, within this context of eschatological philosophies, the theosophical ideas of the Rosicrucian fraternity heightened the fervour around a forthcoming *parousia*. Their alchemical, mystical intellectual background was also the one proper to Paracelsus, who "wished to install the image of God as an alchemist, and of Creation as a divine chemical distillation."<sup>459</sup> By means of cultural juxtapositions between the book of Genesis and the writings of the fathers of alchemy, he truly believed to have uncovered the secret of divine creation on which "a genuinely Christian science"<sup>460</sup> could be established. Remarkably, in the comprehensive collection of Newton's correspondence, the following passage about the days of divine Creation is recorded in a letter Newton wrote to Burnet in 1680: "Where natural causes are at hand God uses them as instruments in his works, but I do not think them alone sufficient for ye creation & therefore may be allowed to suppose that amongst other things God gave the earth it's motion by such degrees & at such times as was most suitable to ye creatures."<sup>461</sup>

It is within this complex frame of entangled relations between eschatological and millenarian views and Hermetic/theosophical philosophies, that the historical events

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<sup>459</sup> P. Rattansi, "Newton and the Wisdom of the Ancients," in *Let Newton be!*, cit., p. 195.

<sup>460</sup> *Ibidem*.

<sup>461</sup> Isaac Newton, *Correspondence*, edited by H. W. Turnbull, 7 vols., Cambridge, Published for the Royal Society at the University Press, 1959-77, vol. II, 247 - Newton to Burnet, January 1680/81, on p. 334.

which engender the birth of modern science took place. Isaac Newton's scholarship developed therefore in this context of close correspondences between heterogeneous fields of human knowledge. Yet the *criterion* he applied to solve out the intellectual maze of his age was, surprisingly enough, 'simplicity.' What I call the 'method of reduction to simplicity' acted as leading methodological approach in each branch of his intellectual endeavour and, therefore, we can find traces of its employment even in his interpretation of the prophecies:

Newton's natural philosophy and his heretical theology are also linked by this methodology. Just as a humble and inductive reading of the Book of Nature leads one to the Creator, so a humble and inductive reading of the Book of Scriptures leads one to the One True God of the Bible. The two reformations come together in the General Scholium.<sup>462</sup>

One most interesting thing is the alchemical derivation of this *principium* whose characteristics I am now about to fathom out.

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<sup>462</sup> Snobelen, "The True Frame of Nature," in Brooke and Maclean (eds.), *Heterodoxy*, cit., p. 257.

## 4.1 Preliminary Methodological Considerations

As the title itself does suggest, this paragraph will be devoted to evaluate some important methodological questions. My discourse on methodological issues is going to be divided into two distinct sections: one, spelt out in this paragraph, regarding Newton's scientific and exegetic methods of research, the other, developed in paragraph 4.3, focusing on the methodological strands of my approach towards Newton's millenaristic manuscripts. The overdue suspension in between them will be hosting an important reasoning about Jung's theories and their role in the alchemical evaluation of Newton's texts. The demand for some preliminary methodological considerations chiefly rises from the strict bond which closely links Newton's rules for scientific research and his hermeneutic principles for interpreting *Daniel* and *Revelation*. Let's therefore start to sum up Newton's synthetic scientific method.

Basically and sharply outlined in the 31<sup>st</sup> of the Queries appended to his *Opticks*, Newton's method<sup>463</sup> of scientific investigation was at the core of his whole scientific knowledge and obviously marked the success of his discoveries. Though fundamental in determining the successful outcome of his scientific task, the (apparently) easy structure of the method consists in two distinct processes of analysis which, supposed to be developed according to Newton's order, would prove the righteousness of one's initial assumptions. The first process is analytic and proceeds backwards from the final effects up to their original causes; then comes the synthetic way which allows to guess the overarching causes of the phenomena they engendered. Newton's own explanation of his method runs as follows:

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<sup>463</sup> An excellent study on the synthetic methodology of Isaac Newton is Alexandre Koyré, "The Significance of the Newtonian Synthesis," in Cohen and Westfall (eds.), *Newton*, cit., pp. 58-72.

As in Mathematicks, so in Natural Philosophy, the Investigation of difficult Things by the Method of Analysis, ought ever to precede the Method of Composition. This Analysis consists in making Experiments and Observations, and in drawing general Conclusions from them by Induction, and admitting of no Objections against the Conclusions, but such as are taken from Experiments, or other certain Truths.<sup>464</sup>

To the outworking of his general method, Newton added in the *Principia* four ‘Rules for the Study of Natural Philosophy’<sup>465</sup> which are the most famous example of Newton’s ‘method of reduction to simplicity.’ These four rules have been thus framed by Newton:

Rule 1 No more causes of natural things should be admitted than are both true and sufficient to explain their phenomena.

Rule 2 Therefore, the causes assigned to natural effects of the same kind must be, so far as possible, the same.

Rule 3 Those qualities of bodies that cannot be intended and remitted [i.e., qualities that cannot be increased and diminished] and that belong to all bodies on which experiments can be made should be taken as qualities of all bodies universally.

Rule 4 In experimental philosophy, propositions gathered from phenomena by induction should be considered either exactly or very nearly true notwithstanding any contrary hypothesis, until yet other phenomena make such propositions either more exact or liable to exceptions.

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<sup>464</sup> Isaac Newton, *Opticks*, based on the 4<sup>th</sup> edition, New York, Dover Publication, 1952, pp. 404-405, quoted in Cohen and Westfall (eds.), *Newton*, cit., p. 115.

<sup>465</sup> Cohen and Whitman, *The Principia*, cit., pp. 794-796. Most interesting studies on Newton’s methodological rules are: Alexandre Koyré, *Newtonian Studies*, London, Chapman & Hall, 1965, pp. 261-271; I. Bernard Cohen, “Hypotheses in Newton’s Philosophy,” in *Physis*, 8 (1966), pp. 163-184; I. Bernard Cohen, *Introduction to Newton’s ‘Principia,’* London, Cambridge University Press, 1971.

Newton's fourth rule has been linked to his most famous quotation "*hypothesis non fingo*," – "I frame no hypothesis."<sup>466</sup> According to this last rule, Newton expresses his blunt refusal for any scientific explanation which has not been painstakingly subjected to experimental review. The main consequence of Newton's assumptions was his denial of all those 'truths' whose demonstrations exceeded the boundaries of their methodological frame. As a matter of fact, those 'truths' were all manifestations of metaphysical phenomena which couldn't be examined according to a pattern of cause-and-effect analysis. Allegedly, it is this context of rigid scientific scrutiny that Newton's alchemical searching after the vital agent could be ascribed to. Insofar as he wasn't able to provide any scientific solid proof to its existence,<sup>467</sup> he resolved to find an alternative way to confirm his convictions about the existence of the "animating vegetative principle." Moreover, the striking heterogeneous relevance of Newton's "*hypothesis non fingo*" is increased by the following passages quoted from Mamiani:

L'affermazione metodologica di Newton che più ha colpito la comunità scientifica del suo tempo, *hypothesis non fingo*, significa anche non sovrappongo la mia immaginazione a quella di Dio, distorcendola. La scoperta dell'oggettività – almeno come idea regolativa – ha dovuto percorrere la tortuosa via dell'ermeneutica biblica.<sup>468</sup>

As far as the perspective of an alchemical reading of Newton's exegesis is concerned, the other three rules are not less worth to be analysed. By promoting the idea that explanations do not require more details than those sufficient to their effectiveness, Newton largely shared a principle of succinctness whose most famous forerunner has

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<sup>466</sup> A critical debate about the problematic translation of Newton's Latin original quotation is in Cohen and Westfall (eds.), *Newton*, cit., p. 111.

<sup>467</sup> Cfr. Cohen and Whitman, *The Principia*, cit., General Scholium, p. 943: "A few things could now be added concerning a certain very subtle spirit pervading gross bodies and lying hidden in them."

<sup>468</sup> Maurizio Mamiani, "Newton e l'Apocalisse," in *I Castelli di Yale. Quaderni di Filosofia*, anno I, n° 1, Firenze, Vallecchi, 1996, pp. 5-16, on pp. 9-10.

been William of Ockham.<sup>469</sup> Commonly known as ‘Ockham razor,’ it was the *lex parsimoniae* per excellence, the principle assuming that out of a series of hypothesis, the one portending the fewest assumptions ought to be selected. Allegedly passed into Newton’s methodological mind through Maimonides’ philosophical synthesis,<sup>470</sup> in the *Principia*, ‘the law of parsimony’ evolved into quite a complex re-formulation according to which those entities unnecessarily to experience must be rejected. These heuristic techniques have been expressed alike by Newton as hermeneutic rules for interpreting the biblical prophecies. Yet moreover, as Mamiani has observed, the hermeneutic rules have “passed” into the scientific method scheduling it:<sup>471</sup>

Newton attempted to formalize no fewer than 15 rules for the correct interpretation of the Bible. Just as one paid attention to the analogy of nature, so one respected the analogy of prophetic style. Just as one sought certainty in the mathematization of nature, so one tried to choose interpretations of Scripture that converged on a unique and literal meaning.<sup>472</sup>

The hermeneutic rules are neatly expressed by Newton in Yahuda MS. 1.1. They are ordered from general to particular and constitute the first out of the three parts<sup>473</sup> of which his comprehensive exegetic method is composed. One most important clarification about the exact number of the rules has however to be premised now.

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<sup>469</sup> Noteworthy general studies on *William of Ockham* could be found in: Gabriel Norbert Buescher, *The Eucharistic Teaching of William Ockham*, St. Bonaventure, N.Y., Franciscan Institute, 1974; Ernest Addison Moody, *The Logic of William of Ockham*, New York, Russell & Russell, 1965; Severino, *Filosofia Antica e Medievale*, cit., pp. 300-307; Paul Vincent Spade (ed.), *The Cambridge Companion to Ockham*, Cambridge, Cambridge University Press, 1999.

<sup>470</sup> Cfr. Ruth Link-Salinger et al. (eds.), *A Straight Path. Studies in Medieval Philosophy and Culture. Essays in honor of Arthur Hyman*, cit., pp. 216-229; Richard H. Popkin, “Some Further Comments on Newton an Maimonides,” in Force and Popkin (eds.), *Essays*, cit., pp. 1-7.

<sup>471</sup> See Mamiani (ed.), *Trattato sull'Apocalisse*, cit., Introduzione, p. VIII.

<sup>472</sup> Fauvel et al. (eds.), *Let Newton Be!*, cit., p. 174.

<sup>473</sup> Cfr. Maurizio Mamiani, “Newton e l’Apocalisse,” in *I Castelli di Yale. Quaderni di Filosofia*, cit., pp. 11-12.

Mamiani argues that the rules<sup>474</sup> given by Newton are 16, counting therefore as proper rule the one enlisted by Newton as rule [5B]. I am otherwise convinced that this critical choice would not entirely reveal the importance attached by Newton to the meaning of number 15. Moreover, Newton deemed rule [5], the last of the section about ‘Rules for interpreting the words & language in Scripture,’ to be a whole with rule [5B], the one opening the series of principles in the section of the ‘Rules for methodising | construing the Apocalyps.’ The glaring proximity in meaning of the two rules, in my opinion, suggests that Newton clearly imagined the logical sequence of the passage from an interpretative step (section 1) to another (section 2) as a shadow zone with no distinct boundary line in between them. The alchemical possible implications of these 15 rules will be later further explained. Moreover, the second stage of Newton’s hermeneutics envisaged the elaboration of the previous definitions whereas the last phase, through a series of propositions, developed the subdivision of *Daniel* and *Revelation* into several parts which Newton marshaled to compare and order. To allow a clearer understanding of my statements, the 15 hermeneutic rules are here reproduced.

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<sup>474</sup> Cfr. Maurizio Mamiani, “Newton e l’Apocalisse,” in *I Castelli di Yale. Quaderni di Filosofia*, cit., pp. 11-12; Mamiani (ed.), *Trattato sull’Apocalisse*, cit., Introduzione, p. xxx.

**Rules for interpreting the words & language in Scripture.**

1. To observe diligently the consent of Scriptures & analogy of the prophetic stile, and to reject those interpretations where this is not duly observed. Thus if any man interpret a Beast to signify some great vice, this is to be rejected as his private imagination because according to the stile and tenour of the Apocalyps & of all other Prophetic scriptures a Beast signifies a body politique & sometimes a single person which heads that body, & there is no ground in scripture for any other interpretation,

< insertion from right margin >

2. To assigne but one meaning to one place of scripture; unless it be by way of conjecture < insertion from f 12v > unless it be perhaps by way of conjecture, or where the literal sense is designed to hide the more noble mystical sense as a shell the kernel from being tasted either by unworthy persons, or untill such time as God shall think fit. In this case there may be for a blind, a true literal sense, even such as in its way may be beneficial to the church. But when we have the principal meaning: If it be mystical we can insist on a true literal sense no farther then by history or arguments drawn from circumstances it appears to be true: if literal, though there may be also a by mystical sense yet we can scarce be sure there is one without some further arguments for it then a bare analogy. Much more are we to be cautious in giving a double mystical sense. There may be a double one, as where the heads of the Beast signify both mountains & Kings Apoc 17.9, 10. But without divine authority or at least some further argument then the analogy and resemblance & similitude of things, we cannot be sure that the Prophecy looks more ways then one. Too much liberty in this kind savours of a luxuriant ungovernable fancy and borders on enthusiasm.

< text from the right margin resumes >

< text from f 12r resumes >

3. To keep as close as may be to the same sense of words, especially in the same vision, & < insertion from f 12v > 3. To keep as close as may be to the same sense of words especially in the same Vision and to prefer those interpretations where this is most observed unless any circumstance plainly require a different signification. < text from f 12r resumes > to prefer those interpretations where this is best observed. Thus if a man interpret the Beast to signify a kingdom in one sentence & a vice in another when there



is nothing in the text that does argue any change of , sense, this is to be rejected as no genuine interpretation. So if a man in the same or contemporary visions where the earth & sea or the earth & waters stand related to one another shall interpret the earth to signify sometimes the dition of a Kingdom as in the first Trumpet in chap 12 where the Dragon came down to the inhabitants of the earth & sea, , sometimes Councils as where the Earth helped the woman, & sometimes onely a low estate as where the Dragon was cast into the earth or the two hornd Beast rose out of the earth this wavering is not readily to be acquiesced in but such an interpretation to be indeavoured after as retains the same signification of Earth in all cases. < **insertion from f 12v** > So in the vision of the whore chap 17 & 18, to take the Kings of the earth over which the woman or great city reigned chap 17.18 for any other then the kings of the earth which committed fornication with her ch 17.2 & 18.3, 9 and lamented her fall ch 18.9, 10 that is for any other then the 10 Kings or horns of the Beast she reigned over, is not congruous. < **text from f 12r resumes** > So in the vision of the whore chap. 17 & 18 to take Kings of the Earth in one sence chap 17.2 and ch 18.3, 9 & in another ch 17.18 is not harmonious.

4. To chose those interpretations which are most according to the litterall meaning of the scriptures unles where the tenour & circumstances of the place plainly require an Allegory. Thus if the wound by a sword should be interpreted of a spirituall wound, or if the battel at the seventh Trumpet & vial exprest by the concours of Armies, & by a hail-storm with other meteors should be in interpreted of a spiritual Battel; since there is nothing in the text to countenance such an interpretation, it ought to be rejected as a phantasy, Where note that the usuall signification of a prophetic figure is in the application of this Rule to be accounted equipollent to the literall meaning of a word when ever it appears that the Prophets speak in their figurative language. As if they describe the overthrow of nations by a tempest of Hail, thunder, lightning and shaking of the world, the usuall signification of this figure is to be esteemed the proper & direct sense of the place as much as if it had been the litterall meaning, this being a language as common amongst them as any national language is amongst the people of that nation.

< **text from f 12r resumes** >

5. To acquiesce in that sense of any portion of Scripture <13r> as the true one which results most freely & naturally from the use & propriety of the Language & tenor of the context in that & all other places of Scripture to that sense. For if this be not the true sense, then is the true sense uncertain, & no man can attain to any certainty in the knowledg of it. Which is to make the scriptures no certain rule of faith, & so to reflect upon the spirit of God who dictated it.

He that without better grounds then his private opinion or the opinion of any human authority whatsoever shall turn scripture from the plain meaning to an Allegory or to any other less naturall sense declares thereby that he reposes more trust in his own imaginations or in that human authority then in the Scripture . And therefore the opinion of such men how numerous soever they be, is not to be regarded. Hence it is & not from any reall uncertainty in the Scripture that Commentators have so distorted it; And this hath been the door through which all Heresies have crept in & turned out the ancient faith.

### **Rules for methodising | construing the Apocalyps.**

< insertion from f 12v >

Rule 5B. To prefer those interpretations which, cæteris paribus, are of the most considerable things. ffor it was Gods designe in these prophesies to typify & describe not trifles but the most considerable things in the world during the time of the Prophesies. Thus were the question put whether the three froggs, the head or horn of any Beast, the <13v> whore of Babylon, the woman Iezabel, the ffals Prophet, the Prophet Balaam, the King Balac, the martyr Antipas, the two witnesses, the woman cloathed with the Sun the Manchild her Son, the Eagle proclaiming Wo & the like were to be interpreted of single persons or of kingdoms Churches & other great bodies of men: I should by this Rule prefer the latter, unless perhaps in any case the single person propounded might be of more note & moment then the whole body of men he stands in competition with, or some other material circumstance might make more for a single person then a multitude.

