

# Interpretation and the Hieroglyphic Monad: John Dee's Reading of Pantheus's *Voarchadumia*

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John Dee's marginalia in his copy of Johannes Pantheus's *Voarchadumia* (now in the British Library) are an interesting source of information about the development of Dee's scientific ideas in the period between the *Propaedeumata Aphoristica* (1558) and the *Monas Hieroglyphica* (1564). In reading the book, Dee has systematically compared the text with Pantheus's earlier work, the *Ars Metallica*, and noted any differences between the two largely identical works. Therefore, most of Dee's comments are not indications of his own interests, as has previously been assumed. Only the marginalia that are not concerned with comparing the two texts can be taken to express Dee's own views. These marginalia, probably written in 1559, provide evidence that Dee had already at this time a strong interest in cabbalistic methods as a means of gaining knowledge about natural substances. Cabbalistic speculation was to be central to Dee's thought in the *Monas Hieroglyphica*, and has previously been taken to indicate a dramatic change in Dee's scientific outlook, towards a spiritual quest. In his marginalia in the *Voarchadumia*, however, Dee appears to be using cabbalistic methods to gain information on wholly material, non-spiritual matters. The abundant use of the symbol of the hieroglyphic monad in the marginalia provides a further source of insight into the alchemical import of the symbol, five years before the publication of the *Monas Hieroglyphica*.

In 1559, the English alchemist John Dee received Giovanni Agostino Pantheus's "anti-alchemical" work *Voarchadumia contra alchimiam: ars distincta ab archimia et sophia: cum Additionibus: Proportionibus: Numeris: et Figuris* (Venice, 1530) as a gift from a friend.<sup>1</sup> This book, which describes a new theory of the transmutation of metals, he read with great interest, as can be seen by his annotations and drawings in the margins, and his many underlinings of words and sentences in the text. A study of these marginalia brings to light new sides of Dee's intellectual development, and also suggests that there may have been a greater continuity in Dee's intellectual life than has been assumed in recent literature.

<sup>1</sup> G. A. Pantheus, *Voarchadumia contra alchimiam: ars distincta ab archimia et sophia: cum Additionibus: Proportionibus: Numeris: et Figuris* (Venice, 1530). Dee's note on the title page is "Joannes Dee 1559 18 Junij ex dono magister Joannis Baptistae Danieus." This man may be identical with Giovanni Baptista Agnello, who published the alchemical work *Apocalypsis spiritus secreti* in London in 1566. Dee also owned this work. See D. E. Harkness, *John Dee's Conversations with Angels* (Cambridge: Cambridge University Press, 1999), 204, n. 31. Harkness states that Dee owned the 1550 Paris editions of both of Pantheus's books (89). However, Dee's annotated copy of the *Voarchadumia* is the first edition dated Venice 1530 (British Museum, shelfmark C.120.6.4 [2]).

In Nicholas Clulee's *John Dee's Natural Philosophy* (1988),<sup>2</sup> the biography of John Dee's scientific career is roughly divided into three phases, corresponding to the publication of his three works on natural philosophy: the *Propaedeumata Aphoristica* (1558), the *Monas Hieroglyphica* (1564), and his *Mathematicall Praeface* to the first English translation of Euclid's *Elements* (1570). The primary objective of Clulee's division of Dee's career into different phases was to offer a critique of what he calls the "Warburg thesis" (advanced by Frances Yates and Peter J. French), which sought to explain Dee's life within a single intellectual framework: that of "Hermetic Neo-Platonism." Clulee correctly argued that this approach to Dee's career excludes important facets of his intellectual development, and thus obscures our understanding of his natural philosophy. By emphasising the diversity in Dee's interests and development, Clulee wished to write a Dee biography that was less homogeneous and more nuanced than the "Hermetic Dee" of the Warburg thesis.