< text from f 13r resumes >

6. To make the parts of a vision succeed one another according to the order of the narration without any breach or interfering unless when there are manifest indications of such a breach or interfering. For if the order of its parts might be varied or interrupted at pleasure, it would be of no certain interpretation, which is to elude it and make it no prophesie but an ambiguitie like those of the heathen Oracles.

7. In collaterall visions to adjust the most notable parts & periods to one another: And if they be not throughout collaterall, to make the beginning or end of one vision fall in with some notable period of the other. For the visions are duely proportioned to the actions & changes of the times which they respect by the following Rule and therefore they are duely proportioned to one another. (2) But yet this Rule is not over strictly to be adhered to when the visions respect divers kingdoms or one vision respects the Church & another the state . (1) An instance of this you have in suiting the Dragon to all the seals the Beast to all the Trumpets and the Whore to the Wo Trumpets.

8. To choose those constructions which without straining reduce contemporary visions to the greatest harmony of their parts. I mean not onely in their proportions as in the precedent rule, but also in their other qualities, principally so as to make them respect the same actions For the design of collaterall visions is to be a key to one another & therefore the way to unlock them without straining must be fitting one to the other with all diligence & curiosity. {This} is true {opening} scripture by scripture. An instance of this you have in the comparison of the Dragon's history with the seales & Trumpets in Prop, & of the Trumpets with the Vials, in Prop &c

<14r>

9. To choose those constructions which without straining reduce things to the greatest simplicity. The reason of this is manifest by the precedent Rule. Truth is ever to be found in simplicity, & not in the multiplicity & confusion of things. As the world, which to the naked eye exhibits the greatest variety of objects, appears very simple in its internall constitution when surveyed by a philosophic understanding, & so much the simpler by how much the better it is understood, so it is in these visions. It is the perfection of God's works that they are all done with the greatest simplicity. He is the God of order & not of confusion. And therefore as they that would understand the frame of the world must indeavour to reduce their knowledg to all possible simplicity, so it must be in seeking to understand these visions. And they that shall do otherwise do not

only make sure never to understand them, but derogate from the perfection of the prophesy; & make it suspicious also that their designe is not to understand it but to shuffle it of & confound the understandings of men by making it intricate & confused.

10. In construing the Apocalyps to have little or no regard to arguments drawn from events of things; because there can scarce be any certainty in historical interpretations unless the construction be first determined.

11. To acquiesce in that construction of the Apocalyps as the true one which results most naturally & freely from the characters imprinted by the holy ghost on the severall parts thereof for insinuating their connexion, & from the observation of the precedent rules. The reason of this is the same with that of the fifth rule.

Hence if any man shall contend that my Construction of the Apocalyps is uncertain, upon pretence that it may be possible to find out other ways, he is not to be regarded unless he shall show wherein what I have done may be mended. If the ways <15r> which he contends for be less natural or grounded upon weaker reasons, that very thing is demonstration enough that they are false, & that he seeks not truth but the interest of a party. And if the way which I have followed be according to the nature & genius of the Prophecy there needs no other demonstration to convince it. For as of an Engin made by an excellent Artificer a man readily believes that the parts are right set together when he sees them joyn truly with one another notwithstanding that they may be strained into another posture; & as a man acquiesces in the meaning of an Author how intricate so ever when he sees the words construed or set in order according to the laws of Grammar, notwithstanding that there may be a possibility of forcing the words to some other harsher construction: so a man ought with equal reason to acquiesce in the construction of these Prophecies when he sees their parts set in order according to their suitableness & the characters imprinted in them for that purpose

Tis true that an Artificer may make an Engin capable of being with equal congruity set together more ways then one, & that a sentence may be ambiguous: but this Objection can have no place in the Apocalyps, because God who knew how to frame it without ambiguity intended it for a rule of faith.

But it is needless to urge with this general reasoning the Construction which I have composed, since the reasons wherewith I have there proved every particular are of that

evidence that they cannot but move the assent of any humble and indifferent person that shall with sufficient attention peruse them & cordially beleives the scriptures. Yet I would not have this so understood as to hinder the further search of other persons. I suspect there are still more mysteries to be discovered. And as M<sup>r</sup> Mede layed the foundation & I have built upon it: so I hope others will proceed higher untill the work be finished.

### **Rules for interpreting the Apocalyps.**

12. The Construction of the Apocalyps after it is once deter **<16r>** mined must be made the rule of interpretations; And all interpretations rejected which agree not with it. That must not be strained to fit history but such things chosen out of history as are most suitable to that.

13. To interpret sacred Prophecies of the most considerable things & actions of those times to which they are applied. For if it would be weakness in an Historian whilst he writes of obscurer actions to let slip the greater, much less ought this to be supposed in the holy Prophesies which are no other then histories of things to come.

14. To proportion the most notable parts of Prophecy to the most notable parts of history, & the breaches made in a continued series of Prophecy to the changes made in history And to reject those interpretations where the parts and breaches of Prophecy do not thus bear a due proportion to the parts & changes in History. For if Historians divide their histories into Sections Chapters & Books at such periods of time where the less, greater & greatest revolutions begin or end; & to do otherwise would be improper: much more ought we to suppose that the holy Ghost observes this rule accurately in his prophetick dictates, since they are no other then histories of things to come. Thus by the great breaches made between the sixt & seventh seal by interposing the vision of the sealed saints, & between the sixt & seventh Trumpet by interposing the vision of the little book, that prophesy is divided into three cardinal parts, & the middle part subdivided by the little breach between the fourth & fift Trumpet made by interposition of the Angel crying Wo, & all the other seals & trumpets are as it were less sections. And therefore to these breaches & sections, according to the rule, must be adapted periods of time which intercede & distermine proportional revolutions of history. Again if a Historian should use no proportion in his descriptions but magnify a less thing above a greater or attribute the more courage to the softer of two persons &c.: we

<17r> should count it an argument of his unskilfulness. And therefore since the dictates of the Holy-Ghost are histories of things to come, such disproportions are not to be allowed in them. Thus in Daniel's vision of the four Beasts, it would be grosly absurd to interpret, as some Polititians of late have done, the fourth Beast of Antiochus Epiphanes & his successors; since that is described to be the most terrible, dreadfull, strong, & warlike Beast of all the four, & the Prophet dwels far longer upon the description of that then of all the others put together: whereas the kingdom of Antiochus Epiphanes & his successors was both less & weaker & less warlike then any of the three before him.

15. To chose those interpretations which without straining do most respect the church & argue the greatest wisdom & providence of God for preserving her in the truth. As he that would interpret the letters or actions of a very wise states man, so as thence to know the council wherewith they are guided & the designes he is driving on, must consider the main end to which they are directed & suppose they are such as most conduce to that end & argue the greatest wisdom & providence of the States-man in ordering them: so it is in these Prophecies. They are the counsels of God & so the most wise, & fittest for the end to which they are designed: And that end is the benefit of the Church to guide her & preserve her in the truth. For to this end are all the sacred prophecies in both the old and new Testament directed, as they that will consider them may easily perceive. Hence may appear the oversight of some interpreters whose interpretations if they were true would make the Apocalyps of little or no concernment to the Church. Perhaps what follows may be better inserted in the preface.

## 4.2 The Alchemical Archetype of the *Apocalypse*: the Jungian Model

Curiously enough, Fauvel's definition of "Newton as an archetypal scientist"<sup>475</sup> may actually well suit the purpose of introducing my discourse on the Jungian model of alchemical analysis insofar as the whole issue focuses on the psychological meaning of archetypes. The point in that is to sketch out a theoretical grid useful to the analysis of Newton's adaptation of alchemical imagery to his reading of the prophecies. Though not concerned at all with alchemical praxis, Carl Gustav Jung's studies on 'spiritual' alchemy have effectively developed and changed the perspectives of modern criticism on alchemical subjects for good; allegedly, "Jung's is the first (and largely successful) attempt at understanding it."<sup>476</sup>

Jung's approach to alchemical texts was controversial at first for he deemed the stuff he came up against as "blatant nonsense."<sup>477</sup> Yet then he "realised that the alchemists were talking in symbols,"<sup>478</sup> feeling therefore "condemned to study alchemy from the very beginning"<sup>479</sup> by working "along philological lines, as if" he was "trying to solve the riddle of an unknown language."<sup>480</sup> Nevertheless, after a first period of mixed feelings towards the subject, Jung's commitment to alchemical studies resulted into two main achievements. The first of these two was the placement of the sacred *Art*, along with all its mystical knowledge made of lore, magic, and Christian morality, into a brand new perspective in the history of science, philosophy, and theology alike. He then proceeded to undertake a serious, fully detailed study of alchemical symbolism by

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<sup>475</sup> Fauvel et al. (eds.), *Let Newton Be!*, cit., Introduction, p. 7.

<sup>476</sup> Walter Pagel, "Jung's Views on Alchemy," in *Isis*, cit., p. 48.

<sup>477</sup> Jung, *Memories*, cit., p. 230

<sup>478</sup> *Ibidem*.

<sup>479</sup> *Ibid.*, p. 231

<sup>480</sup> Two last quotations from Jung, *Memories*, cit., p. 231. Cfr. Pereira, "Il Paradigma della Trasformazione," cit., p. 203.

psychological patterns to develop the historical dimension of alchemy and – vice versa – he applied alchemical categories to foster an advancement of modern psychology. It has to be highlighted that the value of his alchemical studies can be gauged only through their placement into the wider framework of his universal theory of symbols. Therefore, as far as the value of alchemical symbols lies at the core of my reasoning, it is particularly worth now to dwell upon Jung's ideas of symbolical images and archetypes.

According to Jungian theory of symbols,<sup>481</sup> an image can be defined as symbolic when it implies unconscious relations which send back to meanings past beyond its most obvious and immediate one. We can therefore outline an idea of symbol which provides a further semantic value that increases the amount of original meanings of the image, number or word to which it refers. Furthermore, these meanings may appear stratified if the process of symbolisation has taken a very long time to be accomplished. Any symbols owned therefore, intrinsically, a direct link to the images they referred to thus allowing us to say that each symbol was, first of all, a picture since its efficacy was bound to its realistic possibility of rendering visible to the human mind what would remain otherwise merely abstract. Jung describes those symbols implying a universal value as 'archetypes.'<sup>482</sup> Actually:

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<sup>481</sup> Cfr. Walter Pagel, Jung's Views on Alchemy, in *Isis*, cit., pp. 44-48.

<sup>482</sup> *Wandlungen und Symbole der Libido* ("Psychology of the Unconscious," published in 1912; revised in 1952 as "*Symbols of Transformation*") is the first work in which Jung expresses his concept of the archetype of 'collective unconscious.' Jung alludes here to 'primordial images' ('*Urbild*' or '*urtümliches Bild*') perceived by conscience which can independently generate themselves. Those images would actually be parts of an unconscious matrix shared by mankind. Nevertheless, the term was first coined by the Swiss historian Jacob Burckhardt to define the key role of Goethe's *Faust* within German culture. According to his *Psychologie und Alchimie* ("Psychology and Alchemy," 1944), Jung derived the term 'archetype' from the *Corpus Hermeticum* but also from the second chapter of Dionysius the Areopagite's *De divinis nominibus*: "[...] aitque sanctus Pater id solvens, magis ea quæ dicuntur confirmare quondam sigillum idem est, sed diversitas confirmantium, unius ac eiusdem *primitivæ formæ*, dissimiles reddit effigies" (Jung, *Psychology and Alchemy*, cit., p. 39).



The archetype is essentially an unconscious content that is altered by becoming conscious and by being perceived, and it takes its colour from the individual consciousness in which it happens to appear.<sup>483</sup>

Moreover, archetypes are typical ways of symbolising man's life because they are representations of human experiences developed in the process of building the autonomous conscience of mankind as a whole – the so called 'collective unconscious.'

Jung remarks that:

The collective unconscious is a part of the psyche which can be negatively distinguished from a personal unconscious by the fact that it does not, like the latter, owe its existence to personal experience and consequently is not a personal acquisition. While the personal unconscious is made up essentially of contents [...] disappeared from consciousness through having been forgotten or repressed, the contents of the collective unconscious [...] owe their existence exclusively to heredity. Whereas the personal unconscious consists for the most part of *complexes*, the content of the collective unconscious is made up essentially of *archetypes*. The concept of the archetype, which is an indispensable correlate of the idea of the collective unconscious, indicates the existence of definitive forms in the psyche which seem to be present always and everywhere.<sup>484</sup>

Accordingly, Jung's general theory of psychological representation of symbols is grounded on the merging between the psyche of each person with the 'collective

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<sup>483</sup> Jung, *Archetypes*, cit., p. 5.

<sup>484</sup> Jung, *Archetypes*, cit., p. 42. Cfr. Carl Gustav Jung, *Der Begriff des kollektiven Unbewußten*, in Carl Gustav Jung, *Die Archetypen und das kollektive Unbewußte*, Olten Freiburg im Breisgau, Walter-Verlag, 1971-1994, p. 55: "Das kollektive Unbewußte ist ein Teil der Psyche, der von einem persönlichen Unbewußten dadurch negativ unterschieden werden kann, daß er seine Existenz nicht persönlicher Erfahrung verdankt und daher keine persönliche Erwerbung ist. Während das persönliche Unbewußte wesentlich aus Inhalten besteht, die zu einer Zeit bewußt waren, aus dem Bewußtsein jedoch entschwunden sind, indem sie entweder vergessen oder verdrängt wurden, waren die Inhalte des kollektiven Unbewußten nie im Bewußtsein und wurden somit nie individuell erworben, sondern verdanken ihr Dasein ausschließlich der Vererbung." Cfr. Jolande Jacobi, *Complesso, Archetipo, Simbolo*, Torino, Boringhieri, 1971, p. 39: "Gli archetipi non sono considerati come esterni rispetto all'uomo, ma fanno piuttosto parte della sua costituzione psichica. Questo patrimonio simbolico si realizza nel corso della storia individuale di ciascuno, con minore o maggiore acutezza. Jung ha dimostrato come gli archetipi, che nell'essere umano si manifestano nei sogni, assumano forme identiche a quelle che l'iconografia alchemica ha utilizzato assai ampiamente negli antichi trattati."

unconscious' of mankind. Human individual psyche tends to crystallize into 'archetypes' which may surface as images or symbols in the consciousness of individual man, especially in dreams and visions. Most importantly, Jung experienced that alchemical symbols were themselves archetypes which alchemists adopted to describe the development of the human psyche: this process he called 'individuation.'

The first results of this theory about alchemical symbolism appeared in his *Alchemical Studies* (1948). In this volume, Jung recorded a series of dreams of his patients in which he recognized surprising parallels with classical alchemical allegorical representations. Moreover, Jung's work focuses on a comprehensive study of the relationship between alchemical symbolism and Christian and Gnostic allegorical imagery, notably between Christ and "the central concept of the alchemists, the *lapis*, or stone"<sup>485</sup> – the *forma Christi*.<sup>486</sup> Notwithstanding the unrivalled achievements of Jung's study on the acknowledgement of the transfers in meaning between alchemical and Christians symbolisms, his general theory of symbolic representation has the limit of debasing the role of alchemical praxis in the development of alchemical symbology. Allegedly, Walter Pagel argues about Jung's general opinion on the nature of the *Art* that:

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<sup>485</sup> Jung, *Memories*, cit., p. 236.

<sup>486</sup> Cfr. Walter Pagel, "Jung's Views on Alchemy," in *Isis*, cit., p. 47: "Incidentally, Jung has discovered that the identification of the Philosopher's Stone with Christ is much older than the work of Khunrath and Jacob Boehme (i.e., the end of the 16th and beginning of the 17th centuries). He gives a comprehensive account of its prelude in gnostic redemption mysteries as found in Zosimos, and of its first definite sources such as the treatise by Petrus Bonus of Ferrara (about 1330) and the *Aurora Consurgens* from the first half of the 14th century."

Engaged in this enormous task, he is prone to belittle the role of alchemy as a precursor to science and its actual foundations in serious philosophical, notably neo-Platonic, speculation. Everything seems to be psychology and symbolism. Yet, however much these explain, they fail to explain everything. They may, if overemphasized, lead to a lopsided and un-historical interpretation of what remains after all one of the essential chapters in the history of science.<sup>487</sup>

This passage quoted from Pagel actually offers us the chance to compare Jung's theory of alchemical symbolical representation to Newton's own adaptations of alchemical symbols and allegories in his Biblical exegesis. Therefore, what we must borrow from the Jungian model of analysis, is its referring to universal archetypes of representation to convey meanings shared also by Christian imagery, insofar as they are both parts of an overarching matrix of collective archetypes. The universal meaning shared by most alchemical symbols is due to the process of symbolical stratification they underwent and to the cultural contamination received especially by Christian, Jewish, and Hermetic influences. Newton must have recognized, unconsciously, a whole series of linkages between biblical symbols and the graphic representations he saw on alchemical practical treatises. Moreover, his acquaintance with alchemical literature increased his belief that those same symbols were apt to define alchemical processes as well as Christian rites.<sup>488</sup> He consequently projected the meanings of most diffused alchemical symbols onto the same images portrayed in the biblical pages and attached to them a significance of universal value. The results of Newton's process of symbolical synthesis is traceable in his exegetic manuscripts, especially in those gathered in the Yahuda collection. Actually, his explanations of biblical episodes encompassing symbols also shared by alchemical imagery, are proofs of the alchemical

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<sup>487</sup> Walter Pagel, "Jung's Views on Alchemy," in *Isis*, cit., p. 48.

<sup>488</sup> On the subject see especially Batfroi, *Alchimia Cristiana*, cit., chapters III - VI, pp. 43-125: "[...] per la religione cristiana il simbolismo alchemico non si limita alle vite della Vergine e del Cristo, ma trova il suo sviluppo nella totalità del ciclo annuale del calendario (*Ibid.*, p. 36)"

influence he underwent since those explanations resemble in tone and meaning passages from alchemical texts. Yet we must remember that Newton's alchemical knowledge sprung from his belief that spiritual alchemy<sup>489</sup> was a consistent part of natural history<sup>490</sup> and that alchemical praxis was useful to enhance scientific experience. I am convinced that Newton's attitude towards symbolical mediation between alchemical and Christian imageries constitutes an example of Pagel's criticism of Jungian theory. When Pagel argues that Jung has primarily focused his analysis upon the spiritual level of *chrysopeia*, thus ruling out from his reasoning the practical side of alchemy, he definitely succeeds in determining the greatest failure of Jungian theory of alchemical symbolical representation. Newton's broad application of alchemical categories to different fields of symbolical interpretations clearly reveals, however, how no process of alchemical representation could exist without laboratory praxis. Therefore, even if Jung's theory of archetypes could be allegedly applied also to alchemical knowledge, we must admit that the *medium* of the process of alchemical psychological individuation is represented by the practical attitude of alchemists. Hence, since archetypes are defined by human experience of them, so alchemical archetypes are the results of the different stages of the *magisterium*. Salomon Trismosin's *Splendor Solis* is actually one of the most renowned and famous alchemical texts which might best exemplify this last assumption of mine.

Credited as having been written by the undoubtedly pseudonymous Salomon Trismosin, the *Splendor Solis* is one very important and well-known alchemical work, primarily because of the beautifully illustrated manuscripts in the British Library (MS.

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<sup>489</sup> Pereira (ed.), *Alchimia*, cit., p. 827. Cfr. Marie-Louise von Franz, *Alchimia*, cit., p. 213: "L'alchimia illustra splendidamente la necessità di non nuocere allo spirito a vantaggio della materia, e di non nuocere alla materia a vantaggio dello spirito. Il corpo dev'essere spiritualizzazione e lo spirito si deve incarnare. L'alchimia, come ha fatto notare Jung, compensa l'unilateralità dello spiritualismo cristiano. L'alchimia non è un movimento anticristiano, ma completa il Cristianesimo richiamando l'attenzione sugli aspetti che esso trascura, ossia sulla fisicità e sulla materia."

<sup>490</sup> Cfr. Lawrence M. Principe, "Alchemy Restored," in *Isis*, cit., p. 311: "[...] I know of no modern scholar who maintains that alchemy is part of "science" in the modern sense. The point is that it was fully part of contemporaneous *natural philosophy*."

Harley 3469 – dated 1582<sup>491</sup>). Actually, nothing much is known of the adept who professed to be the “Preceptor of Paracelsus,” although an account of his life can be found in Julius Kohn’s version. The Trismosin literature appeared in print during the last decades of the sixteenth century, and it was “gathered together as the compendium entitled *Aureum Vellus (The Golden Fleece)* published in 1598 at Rorschach.”<sup>492</sup> This material is in keeping with the spirit of the late sixteenth century by using symbolism in the form of engraved plates to refer to the different stages of the *Opus* which exemplify the outer physical work along with the inner development of the adept’s soul. Being an early and formative work arising from the new impulse of late Renaissance alchemical symbolism, the *Splendor Solis* constantly shifts between the two dimensions of alchemy. According to what I have previously stated, this process of representation is accomplished by using physical analogies to describe the development of the alchemist’s soul and by projecting the inner soul’s experience onto the changes and transmutations occurring to the *prima materia* in the alchemical apparatuses. The work is therefore an outstanding example of the interweaving of these two realms by displaying transformation processes involving the incarnation of spirit in matter through the death-rebirth processes, thus seeming to stem in spirit from the *Rosarium Philosophorum*. As Jaffrey Raff has noticed:

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<sup>491</sup> As a matter of fact, it is impossible to precisely date the *Splendor Solis*. A first printed version of Trismosin’s work was first published in Germany in 1598, yet the manuscripts are earlier: the Berlin manuscript is dated 1532-1535 and the other three German manuscript versions are all ascribed to the mid-sixteenth century.

<sup>492</sup> Trismosin, *Splendor Solis*, cit., p. 7.

L'alchimia mira all'unione di materia e spirito, con il risultato che il corpo diventa spirito e lo spirito diventa corpo, dando luogo a una congiunzione di opposti che libera il corpo dai vincoli della morte. La Pietra, in quanto unione degli opposti, è senza ombra di dubbio un corpo, eppure come corpo non è corporea. Non esiste un termine preciso per definire questo tipo di corpo, che è stato definito "corpo della resurrezione" e "corpo sottile."<sup>493</sup>

By degrees of critical juxtaposition, one meaningful parallel between Jungian description of alchemical concepts and Newton's alchemical influences could be now introduced. According to Raff's previous quotation, we can read Newton's two vexed ending lines of the *General Scholium* about the existence of 'a certain very subtle spirit' in the light of Jung's statement about the qualities of the *anima mundi*. The conclusion of the *General Scholium* runs as follows:

A few things could now be added concerning a certain very subtle spirit pervading gross bodies and lying hidden in them.<sup>494</sup>

In his *Memories*, Jung thus summarises the nature of what he calls the 'alchemical spirit of life.' I actually esteem the connections between the two definitions glaringly enough:

The green gold is the living quality which the alchemists saw not only in man but also in inorganic nature. It is an expression of the life-spirit, the *anima mundi* or *filius macrocosmi*, the Anthropos who animates the whole cosmos. This spirit has poured himself out into everything, even into inorganic matter; he is present in metal and stone.<sup>495</sup>

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<sup>493</sup> Raff, *Jung e l'immaginario alchemico*, cit., p. 252.

<sup>494</sup> Cohen and Whitman, *The Principia*, cit., p. 943.

<sup>495</sup> Jung, *Memories*, cit., p. 237.

Furthermore, in his *Psychology and Alchemy* (1944), and later expanded in *Mysterium Coniunctionis* (1956), Jung provides a thorough psychological analysis of the three main stages of the *Opus alchymicum*. He described the first alchemical stage of *nigredo* – felt as “melancholia” – as the moment of maximum despair of the entire *Work* and, inquiring into the genuine nature of the initial phase of the process, he argued the following:

The first state is the hidden state, but by the art and the grace of God it can be transmuted into the second, manifest state. That is why the *prima materia* sometimes coincides with the idea of the initial stage of the process, the *nigredo* with the idea of the initial stage.<sup>496</sup>

Subsequently, the enlightened stage of the *albedo* would come to bright the alchemist’s sky and bring new life on Earth. Of outstanding importance is Jung’s interpretation of this phase as a fundamental prerequisite to personal development which he psychologically associated to the encounter with one’s shadow. If we are to compare Newton’s attitude towards biblical exegesis in terms of alchemical process, we would say that his task of interpreting God’s Word, by the Almighty’s grace he received, resembles the development of the *magisterium* insofar he esteemed his understanding of the prophecies as the ushering of the Golden Age. Moreover, what has led mankind to Newton’s contemporary situation of gloom and bewilderment is an *Opus contra naturam* which reversed the balance of nature. It is only by restoring that equilibrium, that the Millennium would come.

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<sup>496</sup> Jung, *Psychology and Alchemy*, cit., p. 313. Cfr. Jung, *Mysterium Coniunctionis*, cit., p. 521: “The alchemists called their *nigredo* melancholia, “a black blacker than black”, night, an affliction of the soul, confusion, etc., or, more pointedly, the “black raven”. [...] the raven [...] for the medieval adept [...] was [...] a well-known allegory of the devil.” Cfr. Hermetis Trismegisti, “Tractatus aureus,” in Jean-Jacques Manget (ed.), *Bibliotheca Chemica Curiosa*, 2 vols, Genève, 1702, vol.I, pp. 400-445 [I], in Pereira (ed.), *Alchimia*, cit., p. 228: “The beginning of the Art is the raven, in the obscurity of night and in the brightness of day;” my translation.

### 4.3 The Yahuda Manuscripts: Drafts of a *Treatise on Revelation*

As already briefly introduced in the first chapter, Newton's commitment to alchemical and theological studies resulted in a great bulk of written manuscripts, the most part of which is still nowadays unpublished. Of these texts, the greatest number dealing with alchemical praxis and philosophy is gathered in the Keynes collection at King's College in Cambridge, whereas most manuscripts of exegetic concern do belong to the Yahuda series kept at the Jewish National and University Library of Jerusalem. Remarkably, none of Newton's theological texts were published during his lifetime. The only recorded edition of religious subject was *Observations upon the Prophecies of Daniel and the Apocalypse of St. John* (1733), allegedly published by Newton's half-brother's son Benjamin Smith. According to Popkin's account,<sup>497</sup> in 1754, almost thirty years after Newton's death, a mutilated edition of a treatise on the Trinitarian proof was published under the fake title 'Two Letters of Sir Isaac Newton to Mr. LeClerc.' Mr. LeClerc, to whom the erroneous title of this publication refers, was the Dutch publisher chosen in 1690 by John Locke to print Newton's original manuscript into a French translation. Allegedly, Newton rejected the editorial project and suppressed the edition. Nevertheless, these theological texts finally saw publication in 1785 in an edition of Newton's works edited by Bishop Horsley. Their final title was 'An Historical Account of Two Notable Corruptions of Scripture.' The only modern selection of Newton's theological writings was published by H. McLachlan in a slim volume under the title *Sir Isaac Newton Theological Manuscripts* (1950).

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<sup>497</sup> See Richard H. Popkin, "Newton's Biblical Theology and His Theological Physics," in Scheurer and Debrock (eds.), *Newton's Legacy*, cit., p. 81. Popkin reports that this mutilated edition had "passages missing at beginning and end, reconstructed skilfully by an unnamed editor."



After the posthumous publication of only four items<sup>498</sup> of non-scientific character, Newton's extant material of heterogeneous subject was inherited by his niece Catherine Barton Conduitt and then by her descendants<sup>499</sup> who unsuccessfully managed to offer those texts to great British cultural institutions. Only<sup>500</sup> eventually in the nineteenth century, some of those papers on mathematics and physics were acquired by Cambridge University and were collected in the Portsmouth Collection. The other surviving manuscripts were roughly bundled up and auctioned off at Sotheby's in 1936.<sup>501</sup> The two greatest purchases were made by Lord John Maynard Keynes and by Prof. A. S. Yahuda, after whose authorities their collections of Newton's manuscripts were named.

Actually, well over half of the auction's lots was gathered by A. S. Yahuda, "a wealthy Palestinian Jew, who took his degree in Arabic studies in Germany, became Royal Professor of Medieval Rabbinics in Spain, then Professor of Arabic in Germany, a lecturer in England in the 1930's, and a refugee scholar in America from 1940, until his death in 1951."<sup>502</sup> Yahuda's adventurous life account curiously resembles the troubled history of his collection of Newton's manuscripts. When he left the Continent to flee to America, he asked Albert Einstein to aid him in placing them at Harvard, Yale

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<sup>498</sup> These were: *The Chronology of Ancient Kingdoms Amended* (1728), *Observations upon the Prophecies of Daniel and the Apocalypse of St. John* (1733), an essay on the Cubit of the Hebrews (1737), and two letters to John Locke dealing with the Doctrine of the Trinity (1743).

<sup>499</sup> For an account of late eighteenth-early nineteenth century history of the oblivion of Newton's manuscript check the following entry at the Newton Project Website: <http://www.newtonproject.sussex.ac.uk/prism.php?id=20>

<sup>500</sup> A detailed history of the attempts to publish Newton's works at the beginning of the nineteenth century is provided by the Newton Project Website. To further details heck the link: <http://www.newtonproject.sussex.ac.uk/prism.php?id=22>.

<sup>501</sup> Cfr. *A Catalogue of the Portsmouth Collection of Books and Papers*, cit., p. xix. On Newton's papers for sale at Sotheby's see especially Rob Iliffe, "A 'Connected System'? The Snare of a Beautiful Hand and the Unity of Newton's Archive," in Michael Hunter (ed.), *Archives of the Scientific Revolution*, Woodbridge, cit., pp. 137-157; Peter Spargo, "Sotheby, Keynes, and Yahuda: The 1936 Sale of Newton's Manuscripts," in P. Harman and A. E. Shapiro (eds.), *The Investigation of Difficult Things: Essays on Newton and the History of the Exact Sciences, in Honour of D. T. Whiteside*, cit., pp. 115-134. For further details see also the following link of the Newton Project Website : <http://www.newtonproject.sussex.ac.uk/prism.php?id=23>.

<sup>502</sup> The quotation is from Richard H. Popkin, "Newton and Maimonides," in Popkin, *The Third Force*, cit., p. 190. Popkin's essay provides a good survey on the figure of Professor A. S. Yahuda. See also Richard H. Popkin, "Some Further Comments on Newton an Maimonides," in Force and Popkin (eds.), *Essays*, cit., pp. 1-7. See also Stefani, *Radici Bibliche*, cit., p. 199.

or Princeton. Yet unfortunately, “Harvard refused them on the grounds that a war was going on; Yale on the grounds that they had no space; and Princeton on the grounds that the material was not scientific.”<sup>503</sup> Yahuda had therefore to drop out his ambitions and kept Newton’s manuscripts in his house in New Haven. The problem of how to find a place for that great amount of documents arose again as he felt death nearing. Popkin revealed that a friend and disciple of Yahuda told him that “it was only on his death-bed that he willed all of his manuscripts to the Jewish National Library in Jerusalem.”<sup>504</sup> It is attested that at the dawning of the Zionist movement, Yahuda allegedly adhered to it. The breaking with Zionism was related to the Balfour declaration in 1917, after whose entering into force Yahuda turned into a leading opponent of the idea of a Jewish state. But his manuscripts needed a new home, and he was therefore persuaded to send them to Israel were they only arrived in 1969 after a harsh family lawsuit.

The manuscripts which are nowadays included in the Yahuda collection display a staggering diversity of subjects. The general contents of the manuscripts could be divided into 3 macro subjects: exegetical, theological, and historical. According to this overarching division I have thus subdivided the manuscripts. The only missing manuscripts in the following grid, due to their particular contents, are: Yahuda MS. 24 (divided into 9 sections) “Proposals concerning calendar reform;” Yahuda Ms. 30 “‘Out of La Lumiere sortant des Tenebres’ and ‘Out of the Commentator on La Lumiere sortant de Tenebris [*sic*] ;” Yahuda Ms. 38 “De Igne sophorum et materia quam calefacit.”

To the **first** groups do belong:

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<sup>503</sup> Richard H. Popkin, “Newton’s Biblical Theology and His Theological Physics,” in Scheurer and Debrock (eds.), *Newton’s Legacy*, cit., p. 82.

<sup>504</sup> *Ibidem*.

**Yahuda MS. 1:** “Untitled treatise on Revelation”

The manuscript comprises 9 sections: Yahuda MS. 1.1 ; 1.1a ; 1.2 ; 1.3 ; 1.4 ; 1.5 ; 1.6 ; 1.7 ; 1.8. All the sections are labelled with the same title of the shelfmark.

**Yahuda MS. 2.1:** “Treatise on the symbolism of Biblical prophecy (Section 1)”

**Yahuda MS. 2.2:** “‘Quod Bestia bicornis locuta sit ut Draco’ (‘That the two-horned Beast spake as a Dragon’)”

**Yahuda MS. 2.5a:** “Draft account of the symbolism of Revelation”

**Yahuda MS. 3:** “‘Introductio. Continens Apocalypseos rationem generalem’”

**Yahuda MS. 4:** “‘Variantes Lectiones Apocalypticae’”

The manuscript comprises 2 versions.

**Yahuda MS. 6:** “‘The synchronisms of the three parts of the prophetick Interpretation’”

**Yahuda MS. 7:** “Miscellaneous drafts and fragments on prophecy”

The manuscript comprises 8 sections:

Yahuda MS. 7.1a: “Four draft chapters on prophecy”

Yahuda MS. 7.1b: “‘An Interpretation of Daniel’s Beasts’”

Yahuda MS. 7.1c: “‘An Interpretation of the Prophecy of Daniel’s weeks by Iewish years’”

Yahuda MS. 7.1d: “Four draft chapters on prophecy”

Yahuda MS. 7.1e: “Three draft chapters on prophecy”

Yahuda MS. 7.1f: “‘Chap. 4 Of the Propesy of the seventy weeks’ (3 drafts)”

Yahuda MS. 7.1g: “‘Chap. 5 Of the Empire of the Greeks’”

Yahuda MS. 7.1h: “‘Chap. VI Of the Empire of the Latins’ (4 increasingly fragmentary drafts)”

**Yahuda MS. 8:** “Notes on prophecies”

The manuscript comprises 4 sections: Yahuda MS. 8.1 ; 8.2 ; 8.3 ; 8.4. All the sections are labelled with the same title of the shelfmark.