According to Clulee, a "radical disjuncture" occurred in Dee's intellectual life in connection with the writing and publication of his speculative alchemical work the *Monas Hieroglyphica* in 1564.<sup>3</sup> Clulee's claim is that Dee's scientific endeavours from this time onwards became a Neo-Platonic religious quest for God through the study of nature.<sup>4</sup> In the *Monas Hieroglyphica*, Clulee argues, Dee began to use speculative cabballistic and numerological methods that are absent from his earlier work, the *Propaedeumata Aphoristica* (1558), and began to use the obscure analogies and metaphors characteristic of alchemical literature. Even though Dee had used the symbol of his hieroglyphic monad as an emblem on the front page of the *Propaedeumata Aphoristica*, and Clulee acknowledges that Dee's use of the monad symbol in the marginalia in the *Voarchadumia* anticipates its later elaboration in the *Monas Hieroglyphica*,<sup>5</sup> he argues that "these similarities do not support any assumption that the characteristic features of the *Monas* were fully developed in the earlier period."<sup>6</sup> These characteristic features, i.e. the cabballistic, numerological, and magical aspects of the monas symbol, are first seen in the *Monas Hieroglyphica*.<sup>7</sup> A closer study of Dee's marginalia in the *Voarchadumia*, however, indicates that several of the main features of Dee's theory of the hieroglyphic monad were already well developed in 1559. An examination of one of the main sources for the cabballistic elements of the *Monas Hieroglyphica* may also shed some new light on these aspects of the work.

### Alchemy and Dee's *Monas Hieroglyphica*

The quantification of nature is often viewed as the decisive theoretical step towards the development of science in early modernity.<sup>8</sup> Alongside the mathematical conception of nature that particularly characterised the Neo-Platonic–Pythagorean current of the Renaissance, there existed a new chemical conception of nature, the foremost representative

<sup>2</sup> N. Clulee, *John Dee's Natural Philosophy* (London and New York: Routledge, 1988).

<sup>3</sup> Clulee, *John Dee's Natural Philosophy*, 15.

<sup>4</sup> Clulee, *John Dee's Natural Philosophy*, 16.

<sup>5</sup> Clulee, *John Dee's Natural Philosophy*, 97.

<sup>6</sup> Clulee, *John Dee's Natural Philosophy*, 118.

<sup>7</sup> Clulee, *John Dee's Natural Philosophy*, 118.

<sup>8</sup> See, for instance, W. A. Crosby, *The Measure of Reality: Quantification and Western Society, 1250–1600* (Cambridge: Cambridge University Press, 1997).

of which was Paracelsus.<sup>9</sup> In the *Monas Hieroglyphica*, John Dee expresses a conception of nature that combines the Neo-Platonic idea of nature as structured by numbers with the view that all changes in nature can be explained as alchemical processes. The hieroglyphic monad itself is a symbolic representation of the universe, revealing the divine order and underlying structures of nature. Underlying this, there is a mathematical-alchemical theory, which also forms the basis for the manipulation of natural forces by means of catoptrics that Dee describes in the *Propaedeumata Aphoristica*. In this work, Dee describes a method of calculating and reinforcing celestial influences by means of lenses, the assumption being that all sublunar change happens according to influences of the planets, as in an alchemical vessel, and that the rays of the sun can serve as a model of the behaviour of the influences from the moon and other planets.<sup>10</sup> The hieroglyphic monad was central to Dee's thought in his scientific endeavours after the publication of the *Monas Hieroglyphica* in 1564,<sup>11</sup> and, as a study of its role in Dee's reading of the *Voarchadumia* may reveal, probably earlier, too.