**Yahuda MS. 9:** “Treatise on Revelation”

The manuscript comprises 3 sections: Yahuda MS. 9.1 ; 9.2 ; 9.3. All the sections are labelled with the same title of the shelfmark.

**Yahuda MS. 10:** “Notes and extracts on interpreting the prophets”

The manuscript comprises 3 sections:

Yahuda MS. 10.a: ““Out of Mr Garret’s discourse concerning Antichrist””

Yahuda MS. 10.b: “Notes on prophetic works”

Yahuda MS. 10.c: “Further notes on prophecies”

**Yahuda MS. 13.2:** “Notes on Jewish ceremonies and their relevance to prophetic exegesis”

**Yahuda MS. 21:** “Expositions of 2 Kings 17:15-16”

As a matter of fact, Newton’s prophetic exegesis was chiefly concerned with the establishing of the primacy of the book of *Revelation*. He believed that, especially for the deliberate corruption of the texts of the New Testament by figures like Saint Athanasius, “the core of Scripture [...] were the two books, *Daniel* and *Revelation*.”<sup>505</sup> Newton was also engaged in the dating of *Revelation* which he thought must have been written before the destruction of Solomon’s Temple and even before the expulsion of the Jews from Jerusalem. The fact that *Revelation* was alluded to in passages of the epistles of Peter and in Paul’s letter to the Hebrews led Newton to establish its being previous to them. Moreover, Newton identified its author with the same of the Gospel of John. In sundry passages of the manuscript drafts, Newton dwells upon the chronological order of the various parts of the prophecies. Mamiani thus explains this

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<sup>505</sup> Richard H. Popkin, “Newton’s Biblical Theology and His Theological Physics,” in Scheurer and Debrock (eds.), *Newton’s Legacy*, cit., p. 84.

process of Newton's equalling the ultimate aims of exegesis and historical interpretation:

[...] l'identità di un contenuto tra la profezia e la storia esige che si interpreti la prima con i medesimi mezzi con cui si costruisce la seconda. Ecco perché Newton parla di costruzione della profezia, che è l'esito proprio della sua interpretazione.<sup>506</sup>

The theory of progressive development in understanding the prophecies was a direct consequence of Newton's idea that actual history is the fulfilment of the events forecasted in the Bible. In his exegesis of the texts, Newton is chiefly concerned with the explanation of a whole series of recurring symbols which will be the object of my analysis. The documents, all belonging to the series of 'exegetic manuscripts,' which provide Newton's most extensive symbolical interpretation of *Revelation* are: Yahuda Ms.1; Yahuda Ms.2.2; Yahuda Ms.2.5a; Yahuda Ms.7; Yahuda Ms.8; Yahuda Ms.9; Yahuda Ms.10.

The **second** group enlists:

**Yahuda MS. 2.4:** "Draft concerning Solomon's Temple and the sacred cubit"

**Yahuda MS. 5:** "Theological notes"

The manuscript comprises 3 sections: Yahuda MS. 5.1 ; 5.2 ; 5.3. All the sections are labelled with the same title of the shelfmark.

**Yahuda MS. 13.1:** "Ex Irenæi adversus hæreses lib. I"

**Yahuda MS. 13.3:** "Notes for 'Theologiæ Gentilis Origines Philosophicæ'"

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<sup>506</sup> Maurizio Mamiani, "Newton e l'Apocalisse," in *I Castelli di Yale. Quaderni di Filosofia*, cit., p. 7.

**Yahuda MS. 14:** “Miscellaneous notes and extracts on the Temple, the Fathers, prophecy, Church history, doctrinal issues, etc.”

**Yahuda MS. 16:** “Rough drafts portions of and notes for ‘Theologiæ Gentilis Origines Philosophicæ”

The manuscript comprises 2 sections:

Yahuda MS. 16.1: ““Rough notes for ‘Theologiæ Gentilis Origines Philosophicæ”

Yahuda MS. 16.2: “Miscellaneous draft portions of ‘Theologiæ Gentilis Origines Philosophicæ”

**Yahuda MS. 17:** “Three bundles of notes for a work on the ancients’ physic-theology, related to ‘Theologiæ Gentilis Origines Philosophicæ”

The manuscript comprises 3 sections:

Yahuda MS. 17.1: “Notes on ancient religions”

Yahuda MS. 17.2: “Notes and drafts relating to ‘Theologiæ Gentilis Origines Philosophicæ”

Yahuda MS. 17.3: “Notes on ancient religions”

**Yahuda MS. 18:** “Fragment on history of apostasy”

**Yahuda MS. 20:** Expanded Latin translation of the first part of ‘Two Notable Corruptions”

**Yahuda MS. 22:** “Copies of second and third ‘professions of faith’ by early Church Councils”

**Yahuda MS. 31:** “Miscellaneous notes on history, chronology and theology, preceded by a draft letter to ‘Io. Lacy”

**Yahuda MS. 41:** “Draft chapters of a treatise on the origin of religion and its corruption”

The manuscripts of this group all deal with theological issues ranging from apostasies and heresies up to linguistic/philological problems in religious interpretations.

The **third** category encompasses the following texts:

**Yahuda MS. 2.3:** “Drafts towards a history of the Church”

**Yahuda MS. 2.5b:** “Drafts on early Church history”

**Yahuda MS. 11:** “‘Præmium’ and first chapter of a treatise on Church history”

**Yahuda MS. 12:** “Treatise on Church history”

**Yahuda MS. 15:** “Drafts on the history of the Church”

The manuscript comprises 7 sections: Yahuda MS. 15.1 ; 15.2 ; 15.3 ; 15.4 ; 15.5 ; 15.6 ; 15.7. All the sections are labelled with the same title of the shelfmark.

**Yahuda MS. 19:** “Treatise on Church history with particular reference to the Arian controversy”

**Yahuda MS. 25:** Draft passages on chronology and biblical history”

The manuscript comprises 2 sections:

Yahuda MS. 25.1a I: “Draft sections of the ‘Chronology of Ancient Kingdoms Amended’ and of a treatise on Daniel: section a(1)”

Yahuda MS. 25.1a II: “Draft sections of the ‘Chronology of Ancient Kingdoms Amended’ and of a treatise on Daniel: section a(2)”

**Yahuda MS. 26:** “Draft chapters of *The Chronology of Ancient Kingdoms Amended* (post-1710)”

**Yahuda MS. 27:** “Seven drafts of Newton’s defence of the Chronology of Ancient Kingdoms”

**Yahuda MS. 28:** “Fragments on the kingdoms of the European tribes, the Temple and the history of Jewish and Christian Churches”

The manuscript comprises 4 sections:

Yahuda MS. 28.a: “Jottings on chronology”

Yahuda MS. 28.b: “Notes on Roman and Church history

Yahuda MS. 28.c: “Notes on Villalpando”

Yahuda MS. 28.e: “Notes from Buxtorf”

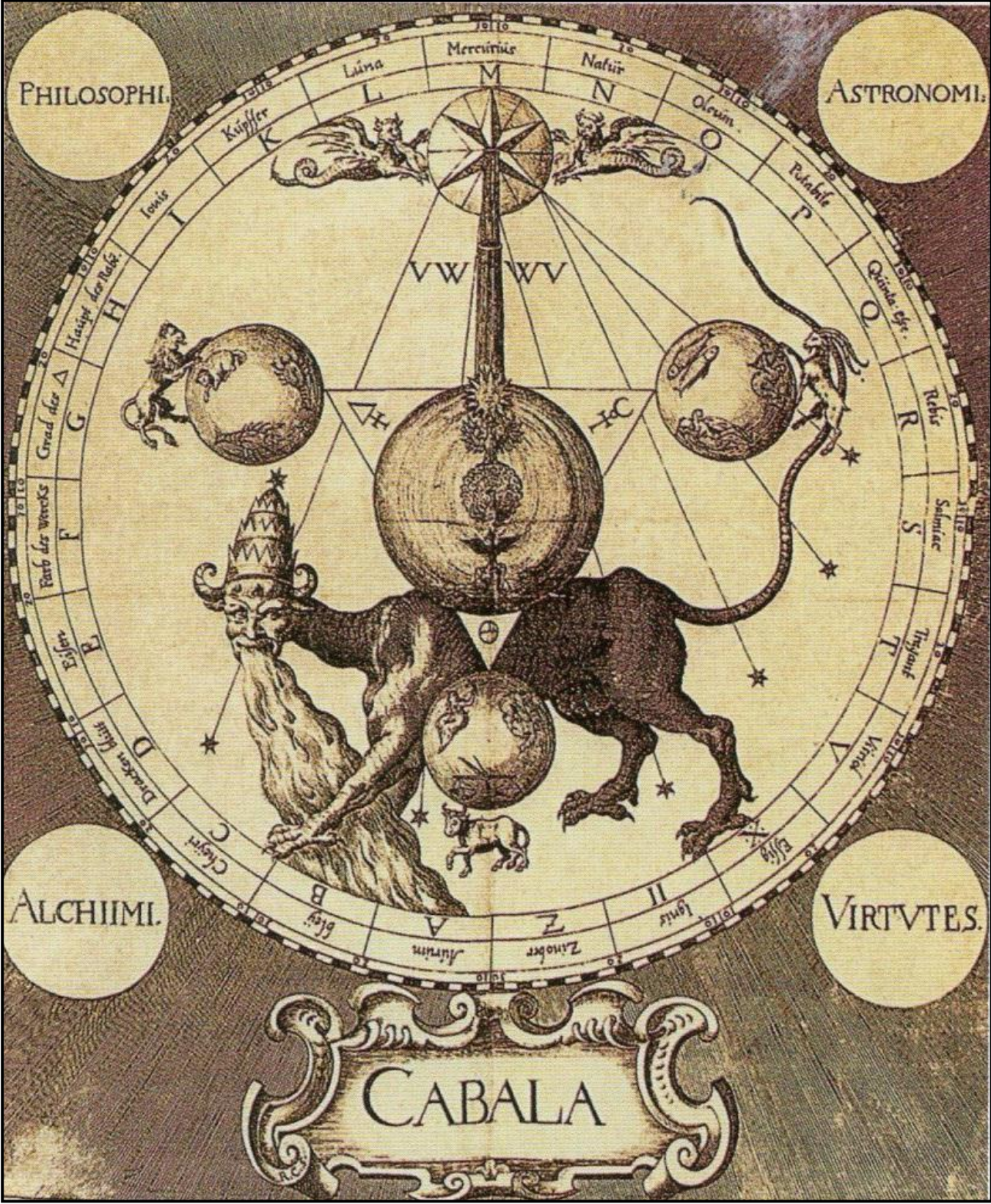
**Yahuda MS. 29:** “Fragment on Church history, mainly concerning Athanasius”

**Yahuda MS. 33:** “Notes on Greek, Roman and Egyptian deities”

**Yahuda MS. 39:** “Notes on early Church history and the moral superiority of the ‘barbarians’ to the Romans”

In the manuscripts of this last group, Newton portrays a picture of how the texts abridged in the Old Testament got to their present state by proposing a theory about their composition, corruption and mixing up. Moreover, by using internal evidence besides the historical events narrated in the Biblical pages, Newton sketched out an accurate account of how the books of the Old Testament were compiled (especially in Yahuda MS. 2.3, Yahuda MS. 12 and Yahuda MS. 15).





PHILOSOPHI.

ASTRONOMI.

ALCHIMI.

VIRTUTES.

CABALA

**Plate 4. The alchemical *prima materia* as the Apocalyptic beast.**

Steffan Michelspacher, *Cabala*, Augusta, 1616, reproduced here from Alexander Roob, *Alchimia & Mistica*, Köln, Taschen, 1997, p.168.

## 4.4 Methodological Conclusions

A few pages about some last methodological conclusions on the rate and mode of my forthcoming study of Newton's alchemical exegesis are necessary. What I would like to premise and highlight now, is how alchemical and biblical sources interact in his comprehensive understanding of the prophecies. The fact that symbols, allegories, and metaphorical terms of alchemical origin were largely applied by alchemists to their own explanations of Biblical episodes, would not imply that Newton's understanding of biblical imagery had an alchemical aim. I am absolutely convinced that, primarily due to his deep commitment to alchemical knowledge, both in terms of praxis and theoretical approach to it, Newton must have recognized, even at an unconscious level, a juxtaposition in meanings between alchemical pages and Biblical passages. The process of his alchemical interpretation of religious symbols was opposed to that developed by ancient alchemists. These latter, especially in the first centuries of the Christian era, first proceeded to recognise similarities between Christ's life and the *magisterium* and then began to establish extensive references between the two fields. By the time of Newton's commitment to the *Art*, this process of symbolisation had already been accomplished. The result was a complex grid of symbolic meanings onto which more puzzling metaphorical significances kept being attached. Conversely, Newton applied those established alchemical categories of symbolic interpretation to his millenarianism. He might have felt this overlapping in meanings between alchemical and biblical symbolisms quite natural, since he shared the alchemists' belief that the main goal of *chrysopeia* was the alignment to God's will. Allegedly, this harmony in patterns between biblical and alchemical imageries and metaphors was the result, as proved by Jung, of a stratification in the long process of symbolisation of archetypical 'ur-symbols.' This assumption provides therefore an explanation to the vexed issue

about the acknowledgement of alchemical texts to be interpreted or even unscrambled, and of alchemical interpretations of documents of heterogeneous subject. Jung's theory of archetypal representation is the answer to the question of how a common cultural background might have furnished alchemists the chance to build a language of their own.

Moreover, the criterion adopted by Newton to establish his alchemical interpretation of those Biblical symbols scattered throughout the pages of *Daniel* and *Revelation* constitutes another answer to his quest for methodological simplicity. As he scientifically explained his method of 'reduction to simplicity' in the *Opticks* (Query 31) and in the *Principia*, so he did manage to acquire knowledge of those alchemical sources which most resembled his adaptation of Ockham's razor. Among these sources, the most important are: the *Corpus Hermeticum* and Hermes' *Tabula Smaragdina*, Zosimos of Panopolis' *Visions*, Michael Maier's *Atalanta Fugiens*,<sup>507</sup> Altus' *Mutus Liber*, and the comprehensive alchemical work of Eirenæus Philalethes. Newton's standard adoption of methodological tools to enquire into the two Books handed down by God to the *prisci theologi*, is one most plausible explanation to the extension of the law of succinctness even to his approach to alchemical sources. Here is one ultimate definition of Newton's deep commitment to the doctrine of the two Books – the Book of Nature and the Holy Bible:

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<sup>507</sup> Given the key role played by Michael Maier in shaping Newton's alchemical mind, a good survey on his life would be useful to understand the development of his philosophy. A good survey is in: Karin Figala and Ulrich Neumann, "'Author Cui Nomen Hermes Malavici.' New Light on the Bio-Bibliography of Michael Maier (1569-1622)," in Rattansi and Clericuzio (eds.), *Alchemy and Chemistry*, cit., pp. 121-147.

Leading scientists of this era, almost without exception, had a dual commitment on the one hand to a science premised upon a mechanical universe governed by immutable laws of nature and on the other to an omnipotent God who intervened in the natural order from time to time, breaching these “laws” of nature.<sup>508</sup>

In the manifold drafts of his *Treatise on Revelation*, Newton dabbled both in biblical exegesis and hermeneutics. The former was Newton’s attempt to reinstate the true historical meaning and dimension of the biblical texts, the latter he undertook to interpret them according to his contemporary scholarship – and we well know that alchemical knowledge was one most important field of seventeenth-century intellectual background. Among the sundry strands of research reached out by his intellectual endeavour, alchemy provided Newton a long cluster of images, allegories, and terms whose legitimacy as valuable symbols to extoll the Almighty’s glory was boosted by biblical references. And since he allegedly believed that the power of God was expressed also by natural phenomena, he strived to deepen the secrets of alchemical praxis by means of laboratory experiments.

Some last hints at the development of Newton’s manuscripts analysis are now useful. Since the complex nature of the writing style of some texts, I have decided to especially refer to the following sources: Yahuda MS 1.1; Yahuda MS 7.1e; Yahuda MS 9.1; Yahuda MS 9.2; Keynes MS. 5. To ease one’s approach to the texts I will provide some long quotations from them, though avoiding long explanations which would only come to meddle in the reader’s direct experience with Newton’s alchemical apocalypse.

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<sup>508</sup> Peter Harrison, “Newtonian Science, Miracles, and the Laws of Nature,” in *Journal of the History of Ideas*, Vol. 56, No. 4 (Oct., 1995), pp. 531-553, stable URL: <http://www.jstor.org/stable/2709991>, on p. 531.