In the introduction to his English translation of the *Monas Hieroglyphica*, Josten points out that Dee himself was concerned with the continuity of his alchemical studies. In the introduction to the *Monas Hieroglyphica*, Dee mentions a treatise about the art of "Arioton,"<sup>12</sup> addressed to the Parisians in 1562, into which he had incorporated all the knowledge he had obtained through his previous twenty years of alchemical studies.<sup>13</sup> He must therefore have begun to study alchemy in 1542 when, as a fifteen-year-old, he began his studies under John Cheke. Dee claims to have invented the monas symbol in 1557,<sup>14</sup> and in 1558 he included it on the title page of the *Propaedeumata Aphoristica*, pointing out that all the symbols of "the astronomy that is named inferior" (i.e. alchemy) are encompassed in it, and that the symbol derives from his own alchemical theories.<sup>15</sup> His insistence that

<sup>9</sup> See, for instance, A. G. Debus, "The Scientific Revolution: a Chemist's Reappraisal," in *Science, Pseudo-Science, and Utopianism in Early Modern Thought*, ed. S. A. McKnight (Columbia and London: University of Missouri Press, 1992), 38 et seq.

<sup>10</sup> W. Shumaker and J. L. Heilbron (eds.), *John Dee on Astronomy: "Propaedeumata aphoristica" (1558 and 1568) Latin and English* (Berkeley, Los Angeles and London: University of California Press, 1978).

<sup>11</sup> The book's full title is *Monas Hieroglyphica: Ioannis Dee, Londinensis, Mathematicè, Magicè, Cabalisticè, Anagogicè, explicata: Ad Sapientissimum, Romanorum, Bohemiae, et Hungariae, Regem, Maximilianum*. (The Hieroglyphic Monad of John Dee, of London, Mathematically, Magically, Cabbalistically, and Anagogically Explained, [and addressed] to the Most Wise Maximilian, King of the Romans, of Bohemia, and of Hungary.)

<sup>12</sup> C. H. Josten, "A Translation of John Dee's *Monas Hieroglyphica* (Antwerp, 1564), with an Introduction and Annotations," *Ambix* 12 (1964): 137, footnote 29. Josten notes Walter Pagel's suggestion that "Arioton" may be derived from "ariet-," the Latin root of "Aries," which Dee in the *Monas Hieroglyphica* equates with the fire used in alchemical processes. "Arioton Ars" may therefore mean "alchemy."

<sup>13</sup> J. Dee, *Monas Hieroglyphica*, in C. H. Josten, "A Translation of John Dee's *Monas Hieroglyphica*," 136–37, 85–86.

<sup>14</sup> Dee, *Monas Hieroglyphica*, 146–47.

<sup>15</sup> Shumaker and Heilbron, *John Dee on Astronomy*, aphorism LII, 148–49. "[A]ugustissima philosophorum ASTRONOMIA, INFERIOR nuncupata: cuius Insignia, in quadam inclusa MONADE, ac ex nostris Theoriis desumpta, tibi una cum isto libello mittimus."

the planetary signs of the monad refer to “inferior” as opposed to “ordinary” celestial astronomy indicates that the astronomical physics of the *Propaedeumata Aphoristica* should also be seen as an alchemical physics, and suggests that Dee had already developed an alchemical interpretation of the monad at this time. Likewise, Josten states that the *Monas Hieroglyphica* was presented to both the Emperor Maximilian and his son Rudolph II as an alchemical work, and that “the best and greatest thing” (Res . . . Optima, Maximaque) that Dee was hoping would result from this gift was probably the philosopher’s stone.<sup>16</sup> Josten summarises his alchemical interpretation of the *Monas Hieroglyphica* as follows:

If one leaves aside all refinements and all secondary interpretations with which Dee so confusingly invests his concept of the monad, the most general and obvious idea conveyed by its symbol is therefore, that of the alchemical process: Mercury, i.e. the philosophers’ mercury, is seen as being activated by alchemical fire (*Ignis ille Arietinus*). The inclusion of the monad symbol in an egg-shaped escutcheon points not only to the supposedly oviform orbit of the planet Mercury, but also to the hermetic vessel, or philosophical egg, in which the sublimation of the philosophers’ mercury, resulting in the philosophers’ stone, takes place.<sup>17</sup>

Despite this, however, he insists that the subject matter of the *Monas Hieroglyphica* is not primarily the process of making gold. Influenced by the Neo-Platonic interpretation in Calder’s seminal, but unpublished, Ph.D. thesis, “John Dee Studied as an English Neoplatonist,”<sup>18</sup> he insists that Dee’s alchemical quest is spiritual, and that the practitioner himself is the primary subject of transmutation. He sees Dee’s criticism of false alchemists as a denunciation of transmutation in itself: “The alchemists, i.e. those labouring in the transmutations of metals, are denounced as wretched and inexperienced impostors.”<sup>19</sup> However, Dee’s denunciation is — as he says in the prefatory epistle to the *Monas Hieroglyphica* — aimed at false alchemy, which is like a “shadow” compared to the “solid doctrine” of true alchemy:

[A]s all bodies have a borderline in common with their shadows (as is well known to mathematicians), so also in this matter the phrases of speech and writing are common to the shadows and to the real bodies, as the wise admit. The ignorant, rash and presumptuous

<sup>16</sup> Dee, *Monas Hieroglyphica*, 92–93, footnote 50. Josten is citing Dee’s letter to the Emperor Rudolph II, 17 August 1584, printed in M. Casaubon, *A True & Faithful Relation of What passed for many yeers Between Dr. John Dee . . . and Some Spirits* [etc.] (London: D. Maxwell for T. Garthwait, 1659), 218. In October 1584, Dee promised to give Rudolph the secret of the philosopher’s stone. See Casaubon, *A True & Faithful Relation*, 246, 255, cited by Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 94, footnote 55.

<sup>17</sup> Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 103.

<sup>18</sup> I. R. F. Calder, “John Dee Studied as an English Neoplatonist,” unpublished Ph.D. thesis, University of London, 1952.

<sup>19</sup> Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 101. The reference is to the *Monas Hieroglyphica*, 176–77. “May the most wretched alchemists hence take admonishment and learn to recognize their various errors. May those very inexperienced impostors, in their desperation, hereby understand what is the water of the white of eggs, what the oil from the yolks, [and] what the chalk of eggs [egg-shell], and many more things like these.” (HINC Moniti, discant Miserrimi Alchimistae, suos agnoscere Errorres varios. Quae sit Albuminis QUORUM AQUA: QUOD EX VITELLIS OLEUM. Que QUORUM CALX: HINC Imperitissimi Illi Impostores, cum illoru[m] Desperatione, Intelligant.)

apes grasp mere shadows, naked and inane, while the wiser philosophers enjoy the solid doctrine and the very pleasing effects of the [real] bodies.<sup>20</sup>

It is presupposed that a true alchemy does exist, and he explicitly says that the “voarchadumicuſ” will find the work useful.<sup>21</sup> Dee denounces inexperienced impostors, but claims that there are practitioners who actually work with the thing itself, of which the ignorant see only the shadow, and this is real transmutation. This rhetoric is not uncommon in alchemical works, and in this Dee echoes Pantheus’s criticism of the false alchemists, impostors who, unlike himself, seek to make gold by dying base metals, leaving the essential substance of the metal unchanged. Like Pantheus (who calls his “anti-alchemical” art *voarchadumia*), Dee calls his honest science by a different name than “alchemy”: *pyronomia*, *ars arioton*, and *astronomia inferior*.