## Chapter V

### The Alchemical *Apocalypse* of Isaac Newton

Stat rosa pristina nomine, nomina nuda tenemus.  
*Umberto Eco*

As recorded in the *Rosarium Philosophorum* (1550), “the Art of Alchemy is a gift of the Holy Ghost.”<sup>509</sup> Accordingly, alchemists of the Christian era have always been considering their searching after the *philosopher’s stone* as the allegorical pursue of God’s will as it is expressed in the Holy Scriptures. This is the reason why we could talk and reason about ‘Christian alchemy:’

Per quanto riguarda il Cristianesimo, esso è considerato dai suoi fedeli come la Rivelazione del mistero dell’Incarnazione del Verbo, che è venuto ad abolire gli errori introdotti da certe antiche concezioni filosofiche e dogmatiche. Con il Cristo le illusioni sono definitivamente scacciate dal mondo, poiché i testi dicono che egli è la Via, la Verità e la Vita. Gli alchimisti non mancarono di constatare che l’Arte di Ermete e la vita di Cristo potevano dare luogo a degli accostamenti; ciò diede origine a una corrente di idee di grande vivacità che promosse una visione totale dell’alchimia, nella quale le nozioni simboliche dell’ermetismo e del Cristianesimo si trovavano strettamente fuse. Nacque così in Occidente, fin dal Medioevo, quella che può definirsi un’alchimia cristiana.<sup>510</sup>

According to Raphael Patai’s brilliant study on the alchemical interpretations of important Biblical figures, the first Hellenistic alchemist to hint at the Biblical origin

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<sup>509</sup> Cfr. *Rosarium Philosophorum* I, pp. 5-11 [s] in Pereira (ed.), *Alchimia.*, cit., p. 798.

<sup>510</sup> Batfroi, *Alchimia Cristiana*, cit., p. 33.

of alchemy was Zosimos of Panopolis.<sup>511</sup> He lived in Alexandria between the late third and the early fourth century A.D., where the precepts of the still flourishing Hermetic doctrine had deeply merged with the tenets of the new born Christian religion. It was within that heterogeneous blend of Eastern and Hellenic philosophies, Hermetic mysticism, and Christian orthodoxy, that alchemy slightly started to evolve into a religious discipline which purported to establish the Golden Age of Christ on Earth. The chance to achieve human palingenesis was first acknowledged throughout Medieval mystical doctrines and then accounted as being the result of the true interpretation of biblical prophecy. Renaissance re-reading of Hermetic doctrines engendered a revived fervour to rescue that mastering of Nature lost at the Fall through the study of the physical world. At the dawning of the scientific revolution, natural philosophers committed to the study of the Book of Nature resolved to apply alchemical knowledge to their proto-scientific task. Accordingly, this process also underwent an overlapping in aims between scientific, alchemical, and religious teachings:

Alchemy allegedly admits an unconscious “process of assimilation between revealed Truth and natural science,” which is tightly related to scientific empirism. Among the consequences of this process, there is the possibility of the integration of Eastern spirit into Western world.<sup>512</sup>

As previously hinted at, the theoretical rate of alchemical influence on Newton’s millenarianism acts on a twofold level: one methodological and one symbolical. The former actually shaped Newton’s general approach to biblical understanding and evolved into his methodological organisation of biblical exegesis.

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<sup>511</sup> Cfr. Raphael Patai, “Biblical Figures as Alchemists,” in *Hebrew Union College Annual*, Vol. LIV (1983), pp. 195-229, on p. 195. Patai’s essay is doubtlessly one of the most brilliant study on the alchemical interpretation of biblical patriarchs, prophets, and leading figures.

<sup>512</sup> “Nell’alchimia si assiste perciò ad un inconscio “processo d’assimilazione fra la verità rivelata e la scienza della natura”, che è in relazione stretta con l’empirismo della ricerca scientifica e porta fra le sue conseguenze la possibilità dell’incorporazione dello spirito orientale all’Occidente;” my translation (Pereira, “Il Paradigma della Trasformazione,” cit., p. 214).

The latter resembles the idea that the power of alchemical words and symbols ought to lead to divine Truth. Accordingly, the former of these two modes of alchemical influence is in my opinion the most important of the two since it can be definitively proved. Newton glaringly outlined his method of ‘reduction to simplicity’ in the ninth rule for construing the Apocalypse in Yahuda MS. 1.1, f. <14r>:

<14r>

9. To choose those constructions which without straining reduce things to the greatest simplicity. The reason of this is manifest by the precedent Rule. Truth is ever to be found in simplicity, & not in the multiplicity & confusion of things. As the world, which to the naked eye exhibits the greatest variety of objects, appears very simple in its internall constitution when surveyed by a philosophic understanding, & so much the simpler by how much the better it is understood, so it is in these visions. It is the perfection of God's works that they are all done with the greatest simplicity. He is the God of order & not of confusion. And therefore as they that would understand the frame of the world must indeavour to reduce their knowledg to all possible simplicity, so it must be in seeking to understand these visions. And they that shall do otherwise do not onely make sure never to understand them, but derogate from the perfection of the prophesy; & make it suspicious also that their designe is not to understand it but to shuffle it of & confound the understandings of men by making it intricate & confused.

This is allegedly Newton’s most clear adaptation of scientific method to his biblical hermeneutics even though, as attested by Mamiani,<sup>513</sup> the hermeneutic rules were previous to the four methodological principles of the *Principia*. We can therefore assume that the same general approach he suggested for the study of the prophecies was adopted by him even in his reading of the Book of Nature. Newton’s general approach to biblical study, which he strongly suggests to his readers, appears in the first lines of Yahuda MS. 1.1, f. <2r>:

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<sup>513</sup> See Mamiani (ed.), *Trattato sull'Apocalisse*, cit., Introduzione, p. VIII.



But search the scriptures thy self & that by frequent reading & constant meditation upon what thou readest, & earnest prayer to God to enlighten thine understanding if thou desirest to find the truth. Which if thou shalt at length attain thou wilt value above all other treasures in the world by reason of the assurance and vigour it will add to thy faith, and steady satisfaction to thy mind which he onely can know how to estimate who shall experience it.

Newton's bid for constant reading and serious commitment to meditation and re-elaboration of the biblical Word stems in spirit from the incipit of the first book of the *Rosarium Philosophorum*:

Qui desiderant artis Philosophice scientiæ maioris cognitionem uerissimam habere, labellum hunc diligentius inspiciant, & sæpissime perlegant, & optatu prosperum consequentur.<sup>514</sup>

Moreover, Newton follows *pari passu* the suggestions of the *Rosarium* by granting his readers the assurance of the Almighty's reward for their attachment to his mystery. Their earthly sufferings would therefore one day be swept away by God's grace in the peacefulness of the Millennium. Harrison's catalogue attests<sup>515</sup> that Newton owned a printed copy of the *Rosarium* to whose teachings he must have therefore been used to. However, the most important alchemical source, to which Newton might have referred to, is in my opinion the fourteenth plate of Altus' *Mutus Liber* in which is engraved the motto "*Ora, Lege, Lege, Lege, Relege, labora et Inuenies.*"

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<sup>514</sup> Telle (ed.), *Rosarium*, cit., p. 3.

<sup>515</sup> See Harrison, *Library*, cit., entry 493 on p. 130: "[493] *De alchimia opuscula complura veterum philosophorum, quorum catalogum sequens pagella indicabit.* (Pt 1.) 4°, [Francoforti, 1550]." Cfr. Chapter I, note 181 on p. 80.



Figure 13.  
 Fourteenth plate from Altus' *Mutus Liber*.  
 Reproduced from Altus, *Mutus Liber*, cit., p. 135.

The fact that the words of the fourteenth plate are the only ones, besides the inscriptions of the first and fourteenth tables and the numbers on the thirteenth, in Altus' *Liber* reinforces my statements about Newton's alchemical sources. He in fact referred to those works which he felt most akin to his overarching methodological dogma of simplicity:

The *Mutus Liber* is an enigmatic work, as befits one of the most significant statements of the alchemical process. The important documents of Alchemy, the texts and series of symbolic pictures, as they come close to revealing the nature of their subject, become enigmatic, dissolving the clear statement of ideas into unfocused obscurity and paradox. [...] The *Mutus Liber* is such an alchemical document, and being entirely symbolic, consisting of fifteen engraved plates, it presents its mystery through a seeming simplicity of statement.<sup>516</sup>

Another proof of Newton's acquaintance with the *Mutus Liber's* motto is to be found in Keynes MS. 23. The manuscript, entitled "Epistola ad veros Hermetis discipulos continens claves sex principales Philosophiæ secretæ," is dated back to the early 1690s and it is therefore subsequent to Yahuda MS. 1.1 (c.1670s-c.1680) and to the first edition of Altus' engravings (1677). Nevertheless, Newton's translation of the last section of Limojon de Didier's *Triomphe Hermétique* (1689), "Lettre Aux vrais Disciples d'Hermes, Contenant six principales clefs de la Philosophie Secrete," gives more relevance to the assumption that he was close to the alchemical precept of systematic commitment to the self-reading of natural signs. The quotation from Keynes MS. 23 f. <9v> runs as follows:

Ora assidue. Lege bonos libros. Meditare dies et noctes de operationibus naturæ deque iis quæ natura facere potest quando per artem nostram adjuvatur. Et hoc modò bene procedes proculdubio in caepto tuo.<sup>517</sup>

The second alchemical influence on Newton's exegetic method is exerted by the archaic, mysterious numerological meaning of number 15. What I have argued in chapter IV about the importance of abiding Newton's choice of determining 15 rules for

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<sup>516</sup> McLean, *Commentary*, cit., p. 39. Cfr. d'Espagnet, *Arcanum*, cit., Canon XII: "Typis & figuris ænigmaticis, muto quasi sermone liberiùs & significantiùs exprimunt se philosophi, quàm verbis; exemplo sint tabula Senioris, Rozarii picturæ allegoricæ, Abrahamæ Iudæi apud Flamellum, tum etiam ipsius Flamelli schemata: ex recentioribus insignis doctissimi M. Maieri emblemata."

<sup>517</sup> On-line address of the transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00012/>.

interpreting the Apocalypse, is due to my conviction that he longed to relate his interpretative rules to other outstanding attempts at revealing God's divine message. These attempts are, namely, Zosimos' account in his *Visions* of the 15 steps<sup>518</sup> to the altar of his sacrifice and the 15 plates of Altus' *Mutus Liber*. These two are examples, respectively, of 15 steps to purify themselves from mundane sins and to become spirit endowed of divine grace, and of 15 alchemical praxes to achieve the philosopher's stone.<sup>519</sup> In my opinion, Newton aimed at ascribing his interpretation of the prophecies also to a tradition of numerological symbolism. Since my reasoning has come thus far to establish some methodological links between Newton's alchemical and Biblical knowledge, it is now time to start highlighting some most important resemblances in symbolical patterns.

As suggested by Mylius, an interpretation given through symbolical terms or images could allegedly ease one's interpretative task:

Habentibus symbolum facilis est transitus.<sup>520</sup>

Any alchemical interpretation ought to start from the evaluation of the parallel between the symbolical meaning of the serpent *Ouroboros* and *Revelation* 21: 6. According to alchemical imagery, the serpent *Ouroboros* is the representation of the endlessness of the alchemical research and, for a metaphorical extension, of the power of God and the reign of Christ on Earth. This last assumption doubtlessly owes much to the following lines from *Revelation*, quoted from a passage describing the restoration of

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<sup>518</sup> Cfr. Stillman, *The Story of Alchemy*, cit., p. 163.

<sup>519</sup> Cfr. Batfroi, *Alchimia Cristiana*, cit., p. 58: "Per l'alchimista cristiano, l'alchimia operativa è l'unica somma "sperimentale" dei concetti metafisici alla quale corrisponde, analogicamente, la liturgia cristiana."

<sup>520</sup> Johann Daniel Mylius, *Philosophia Reformata*, Frankfort, 1622, quoted in Jung, *Psychology and Alchemy*, cit., p. 216.

God's realm on Earth after the raging of the Apocalyptic battle. The vision of the New Jerusalem was holy and shining in front of John's eyes:

I am the Alpha and Omega, the beginning  
and the end, the first and the last.

The resemblances between the characteristics of the serpent *Ouroboros* and God's own words describing his omnipotence are glaringly obvious. Just as the Almighty extolled the limitlessness of his reign on Earth and in Heavens, so the alchemical *ur*-dragon represented the endlessness of the alchemical *Opus* whose main goal was the alignment to God's will. In order to do so, the devout adept had to undergo an inner development of moral renewal since: "Out of other things you will never make the One, until you have first become the One yourself."<sup>521</sup> Therefore, Newton must have recognised in the Biblical lines the vouchsafe he needed to feel free to adjust his alchemical symbolism to Biblical imagery. This is especially to be found in a passage from Yahuda MS. 9.2, f. <7v><sup>522</sup> where he explicitly refers to these lines and interprets them in terms of alchemical symbolism of colours.<sup>523</sup>

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<sup>521</sup> Georg Luck, *Arcana Mundi. Magic and the Occult in the Greek and Roman Worlds*, cit., p. 364.

<sup>522</sup> Yahuda MS. 9.2, "Treatise on Revelation;" mid-late 1680s; on-line transcription at: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00270>.

<sup>523</sup> Cfr. J. W. Goethe, *Farbenlehre*, Tübingen, Wissenschaftliche Buchgemeinschaft E.V., 1953 and the English translation J. W. Goethe, *Theory of Colours*, translated by Charles Lock Eastlake, London, Frank Cass & Co. Ltd., 1967, pp. 350-351: ALLEGORICAL, SYMBOLICAL, MYSTICAL APPLICATION OF COLOUR. 915. [...] Hence it follows that colour may be employed for certain moral and æsthetic ends. 916. Such an application, coinciding entirely with nature, might be called symbolical, since the colour would be employed in conformity with its effect, and would at once express its meaning. [...] 917. Another application is nearly allied to this; it might be called the allegorical application. In this there is more of accident and caprice, inasmuch as the meaning of the sign must be first communicated to us before we know what it is to signify; [...] 918. That, lastly, colour may have a mystical allusion, may be readily surmised, for since every diagram in which the variety of colours may be represented points to those primordial relations which belong both to nature and the organ of vision, there can be no doubt that these may be made use of as a language, in cases where it is proposed to express similar primordial relations which do not present themselves to the senses in so powerful and varied a manner. At the same rate, speaking about the power of symbols, in his *Maximen und Reflexionen* Goethe affirms that a phenomenon could be changed into an idea throughout its symbolisation and that, at the same rate, an idea can be moulded into an image in a way that allows the idea to be still perceived within the image though being unutterable in any language: Maxim 1112. Die Allegorie verwandelt die Erscheinung in einen Begriff, den Begriff in ein Bild, doch so, daß der Begriff im Bilde immer no begränzt und

As a matter of fact, every alchemical theory proposed a particular scale of colours<sup>524</sup> and used to attach to each single hue a precise meaning. So black, the colour of Saturn, represented sin and penance, mortification and impurity, putrefaction and death of the undifferentiated *prima materia*; white got along with silver and was therefore considered inferior only to gold, the colour *par excellence* of the entire *Opus Magnum*. Red was the tint of the *elixir vitæ*, of sulphur, blood and of the most passionate and dangerous feelings; green symbolized rebirth, fertility and wealth; the fusion of white and red stood for the re-conjunction of the two contraries – the dyed pattern of the *chymical wedding*. According to this imagery, Newton explains the hues of the rainbow in terms of alchemical symbolism of colours. The passage from Yahuda MS. 9.2, f. runs as follows:

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vollständig zu halten du an demselben auszusprechen sei. Maxim 1113. Die Symbolik verwandelt die Erscheinung in Idee, die Idee in ein Bild, und so, daß die Idee im Bild immer unendlich wirksam und unerreichbar bleibt und, selbst in allen Sprachen ausgesprochen, doch unaussprechlich bliebe. (J. W. Goethe, *Maximen und Reflexionen: mit einem Facsimile nach den Handschriften des Goethe- und Schiller- Archivs; herausgegeben von Max Hecker*, Weimar, Goethe-Gesellschaft, 1907., 1907, Maximen 1112 – 1113, pp. 230-231). For a detailed study on the symbology and phenomenology of colours see especially L. Pedirota, *Il colore, simboli e archetipi*, Roma, Edizioni Mediterranee, 1996.

<sup>524</sup> “Although hardly two authors are of the same opinion regarding the exact course of the process and the sequence of its stages, the majority are agreed on the principal points at issue, and moreover from the earliest time, i.e., the Christian era. Four stages are distinguished [...], characterized by the original colours mentioned in Heraclitus: *melanosis* (blackening), *leukosis* (whitening), *xanthosis* (yellowing), and *iosis* (reddening). The division of the process into four was called the τετραμερῆν τῆν φιλοσοφίαν, the quartering of the philosophy. [...] The *nigredo* or blackness is the initial state, either present from the beginning as a quality of the “*prima materia*” [...] or else produced by the separation [...] of the elements. If the separated condition is assumed at the start, [...] then a union of opposites is performed in the likeness of a union of male and female [...]. From this the washing [...] leads to the whitening [...]. At this point the first main goal of the process is reached, namely the *albedo* [...]. It is the silver or moon condition, which still has to be raised to the sun condition. The *albedo* is, so to speak, the daybreak, but not till the *rubedo* is it sunrise. [...] the *rubedo* then follows direct from the *albedo* [...]. The red and the white are King and Queen, who may also celebrate their “chymical nuptials” at this stage” (Jung, *Psychology and Alchemy*, cit., pp. 218-221).

**From Yahuda MS. 9.2, f. <7v>**

And he that sat was to look upon like a jasper & a sardine stone [the last & the first of & the gemms in Aarons brest-plate to shew that he is the A & Ω the beginning & & the end:] & there was a rainbow about the throne insight like unto an Emerald By the rainbow you may know that the Sun was in the East before the throne & consequently that it was the time of the morning sacrifice. Thereby you may know also that there was a cloud of falling rain in the region of the throne. Clouds suit well with the throne of God in heaven & rain is the embleme of his blessings on mankind. Out of this cloud conceive the thunders to proceed which are afterwards said together with the lightnings to proceed out of the throne. The green colour of the rain-bow represents well the vegetable faculty of the rain. For all vegetables are green & tis by rain that they spring up & grow. To denote that God is the author of their life & growth his appearance is like a jasper & a Saphire, that is of a celestial green & red the green colour referring to the vegetable rain, water the mother or passive principle out of which all things grow & are nourished & the red to the naturall fire & heat, the form & life or active principle of all growing things. For the red is that which Ezekiel & Daniel in the like visions describe by the colour of amber & appearance of fire & this red fiery colour you may conceive to arise from the fire of the Altar through which the throne appeared. Ezek. 1.27 Dan. 7.10.

Moreover, in chapter I, paragraph 1.2<sup>525</sup> I have already introduced a detailed analysis of the parallel between the polarities of “Sun” – “Moon” and “King” – “Queen” from whose *coniunctio* in the *Hermetic Vas the stone of the wises* arises. Interestingly enough, in Keynes MS. 19,<sup>526</sup> f. <3v>, Newton gives a pithy explanation of his understanding of the symbols of “Sol” et “Luna:”

Arcanum Hermeticae Philosophiae  
Opus.

Sec 24. Qui Sulphur & Mercurius  
Lapidis materiam statuunt Sulphuris  
nomine Solem & Lunam communem;  
Mercurii vero Lunama Philosophorum  
intelligunt, sicremoto fucio Lullius ait,  
Ne operare nisi cum ☿ o & ☽ na pro  
argento & ☿ o & ☉ e pro auro. sec 25:  
Nemo itaque decipiatur duobus tertium  
addendo.

Explicationes.

a. Hic patet Lunam aliquando pro  
argento vulgari & masculino, vel  
Sulphure accipi; aliquando pro  
Mercurio faeminino. Nempe, cum opus  
ex duobus tantum componitur, Luna  
cum aqua, vel mercurio, (vel aere etc)  
conjuncta est Mas & ; sed cum ☉<sup>e</sup>,  
auro, sulphure etc est faemina.

According to Jung,<sup>527</sup> the oldest text to display divine analogy between Christ and the alchemical lapis is Petrus Bonus' *Margarita Pretiosa* (sometime between 1330 - 1339) in which the philosopher's stone is accounted to be a gift of God. Accordingly:

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<sup>525</sup> My critics was focused on Newton's symbolic adaptations in Yahuda MS 1.1. Cfr. W. H. Austin, "Isaac Newton on Science and Religion," in *Journal of the History of Ideas*, Vol. 31, No. 4 (Oct. – Dec., 1970), pp. 521-542, stable URL: <http://www.jstor.org/stable/2708258>, p. 524: "The great governing principle is an analogy between the natural realm (whence the prophets draw their symbols) and the political and ecclesiastical realm (which they are really talking about). The sun stands for a King or for Kings as such, the moon for "the body of the common people considered as the King's wife," darkening of celestial luminaries for the downfall of a body politic, dens and rocks in mountains for temples in cities, etc., etc. Newton fills pages with such keys, extending an already highly developed tradition."

<sup>526</sup> Keynes MS. 19 is entitled "Collectiones ex Novo Lumine Chymico quae ad Praxin spectant;" on-line address of the manuscript's transcription: <http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00008/>. Cfr. Keynes MS. 20, f. <5r> (<http://webapp1.dlib.indiana.edu/newton/mss/norm/ALCH00009/>).

<sup>527</sup> Cfr. Jung, *Alchemical Studies*, cit., pp. 358-359.



[...] alchemy stands above nature and is divine. The whole difficulty of the art lies in the stone. The intellect cannot comprehend it, so must believe it, like the divine miracles and the foundation of the Christian creed. Therefore God alone is the operator, while nature remains passive. It was through their knowledge of the art that the old philosophers knew of the coming of the end of the world and the resurrection of the dead.<sup>528</sup>

What we must drag out of Newton's own wilful symbolical obscurity is therefore his attaching to Biblical expressions meanings past beyond their most immediate ones. An example of this is rendered by a comparison between two passages from Keynes MS. 5, f. <2r>,<sup>529</sup> and Yahuda MS. 7.1d, f. <1r>.<sup>530</sup> The two texts, similar in contents, reveal however some semantic discrepancies which might be due to Newton's re-elaboration through the last decades of the seventeenth century.

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<sup>528</sup> *Ibid.*, p. 359.

<sup>529</sup> Keynes MS. 5, "Two incomplete treatises on prophecy;" c.mid-late 1680s and c.1705-10; on-line transcription at: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00005>.

<sup>530</sup> Yahuda MS. 7.1d, "Four draft chapters on prophecy;" after 1700; on-line transcription at: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00367>.

From Keynes MS. 5, f. <2r>

Now in heaven the Sun & Moon are by Interpret{illeg} put for the persons of Kings & Queens, but in sacred Proph{illeg} not single persons the sun is put for the whole species & {illeg} in the kingdom or kingdoms of the World politique, sh{illeg} regall power & glory; the Moon for the body of the common people considered as the Kings wife or (if the people be described by another type) for the body of the Priests;; the stars for subordinate Kings Princes & great men, or for Bishops & Rulers of the people {illeg} God when the Sun is Christ; Light for the glory judgment truth {illeg}knowledge wherewith great men shine & illuminate others; dar{illeg} for obscurity of condition & for error & ignorance; darkning smiting or setting of the Sun Moon & stars for the ceasing of a Kingdom or for the desolation thereof proportional to the darkness: darkning the Sun turning the Moon into blood & falling of the Stars for the {illeg} New Moons for the return of a dispersed people into a body poli{illeg} or ecclesiastique. wars {illeg} persecutions & troubles inflicted by the King &

**From Yahuda MS. 7.1d, f. <1r>**

**An Account of the Empires of the Babylonians, Medes, Persians, Greeks, and  
Romans, according to the descriptions given of them by Daniel.**

**Sect 1**

**Of the prophetic language.**

In the heavens the Sun & Moon are by interpreters of dreams put for the persons of Kings & Queens, but in sacred prophesy which regards not single persons, the sun is put for the whole species & race of kings in the kingdom or kingdoms of the world polytick shining with regal power & glory: the Moon for the body of the common people considered as the kings wife: the starrs for subordinate Princes & great men, or for Bishops & Rulers of the people of God when the Sun is Christ. Light for the glory truth & knowledge wherewith great & good men shine & illuminate others. Darkness for obscurity of condition, & for error blindness & ignorance. Darkning, smiting, or setting of the Sun Moon & starrs for the ceasing of a kingdom, or for the desolation thereof proportional to the darkness. Darkning the Sun, turning the Moon into blood & falling of the starrs, for the same. New Moons for the return of a dispersed people into a body politique or ecclesiastick.

Another outstanding Newtonian alchemical influence can be gauged through the evaluation of the symbolical meaning of the “dew,” the biblical miraculous substance sent by God to feed the Israelites in the desert.<sup>531</sup> Remarkably enough, the *Mutus Liber* is the only alchemical work to clearly states the absolute necessity to use the dew during alchemical processes.<sup>532</sup> Zosimos also accounted in his *Visions* the pouring of the divine manna by giving an alchemical explanation to it.<sup>533</sup> From an alchemical practical point of view,<sup>534</sup> dew is a very special substance containing various essences and bearing within it a richness of etheric force. This is especially due to its arising from a subtle process of alchemical distillation which requires a warm earth, a clear sky at night and cold surface air to be accomplished. Among the most important alchemical references to be compared with Newton’s development of the biblical meaning of dew, there are passages from the *Rosarium Philosophorum* and from Philalethes’ *The Marrow of Alchemy*. The *Rosarium* records that: “Here the dew falleth from heaven,/ And washeth the black body in the sepulchre.” Philalethes remarks that, according to alchemical praxis, dead bodies are revived by the supernatural, all-healing ‘dew and rain:’

For vacant space receives the dew, and rain,/ Which  
falling down, the body doth dispose/ To dye, to rot, and  
after to revive,/ And to be joyn’d in union, not to  
strive.<sup>535</sup>

I will now provide the long transcription of chapter III – IV from Yahuda MS. 9.2, ff. <6v>-<13v>. This manuscript actually reveals much of Newton’s attitude towards Biblical explanation in terms of alchemical symbolism. The two chapters,

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<sup>531</sup> See especially Ex. 16: 16-18; Genesis 27: 28,39; Num. 11: 9; Prov. 19: 12; Hosea 13: 3; Judges 6: 40; Deut. 32: 2.

<sup>532</sup> Cfr. Batfroi, *Alchimia Cristiana*, cit., p. 137.

<sup>533</sup> Cfr. Pereira, *Arcana Sapienza*, cit., p. 43.

<sup>534</sup> Cfr. Abraham, *Dictionary*, cit, pp. 53-54.

<sup>535</sup> Eirenæus Philaletes, “*The Marrow of Alchemy*,” Part two, the second book, 14, in Eirenæus Philaletes, *Alchemical Works*, cit., p. 88.

contiguous in exegetical analysis, fully display plenty of references to the alchemical symbols of Sun, Moon, King, Queen and dew whose meanings, according to Newton's methodology, are adjusted to describe the Biblical figures they are supposed to represent. I actually esteem these two chapters from Yahuda MS. 9.2 to be the most revealing passages out of which Newton's own usage of alchemical imagery can be guessed.

< insertion from f 6v >

**Chap. III.**

**Of things celestial, viz<sup>t</sup> the Sun Moon & stars light & darkness, darkning smiting  
or setting of the Sun Moon & Stars, Eclipsing or turning the Moon into blood  
falling of the stars & New Moons.**

The signification of the Sun Moon & stars is manifested by these instances. The Sun  
immutably

< text from f 6r resumes >

6. The signification of the Sun, Moon & Stars is manifested by these instances. The Sun  
immutably represents the King, the Moon the next in power to the King the Planet Venus  
the Queen, the rest of the greater Stars the great men of the Kingdom Achmet Cap. 16 ex  
Ind. Pers. & Ægypt. <7r> Yet Achmet is mistaken in the doctrine of the Egyptians about  
the Moon, for they referred the Moon to Isis; & Sextus Empirius tells us more truly that  
the Egyptians assimilate the Sun to the King & to the right eye & the Moon to the Queen &  
to the left eye, & the five Planets to Lictors or Staffbearers, & the fixt Stars to the rest of the  
people. The scriptures in like manner refer the Moon to the Queen & Venus or the  
Morning Star to the Prince next the King. ffor Lucifer in Isaiah (ch. 14.12) is put for the  
King of Babylon, suppose in respect of the King of heaven; & in the Apocalyps for Christ,  
suppose in respect of God the ffather. And when Ioseph dreamed that the Sun Moon &  
eleven Stars should do obeysance to him, Iacob interprets it of himself his wife & eleven  
sons comparing his family to a little Kingdom, & his wife as Queen to the Moon. Whenever  
Christ is represented by the Sun (as in Malachy where he is called the sun of righteousness,  
& in the Apocalyps where his face is as the sun,) 'tis to denote him King, & then the Church  
being his wife or Queen is the Moon & the Bishops are the Stars. So in the beginning of the  
Apocalyps where his face is as the Sun, the seven stars are put for the Angels or Bishops  
of the Churches, & of the same kind are those stars which the Goat in Daniel, & the dragon  
in Iohn, cast down from heaven. In Apoc. 19 an Angel standing in the Sun is put for the

ruling part or Clergy of Christ's Kingdom, cloathed with the regal authority of Christ. For Angels in this Prophecy are mystical bodies of Bishops & Bishops are Kings & Priests as Melchizedeck was. In Apoc 12 you may conceive the Sun wherewith the woman in heaven is cloathed to be Christ walking in the midst of the Candlesticks or Churches, her crown of twelve Stars to be the Bishops set over her, the Moon under her feet to be the illuminated body of inferior Christians, that is the Church of the Laity spiritually illuminated by her teachers & governours, & the woman her self to be the illuminateing body of Superior Christians or the body of the Clergy who teach & govern. ffor they are the light of the world, the shining body of Christ whereby the rest are illuminated. And as the Moon here signifies the inferior people who are enlightened & governed, & the Sun comprehends the more glorious body of governours, so in any other kingdom the King & people may be considered as Lord & wife or Sun & Moon. ffor at the opening of the sixt seale Apoc. 6.12, the Moon which there becameas blood is called the whole Moon to shew that she is composed of a multitude. And hence I conceive it is that whilst the times of the woman & two witnesses are reckoned by solary days & years, those of <8r> the lay people called the Beast & the Nations in the outward court are reckoned by the Lunary periods of months. < **insertion from f 7v** > If the world politic or Kingdom considered be an aggregate of many Kingdoms the sun is the aggregate of all the Kings considered as one King & the Moon of all the people. ffor Daniel calls the four Beasts four Kings & yet the third & fouth were aggregated of many single Kings with their Kingdoms & Iohn calls the last head of the Beast the eighth King & yet it was aggregated of tenn Kings with their Kingdoms. And whilst the third part of the Sun was smitten & darkened at the sounding of the fourth Trumpet, Apoc 8.12, you may understand that the sun there was not a single person but an aggregated King. < **text from f 8r resumes** > I have sometimes suspected whether the Moon under the womans feet might not refer to thereligion of the Iews, or else to that of the heathen, but upon second thoughts I am satisfied that the Sun Moon & Stars in one & the same vision must refer to one & the same mystical heaven.

7. Now the reason why the body of governours & teachers are cloathed with the Sun for enlightning the Lunary multitude will best appear by the significations of light. ffor the Jews called their Doctors & teachers Candles, Lamps, & lights & their doctrine light & so Christ saith of his disciples. ye are the light of the world, & Iohn of Christ that he is the true light which lighteth ever man that cometh into the world: & Belshazzar of Daniel that light & understanding was found in him Dan. 5.14. Send out thy light and truth; they shal lead me Ps. 43.3. Thy word is a Lamp to my feet & a light unto my paths Psal. 119.105. The commandment is a lamp & the law is light Prov. 6.23. A law shal go from me & I will make my judgment to rest for a light to the people Isa. 51.4. Tis spoken also of the glory of Rulers & kingdoms in describing their fall by Darkness, as in the following instances.

I will cause your sun [O Israel] to go down at noonday, & I will darken the earth in the clear day, & I will turn your feasts into mourning Amos 8.9. She [Ierusalem] hath given up the ghost, her sun is gone down while it was yet day. Chal Par. Her glory is passed away in her life time. Ier. 15.9. Thy sun shall no more go down, neither shal thy moon withdraw itself, for the Lord shal be thine everlasting light, & the days of thy mourning shal be ended. Chal. Par. Thy kingdom shal no more cease, neither shal thy glory be taken away, &c. Isa. 60.20. The day of the Lord cometh cruel both with wrath & fierce anger to lay the land (i.e. the Kingdom of Babylon) desolate & he shal destroy the sinners out of it: for the stars of heaven & the constellations thereof shal not give their light, & the Sun shal be darkned in his going forth, & the Moon shal not cause her light to shine. – And I will shake the heaven & the earth shall remove out of her place – – Behold I will stir up the Medes against him Isa. 13.10. When I shal extinguish these [o Pharaoh King of Egypt] I will cover the heaven & make <8v> <9r> the stars thereof dark, & I will cover the Sun with a cloud & the Moon shal not give her light. All the bright stars of heaven will I make dark over thee, & get darkness upon thy land. – ffor thus saith the Lord God, the sword of the King of Babylon shal come upon thee. Chal. Par. When I shal extinguish the splendor of the glory of thy kingdom out of heaven tribulation shal cover thee, &c. Ezek. 32.7. Get thee into darkness



O daughter of the Chaldeans, for thou shall no more be called the Lady of kingdoms. Isa.

47.5. Darkness & sorrow Isa. 5.30. See also Ioel 2.10. Ier. 13.16. &c.

If one dream that he sees the Sun in heaven without rays & light, it betokens calamity & dishonour to the King – If he dream that it is eclipsed, it betokens affliction & war to the

King – If in his dream he see the Sun Moon & Stars gathered together without light, if he be one of the nobles that darkness betokens his own destruction, but if the King he shall be invaded on all sides by war & fall into affliction. Ind. Pers. & Ægypt. in Achmet. c.

167. And if one dream that the Stars are very dimm, cast down, scattered & cloudy, it betokens the calamity of Princes Nobles & rich men. Pers. & Ægypt. in Achm. c.

168. Where the Sun is darkned & the moon turned into blood (as in Ioel 2.31, Apoc. 6.12)

it alludes to the eclipses of the Sun & Moon: ffor in those Eclipses the Sun is black & the Moon of a dusk red colour. The signification is still the same: for blood is the type of death,

& the death of a body politick of Men is the dissolution thereof by the ceasing of the government. The falling of the stars from heaven (as in Isa. 34.4, Apoc. 6.13) alludes to the

Meteors vulgarly called falling stars & signifies the fall of Princes & great Men. The new moons are of a contrary signification to Eclipses of the Moon & signify the restauration of a

dispersed people. Where the Iewish new Moons were celebrated with Trumpets, intimating that their return from captivity should be accompanied with war.