The *Monas Hieroglyphica* was also read as an alchemical work by subsequent alchemists who adopted the monas symbol as a symbol of the alchemical process.<sup>22</sup> Around 1600, in the “Epistle Dedicatoreſ” to a planned English translation of the work,<sup>23</sup> Thomas Tymme praised its value for alchemists:

His whole purpose & drift is, to give unto þ the mastery in Alchimy, & the  $\alpha$  and  $\omega$  in the worke, & for this cause his *Monas Hieroglyphicall* hath the first in the top & the last in the foote, the Cross going betweene, which signifies the dejecting and humiliacion of þ before his Exaltacion.<sup>24</sup>

Tymme’s definition of alchemy is “a Science, whereby the principles, causes, properties and passions of all Mettalls are throughly knowne & discovered and by which those Mettalls that are imperfect and corrupted, are altered and changed into true & perfect Gold”;<sup>25</sup> in other words, transmutation without any mention of a “spiritual alchemy” where the object of transmutation is the alchemist himself. Josten deplores Tymme’s failure to understand the “pre-eminently spiritual and non-chemical character” of the *Monas Hieroglyphica*.<sup>26</sup>

<sup>20</sup> “[U]t Corporum quorumcunque, omnes ubicunque Umbrae, COMMUNES cum ipsis Corporibus TERMINOS habet: (Quod Mathematicis est notissimum) Eodem modo, & hic, Phrases Loquendi, Scribendique: Umbris, Verisque ipsis Corporibus, Communes esse, Permittunt SOPHI. Ubi, Imperiti, Temerarij, & Praesumtuosi Simiae, UMBRAS Captant solas, nudas & Inanes: Dum Ipsi Sapientiores Philosophi, CORPORUM Solida fruantur Doctrina & fructu gratissimo.” Dee, *Monas Hieroglyphica*, 144–45.

<sup>21</sup> Dee, *Monas Hieroglyphica*, 136–37.

<sup>22</sup> See, for instance, Clulee, *John Dee’s Natural Philosophy*, 78.

<sup>23</sup> Whether this translation was ever completed has not been established. See: Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 97; and Clulee, *John Dee’s Natural Philosophy*, 78.

<sup>24</sup> T. Tymme, *A Light in Darkness Which Illumineth for all the Monas Hieroglyphica of the famous and profound Dr. JOHN DEE, Discovering Natures closet and revealing the true Christian secrets of Alchimy*, ed. S. K. Heninger (Oxford: The New Bodleian Library, 1963), 6–7.

<sup>25</sup> Tymme, *A Light in Darkness*, 15.

<sup>26</sup> Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 104. Josten has here quoted only the first part of Tymme’s summing up of the *Monas Hieroglyphica*. The second half, “& for this cause his *Monas Hieroglyphicall* þ hath the first in the top & the last in the foote, the Cross going betweene, which signifies the dejecting and humiliacion of þ before his Exaltacion,” is Tymme’s explication of the diagram in *Monas Hieroglyphica*, 198, where Dee shows various interpretations of the monad as divided into the symbols alpha and omega with a cross in the middle. Josten has left the diagram untranslated because he found it unintelligible; see Josten, “A Translation of John

In his marginalia in the *Voarchadumia*, however, Dee puts his hieroglyphic monad in the context of a purely chemical and physical transmutation, and never mentions any spiritual or non-chemical purpose of the symbol.

Like Josten, Clulee in his *John Dee's Natural Philosophy* tends to play down the alchemical interpretation of the *Monas Hieroglyphica*. Although he concedes that “alchemy may be an important component in any understanding of the *Monas*,”<sup>27</sup> and states that the “alchemical association was solidified by the adoption of the *Monas* and its symbol almost exclusively by alchemical writers in the later sixteenth and seventeenth centuries,”<sup>28</sup> he claims that Dee’s main objective with the book was to establish a new language of signs that would have the power to unify and reform all sciences: “Thus the *Monas* is not a complete exposition of alchemy, or magic, or astronomy, or even of this new discipline, but provides examples of how the new art of hieroglyphic writing illuminates the mysteries of these arts and the sayings of the most ancient philosophers.”<sup>29</sup> However, this part of Clulee’s analysis is entirely based on the introduction to the work, where Dee praises the monad’s potential usefulness for all sciences<sup>30</sup> — in the theorems themselves, neither music, medicine, statics nor any of these other arts and sciences are mentioned, while Dee makes rather extensive