#### Chap. IV.

### Of fire & Meteors, Clouds, riding on the clouds, covering the Sun with a cloud or with smoke, Winds, Whirlwinds, Thunder, Lightning, Hail, Overflowing rain, moderate rain, Dew, living water & want of rain

fire is put to signify war ---

< text from f 9r resumes >

9. fire is put to signify war because bodies of men are represented by things combustible as by trees, ships, Beasts, & as these things waste in the fire so Men are destroyed in war. Then this figure there is scarce any more frequently used in scripture. Say to the forest of the South – Behold I kindle a fire in thee & it shall devour every green tree in thee & every dry tree: the flaming flame shall not be quenched, & all faces from the South to the North shall be burnt therein Ezek. 20.47. The house of Jacob shall be a fire <10r> & the house of Joseph a flame, & the house of Esau for stubble & they shall kindle in them & devour them Obad. 18. My determination is to assemble the Kingdoms to pour upon them mine indignation even all my fierce anger: for all the earth shall be devoured with the fire of my jealousy Zeph 3.8. So also Moses describes the desolation of Israel & Peter the ruin of the Kingdoms of the world by a conflagration of the earth (Deut. 32.22 2 Pet 3.10.) & the wars whereby mankind is kept out of Paradise Moses signifies by Cherubims (which are armies) with the flame of a sword which turned every way to keep the way of the tree of life Gen. 3.24. The strength of the battle – hath set him on fire round about, yet he knew not it burned him, yet he laid it not to heart Isa. 42.25. The Lord called thy name a green olive tree – with the noise of a great tumult he hath kindled a fire upon it Ier. 11.16. See also Isa. 56.15, 16. Ier. 21.14 & 48.45, & Ezek. 19.12 & 30.8. &c.

The Chaldee Paraphrast for burning substitutes slaying Isa. 42.25 & for fire & flame armies of enemies strong & powerful as fire Ier. 11.16 & 48.45 &c. Also for flame he puts a sword. Isa. 50.11.

If one dream that he is burnt by a flame he shall perish in war Achm. 159 ex mente Ind. If a King seem to see the pillars of his palace on fire, it signifies the dominion of another & the destruction of the great ones which he hath constituted – And if he see his hair on fire he shall loose his people in war c. 160 ex Pers. et Ægypt. If one dream that the Sun hath scorched him much he will be punished by the King proportionally to the scorching Ind. Pers. & Ægypt. in Achm. c. 167. This respects a single person. Where a nation or people is scorched by the Sun the punishment can scarce be any otherwise then by the King making war upon them, or raising a persecution against them. So when the Palmbearing multitude come out of great tribulation, & 'tis said that the Sun shall not light on them any more nor any heat, for – God shall wipe away all tears from their eyes, this heat plainly represents the tribulation Apoc. 7.16, 17. And so when the ten Kings burn the whore with fire 'tis to be understood that they consume her by war Apoc. 17.16. And the like of the Sun's scorching men {with} fire & great heat so as to cause them to blaspheme God Apoc. 16.8, 9. And what the burning Sun signifies here, a torch of fire signifies in Zechariah Behold I will make Ierusalem a cup of trembling unto all the people round about, when they shall be in the siege both against Iudah, & against Ierusalem – In that day will I make the governour of Iudah like a hearth of fire among the wood, & like a torch of fire in a sheaf; & they shall devour all the people round about. Zech. 12.

10 That a cloud is a multitude may appear by these instances. Thou <11r> shalt ascend & come like a storm, thou shalt be like a cloud to cover the land thou & all thy bands & many people with thee, Ezek. 38.9. A day of darkness, & gloominess, a day of clouds, a great people & a strong &c Joel. 2.2. A cloud shall cover Egypt & her daughters shall go into captivity. i.e. a cloud of enemies or as the Chaldee Paraphrast interprets it a King with his army like a cloud Ezek 30.18. And so God threatening the overthrow of Pharaoh by Nebuchadnezzar, saith: & when I shall put thee out – I will cover the sun with a

cloud & set darkness upon thy land: that is saith the Chalde Paraphrast A King with his Army shall cover thee as a cloud ascends & covers the Sun, Ezek. 32.7. The like signification of smoke see in Isa. 14.31 & Apoc 9.2. In these instances a cloud signifies only numerous armies, but its signification equally extends to any great multitude as may appear out of Heb. 12.1: Wherefore seing we are also compassed about with so great a cloud of witnesses &c.: which expression now grown proverbial was doubtless derived from the language of the ancient Prophets & wise men; or at least from the same grounds from which they derived it: which I take to be chiefly the resemblance which a numerous swarm of insects, as also the dust raised by a great multitude of people, have to a cloud.

Hence riding on a cloud signifies reigning over people. If a King dream that he sits upon the clouds carried whither he will, he shal rule over his enemies & obtain victories & unexpected joy Pers. & Ægypt in Achm. c. 164. So descending & ascending in a cloud is descending and ascending in a multitude. Apoc. 10.1, & 11.12.

11. Clouds being people, the winds which arise from their commotion must signify the commotion & wars of one nation against another in the quarter of the wind. Thus the four winds of heaven strove upon the sea. i.e. the wars of nations whereby the Beasts arose. Dan. 9.1. The wind shall eat up all thy pastures & thy lovers shall go into captivity Jer. 22.22. I will raise up against Babylon – a destroying wind Jer. 51.1. Vpon Elam will I bring the four winds from the four quarters of heaven & will scatter them towards all those winds, & there shall be no Nation whether the outcasts of Elam shall not come. ffor I will cause Elam to be dismayed before their enemies. Jer. 49.36. The wind shall carry them away & the whirlwind shall scatter them. Isa 41.16. I scattered them with a whirlwind among all the nations Zech. 7.14. The king of the north shall come against him with a whirlwind, with chariots &c. Dan. 11.40. A great whirlwind shall be raised up from the coasts of the earth, & the slain of the Lord &c.

Chald. Par. many people shall come openly from the ends of the earth Ier. 25.32. So in Ezek. 19.12 for the east wind dried up her fruit, the Chalde Paraphrast substitutes: A king strong as a parching wind slew her people. In like <12r> manner in the Apocalyps the four winds which hurt the earth & sea are the wars of the four first Trumpets.

If a King see the sea much troubled by wind from a known quarter he will be molested by some nations from that quarter, but if he see the sea calm he will peaceably enjoy his kingdom Ind. Pers. & Egypt apud Achm c. 178. If he seem to be taken up & carried from place to place by a wind, he shall undertake a long expedition with success proportional to the strength & quickness of the wind Ind. c. 165. If a King in a journey seem to be hindred by a wind he shall receive a messenger from a remote kingdom by which he shall be troubled. Pers. & Ægypt. c. 166.

12. Thunder is the voice of a cloud & therefore signifies the voice of a multitude. In allusions to the loud noise of Drums & Trumpets it signifies a battel with victory on that side which thunders. So lightning is fire, & fire is war: and hail (in allusion to the stroke of weapons) is also the tempest of a battel, as you may see by these instances. The Lord thundred in the heavens & the highest gave his voice: Hailstones & coals of fire. Yea he sent out his arrows and scattered them & he shot out lightnings & discomfitted them. Psalm. 18.13. With hailstones of mighty power he made the battel to fall violently upon the nations Eccles. 46.6. The Lord shal cause his glorious voice to be heard, he shal shew the lightning down of his arm with the indignation of his anger, & with the flame of a devouring fire with lightning & tempest & hailstones. ffor through the voice of the Lord shal the Assyrian be beaten down Isa. 30.30. I will camp against thee round about & will lay – seige against thee – & the multitude of the terrible ones shall be as chaff that passeth away, yea it shall be suddenly Thou shalt be visited of the Lord of hosts with thunder, & with earthquake, & with great noise, with storm and tempest, & the flame of devouring fire Isa. 29.1, 6. The Philistines drew near to battel against Israel, but

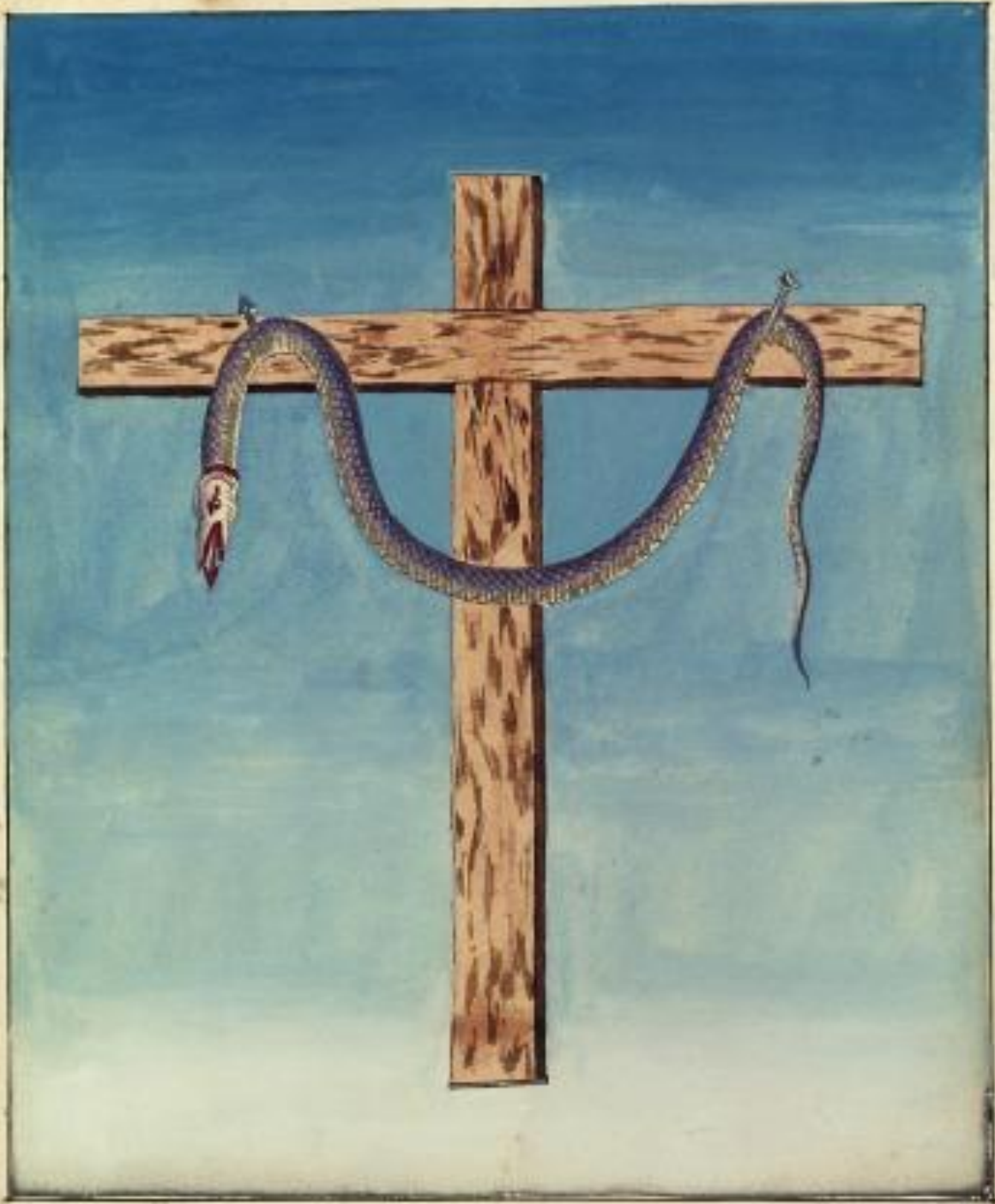
the Lord thundred with a great thunder that day upon the Philistines & smote them until they cme to Beth-car, Sam. 7.10 See also, Sam. 2.10 & Isa. 28.2 & 60.15. So Ioel describing the battel of the great day saith, The Lord shall roar out of Zion, i.e. Thunder with a roaring thunder ch. 3.16. And in thesame sense are thunder lightning & hail constantly used in the Apocaplys ch. 8.6, 7 & 11.19 & 16.18, 21.

If one dream that hail falls on a place he may expect a violent incursion of the enemy; & if he dream that the hail hurt the stalks of corn <13r> there shall be slaughter of men in that place proportional to the breaking of the stalks Achm. c. 191, ex Ind. Pers. & Ægypt. If one dream he sees a Dragon struck with lightning, it portends war & ruin to some other King which is an enemy to that country c. 283, ex Ind. Pers. & Ægypt.

As for the mixing fire with hail, Apoc. 8.6 that figure may seem borrowed from the Ægyptian plague of thunder & hail with fire mingled exod. 9 23. But I suppose it alludes also to the frequent mixture of hail with lightning which happens in hot countries, although in our northern regions it is less usuall.

An overflowing rain refers also to war as you may see by this instance. I will call for a sword against him throughout all my mountains – & I will rain upon him & upon his bands, & upon the many people that are with him an overflowing rain & great hailstones, fire & brimstone. Ezek. 38.22. ffor overflowing waters signify invading people as shall be presently explained. But moderate rain – – – < **insertion from f 13v** > But moderate rain & dew & water whereby vegetables & animals are nourished called living water & water of life, signify the graces & gifts of the holy spirit & doctrine of truth whereby men are nourished to everlasting life. My doctrine shall drop as rain, my speech shall distill as the dew, as the small rain upon the tender herb & as the showers upon the grass. Deut 32.2. It is time to seek the Lord till he come & rain righteousness upon you Hos. 10.2. Paul planted, Apollo's watered, 1 Cor. 3.6. Ho every one that thirsteth come ye to the waters – incline your ear & come unto me, hear & your

soul shall live Isa 55.1, 3. They have forsaken me the fountain of living waters & hewn out cisterns, broken cisterns that can hold no water Ier. 2:13. The fear of the lord is a fountain of life Prov. 14.27 & 13.14 Understanding is a well-spring of life to him that hath it Prov. 16.22 The water that I shall give him shall be in him a well of water springing up into everlasting life John 4.14. He that believeth in me shall never thirst John 6.35. He shall baptize you with the Holy-ghost. Matt. 3.11 I will pour out my spirit upon all flesh Joel. 2.28 & Isa. 44.3. If any man thirst let him come unto me & drink. He that believeth on me out of his belly shall flow rivers of living waters [that is out of his mouth in prophesying or preaching the gospel,] for this he spake of the spirit which they that beleive on him should receive. John. 7.38. Living water shal go out from Ierusalem Zech 14.8, from under the threshold of the Temple Ezek 47 out of the throne of God & of the Lamb Apoc 22 that is the law of God from the Ark into all nations. Isa. 2.3. These have power to shut heaven that it rain not in the days of their prophesy Apoc. 11 that is to make the country of the Beast become a spiritually barren wilderness. < **insertion from right margin of f 14r** > a region barren of saints. Ephraim is smitten, their root is dried up, they shall bear no fruit: yea though they bring forth, yet will I slay even the beloved fruit of their womb. Hos. 9.16. < **text from f 13v resumes** >



Le second 7.<sup>e</sup> Juella.

En dessus une figure d'oy sergent crucifié, mais à cloûé à une Croix.  
de deux cloûde, la teste à la branche droite, & la queue à la branche gauche à  
ladite Croix.



**Plate 5. The Crucified Snake.**

MS. 3047, Paris, Bibliothèque de l'Arsenal, XVII century, reproduced here from Michela Pereira, (ed.), *Alchimia. I Testi Della Tradizione Occidentale*, Milano, Arnoldo Mondadori Editore, 2006, plate 18.

The last alchemical examples I am going to provide are those of the lamb and of the ram. According to Christian tradition, the lamb is the holocaust through whose sacrifice mankind's sins can be redeemed. The lamb's sacrifice was an omen of Christ's crucifixion sent by God to offer man a chance of redemption.<sup>536</sup> The lamb is the alchemical counterpart of the ram which:

[...] with or without horns – is always a hieroglyph of the subject of the wise. Its fleece, stamped with the saline hieroglyph of the secret fire, promoter of the work, becomes in due course the philosopher's stone.<sup>537</sup>

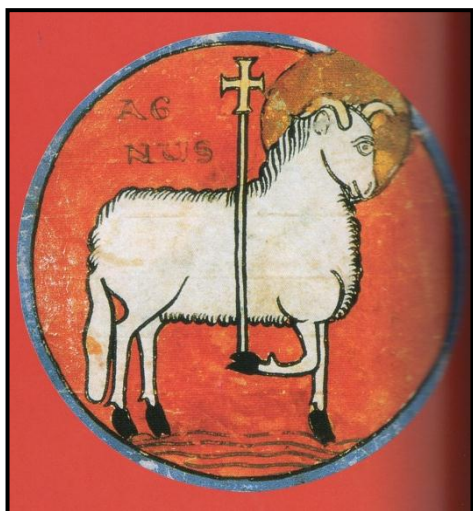


Figure 14. Agnus Dei.  
Reproduced from Robert Adkinson (ed.), *Simboli Sacri – Popoli, Religioni, Misteri*, Milano, L'ippocampo, 2009, p. 512.

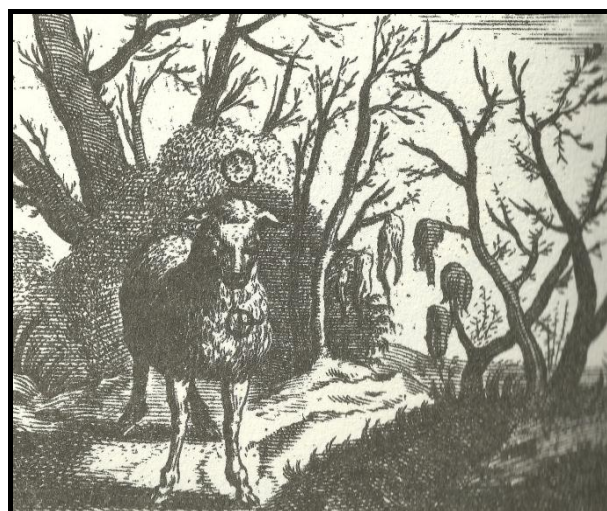


Figure 15. The alchemical ram.  
Reproduced from de Rola, *The Golden Game*, cit., p. 262.

The last two manuscript transcriptions I will provide are from Yahuda MS. 9.1, f. <6r><sup>538</sup> and from Yahuda MS. 7.1e, f. <25r>.<sup>539</sup> Both manuscripts deal with the symbolical meanings of the lamb, the ram, and the redeeming blood of Christ.

<sup>536</sup> See John 1: 29-30; Rev. 7: 9-19.

<sup>537</sup> de Rola, *The Golden Game*, cit., p. 264.

<sup>538</sup> Yahuda MS. 9.1, "Treatise on Revelation;" mid-late 1680s; on-line transcription at: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00216>.

<sup>539</sup> Yahuda MS. 7.1e, "Three draft chapters on prophecy;" after 1700; on-line transcription at: <http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00368>.

**From Yahuda MS. 9.1, f. <6r>**

The sword of the Lord is filled with blood [the two edged sword of his mouth] it is made fat  
with fatness with the blood of Lambs & Goats with the fat of the kidneys of rams[that is,  
saith the Chaldee Paraphrast, with the blood of Kings & Rulers with the fat of kidneys of  
Princes] for the Lord hath a great slaughter in the land of Idumea. Isa 34.2. Here the heaven  
which passeth away is that wherein the sword is bathed & consequently a heaven of  
great Men, For these are the Lambs & Goats & Rams which the Chaldee Paraphrast well  
interprets Kings & Princes. ffor such is the signification of the Goat & Ram and other great  
Beasts in Daniel. In the same sense also doth heaven and earth pass away & the stars fall  
down in the Apocalyps ch. 20.11 & 6.14.

**Chap. VII.**  
**Of the prophesy of the Ram and He Goate.**

The four Monarchies predicted by the vision of the image composed of four metalls, & again by the four Beasts, are again predicted by that of the Ram & he Goat; the two first being represented by the Ram, & the two last by the Goat. For the Ram had two horns both of which were high, & the higher horn came up last; & this Ram having two horns is said to be the kings of Media & Persia, that is the kingdoms. The higher horn which came up last is the kingdom of Persia, & this arose at the fall of the kingdom of Babylon; & the lower horn which came up first is the preceding kingdom of the Medes, & this arose at the fall of the kingdom of Assyria, & is here considered from the time of the date of this prophesy which was in the third year of the reign of Belshazzar. By the fall of the empire of the Assyrians & the division thereof between the Medes & Babylonians, the two empires of the Medes & Babylonians arose together under Cyaxeres & Nebuchadnezzar, & they are represented by the two wings of the Lyon, Dan. VII.4. And these continued standing together till that of the Medes by the conduct of Cyrus a Medo-Persian subdued that of the Babylonians, & then began it self to fall by the revolt of Cyrus & the Persians. For upon the conquest of Babylon by the Medes, Cyrus & the Persians revolted from the Medes, I think before the end of the yeare, & beat them in battel the next year; & the king of the Medes raised a new army & was again beaten the year following & lost his kingdom to Cyrus, who by that victory set the Persians above the Medes. Now in the history of the life of Daniel (Dan. I.21) its said that he continued even untill the first year of Cyrus, that is, untill the first year of his reign over Media: & afterwards (Dan. X.1) its said that he received the prophesy of the

scripture of truth in the third year of Cyrus, that is in the third year of his reign over Persia. And therefore the Persians revolted two years before he conquered the Medes. He conquered Babylon Anno Nabonass. 209 & died Anno Nabonass. 218 according to the Canon of Ptolomy, & reigned seven years after his conquest of the Medes according to Xenophon, & therefore conquered them Anno Nabonass. 211. The horn therefore which rose up first, represents the kingdom of the Medes from the time of the fall of the Assyrian Empire, or at the least from the time of the third year of Belshazzar, the year in which this Prophecy was given; & the second horn represents the kingdom of the Persians which began to rise up Anno Nabonass. 290, & within two years after overcame the kingdom of the Medes.

The He-Goat had a notable horn between his eyes, & smote the Ram & brake his two horns, & waxed very great: & when he was strong the great horn was broken off, & for it came up four notable ones towards the four winds of heaven. And these represent the same kingdoms with the four wings of Daniel's third Beast. The Goat is called the king of Iavan, that is, the king of the people descended from Iavan the son of Iaphet, & is usually interpreted to signify the king of Greece, that is, the kingdom; & in the reign of his first horn it signifies the kingdom of Alexander the great & his brother Aridæus & two sons. After their reign the governours of Provinces put crowns on their own heads, & thereby divided the Monarchy into smaller kingdoms the four chief of which were the kingdoms of Macedon Egypt Syria & Thrace. And these are represented by the four horns. And in the latter time of their kingdom when the transgressors are come to the full, that is, in the reign of Antiochus Epiphanes when the transgressors against the holy covenant are arrived at the height; not before but in his reign, after one of them [after the kingdom of Madedon] came forth a little horn which waxed exceeding great. For in the eighth year of Antiochus, when they had spoiled the temple, prohibited the daily worship, burnt the sacred books, & set up the religion of the heathens in all Iudea; the

kingdom of Macedon, <26r> the principal horn of the four was conquered by the Romans, & the ships which the Romans at the time of this conquest sent with an embassy against Antiochus Epiphanes then in Egypt, are called the ships of Kittim the son of Iavan, & so belong to the body of the Goat. And if we may regard the prophesy of Balaam so far as it is recited by Moses in favour of Israel, the Romans are there also called Kittim. And ships, saith he, shall come from Kittim, & shall afflict Assur & shall afflict Eber. Assur is here put for Syria. Italy was so far peopled from Greece as to be called magna Græcia, & it might be peopled originally from Kittim tho we want the history thereof. < insertion from f 25v > For it was usual before the times of the Trojan war to call the people by the names of their kings & princes.. And some tell us that Telephus the son of Hercules & Auge & father of Latinus reigning in Italy changed the name of the Cetij (or posterity of Kittim) into that of Latines. < text from f 26r resumes > But it is sufficient to make the Romans a horn of the Goat that they are called Kittim in the prophesies of Daniel.

This horn was at first but a little one comparatively to what it became afterwards, It waxed exceeding great towards the south by conquering Afric Libya & Egypt, & towards the east by conquering Asia minor, Armenia & Syria & towards the pleasant land by conquering Iudea. It waxed great even to the host of heaven (the people of the Iews,) & it cast down some of the host & of the stars to the grownd, & it stamped upon them. Yea he magnified himself even to the Prince of the host, the Prince of princes [Jesus Christ whom he crucified] & by him the daily sacrifice was taken away & the place of his Sanctuary (the Temple) was cast down, viz<sup>t</sup> in the war which he made upon the Iews in the reign of Nero & Vespasian And the host was given over to him by the transgression against the daily sacrifice, & it cast down the truth to the grownd & it practised & prospered. For in the reign of the Emperor Hadrian the Romans built a temple to Iupiter Olympius on mount Sion where the temple of the Iews had stood, &

provoked them to rebell, & made war against them with very great slaughter, & banished them from Iudæa upon pain of death, & placed the carved statue of a hog on one of the gates of the city.

Then, saith Daniel, I heard one saint speaking, & another saint said to that certain saint that spake, How long shall be the vision concerning the daily sacrifice & the transgression that maketh desolate, to give both the sanctuary & the host to be troden under foot? And he said unto me, Vnto two thousand & three hundred (prophetic) days. Then shall the sanctuary be cleansed. – – For at the time of the end shall be the vision – – even at the last end of the indignation, that is, at the last end of Gods indignation against the Iews, or at the last end of the long captivity & dispersion of the Iews predicted by Moses & the prophets, which is not yet at an end. Thus the power of this last horn of the Goat became mighty but not by his own power; not by the power of Kittim or Iavan, but by that of Afric, Armenia, Syria, France, Spain, Helvetia, Dacia, & Germany conquered by Kittim.

Some take this little horn to be Antiochus Epiphanes, as if Antiochus was a little horn growing out of another horn, & the Goat had five horns standing up at once. But Daniel by the horns of a Beast understands not single kings but kingdoms. The ten horns of the fourth Beast were ten kingdoms, & the four horns of the Goat were four kingdoms, & are called kingdoms by Daniel himself, Dan. VIII.22. And the first horn, the great horn in the room of which the four came up, was of the same kind with the four. The horn after which the little horn came up, was one of the four: & Antiochus & his kingdom were not two horns. Each of the four horns had many kings, & Antiochus was only one of those many kings. It was at first a little one & grew mighty towards the south & towards the east & up to the host of heaven. But Antiochus did not so. He made no conquests. The little horn magnified himself even to the Prince of the host, & cast down his sanctuary to the grownd, & so did not Antiochus. He did not cast down the

Temple to the ground, nor stand up against the Prince of princes. He only polluted the temple & took away the daily sacrifice during three years or 1080 days, 1 Maccab. I.20, 29, 54. He spoiled the temple two years before, but did not then take away the daily sacrifice, & the whole five years amount only to 1800 days. Before this, some Jews apostatized from the law to the heathen religion, & got a licence from the king to do after the ordinances <27r> of the heathens, & built a place at Ierusalem for their religious assemblies 1 Maccab. I.11, 13, 14.



I actually think that my conclusion about this long series of alchemical representations in Newton's millenaristic manuscripts could be best furnished by the fourth plate of the *Mutus Liber*; actually: "the picture most often reproduced from the *Mutus Liber* series."<sup>540</sup> In this engraving we find all the symbols previously hinted at – the Sun/King and the Moon/Queen; the dew; the alchemical ram – and we can therefore try to solve out the puzzle of their comprehensive meaning. According to McLean's commentary, the alchemical couple is gathering the alchemical dew from a meadow with a ram and a bull behind them. These animals probably stand for the zodiac signs of Aries and Taurus and the scene is therefore supposed to be a spring-like representation. The most important consideration is that, besides the bull which is a symbol of Chthonic earthly energies, the ram may also indicate the stream of Ouranian forces which brings life to unfruitful lands. Just as Newton's casting new light on the true meaning of the prophecies would lead man to salvation.

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<sup>540</sup> McLean, *Commentary*, cit., p. 49.

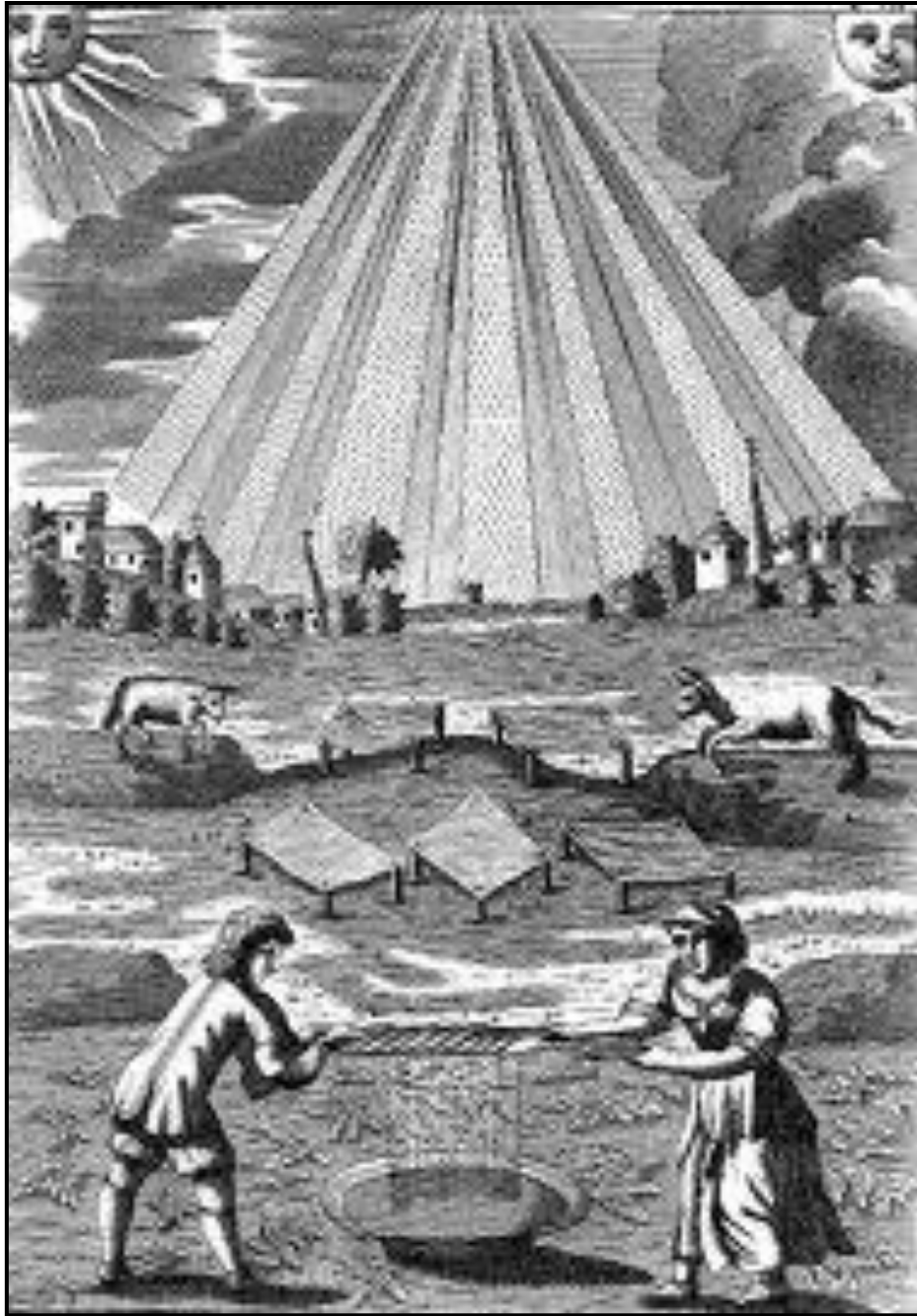


Figure 16.  
Fourth Plate from Altus' *Mutus Liber*.  
Reproduced from Altus, *Mutus Liber*, cit., p. 73.

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## Webgraphy

<http://www.alchemywebsite.com/index.html/>

The site, organized by Adam McLean, provides over 250 complete alchemical texts, extensive bibliographical material, numerous articles, introductory and general reference material on alchemy.

<http://www.isaacnewton.ca/>

The address of the homepage of *The Newton Project Canada*'s website.

<http://www.newtonproject.sussex.ac.uk/>

The address of the homepage of *The Newton Project*'s website.

<http://www.ritmanlibrary.nl/>

This is the official site of the "Bibliotheca Hermetica Philosophica" in Amsterdam. There can be found a vast list of catalogues and images, as well as some links to interesting alchemy-related websites.

<http://webapp1.dlib.indiana.edu/newton/index.jsp/>

The address of the homepage of the website "*Isaac Newton Chemistry*."

## Estratto per riassunto della tesi di dottorato

L'estratto (max. 1000 battute) deve essere redatto sia in lingua italiana che in lingua inglese e nella lingua straniera eventualmente indicata dal Collegio dei docenti.

L'estratto va firmato e rilegato come ultimo foglio della tesi.

Studente: Zanon Irene      matricola: 796168

Dottorato: Lingue, Cultura e Società

Ciclo:      XXV°

Titolo della tesi: *The Alchemical Apocalypse of Isaac Newton*

### Abstract:

#### Italiano

Un'analisi della vita e delle opere di Sir Isaac Newton evidenzia come la sua ricerca scientifica sia sempre stata affiancata da un concomitante interesse per la teologia, l'esegesi biblica e l'alchimia. Soprattutto in seguito alla recente riscoperta di un ingente mole di manoscritti Newtoniani, è stato possibile determinare la natura di questi documenti. Tuttavia, poco o nulla è stato detto su una possibile influenza della filosofia alchemica nei manoscritti esegetici di Newton. Lo scopo principale della mia tesi è perciò quello di fornire delle possibili ipotesi circa l'interazione fra le conoscenze alchemiche di Newton e le sue tecniche esegetiche. Un ruolo chiave avrà in questo l'analisi di alcuni manoscritti della collezione Yahuda (Biblioteca Nazionale, Gerusalemme) ad oggi inediti.

#### English

An analysis of Newton's main life events and works highlights how his scientific commitment has always been followed by a living interest for theology, Biblical exegesis and alchemy. Chiefly due to a late re-discovery of a great bulk of Newtonian manuscripts, scholars have been able to enquire into the true nature of these documents. Yet nothing has been said about a possible influence of alchemical knowledge over Newton's Biblical exegesis. One of the main goals of this Ph.D. thesis of mine is to suggest some possible hypotheses about the interaction between Newton's alchemical mind and his millenarianism. A key role in the development of my criticism will be played by the analysis of some previously unpublished manuscripts gathered in the Yahuda Collection (Jewish National and University Library of Jerusalem)

Firma dello studente

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