<sup>26</sup> *continued*

Dee’s *Monas Hieroglyphica*,” 111. In line with his interpretation of the *Monas Hieroglyphica* as a work primarily about a spiritual process, he suggests, however, that Dee’s passage about the alpha and omega on the previous page (196–97) may refer to a technique of breath control (Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 111, footnote 145), which seems far-fetched. J. W. Hamilton-Jones’s translation from 1946 (which Josten finds inaccurate; see Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 85, footnote 7), however, includes this diagram and another diagram that Josten found “even less intelligible” and similarly left untranslated; see Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 111, 214; and J. W. Hamilton-Jones, *The Hieroglyphic Monad* (Boston: Weiser Books, 1975), 40, 49. The diagram on page 198 provides examples of variations on the series of allegorical alchemical principles of death and rebirth. Tymme, in a *A Light in Darkness*, 29, explains it as “an Allegory, [of] the whole Practice of Alchimy, calling the *Philosophers Stone* in the first begining of the worke *Adam mortall*, but in the end and perfection of the work, passing through the foure Elements into a Quintessence, he calleth it *Adam immortall*, because it will never decay, but purgeth & transformeth all imperfect bodies or Metalls.”

<sup>27</sup> Clulee, *John Dee's Natural Philosophy*, 78.

<sup>28</sup> Clulee, *John Dee's Natural Philosophy*, 78.

<sup>29</sup> Clulee, *John Dee's Natural Philosophy*, 84. Tymme also recognised this aspect of the text, and describes Dee’s work as a restoration of the knowledge of natural philosophy possessed by Adam before the expulsion from the Garden of Eden, and which by his descendants was embodied in hieroglyphic characters and inscribed on two stone tablets to preserve the knowledge from the deluge. See Tymme, *A Light in Darkness*, 11–12.

<sup>30</sup> Clulee, *John Dee's Natural Philosophy*, 82–84; Dee, *Monas Hieroglyphica*, 122–39. The sciences listed in Clulee’s summary are grammar, arithmetic, geometry, music, astronomy, optics, the science of weights, the science of space (*pleno & vacuo*), cabbala, magic, medicine, scrying, “voarchadumia,” and adeptship. Clulee suggests that “Dee’s inclusion of some of these sciences may have been suggested by Norton, *Ordinall of Alchemy*, 60–61, where he mentions grammar, arithmetic, music, astrology, perspective, the science *de pleno & vacuo*, and chiefly natural magic as sciences that to varying degrees illustrate or aid in the alchemical processes.” See Clulee, *John Dee's Natural Philosophy*, 264, footnote 19.

use of traditional alchemical imagery. As Clulee says, alchemy was “traditionally outside the established syllabus and on the fringes of intellectual respectability,” and was to be “disclosed and elevated to a status equal or superior to the other disciplines through this new art.”<sup>31</sup> Dee may therefore have been motivated to include in the introduction to the *Monas Hieroglyphica* a lengthy advertisement for the monas symbol’s potential usefulness for a wide range of sciences, partly to counteract the negative consequences that a book on alchemy might have for his intellectual credibility. Clulee also recognises that the idea of a new grammar did not form part of the monad concept when it was originally conceived in 1557 or 1558,<sup>32</sup> but makes it a main tenet of Dee’s “great metaphysical revolution” of 1564. Clulee’s de-emphasising of the alchemical import of the *Monas Hieroglyphica* serves to support this theory of a radical breach in Dee’s intellectual development in the early 1560s. But the views of the hieroglyphic monad as alchemical and as a new or restored alphabet of nature are not mutually exclusive. While the idea of the universality of science was undoubtedly at the core of Dee’s view of nature, alchemy arguably constituted the prototypical science. The monad’s potential value for other sciences may be viewed as incidental, as the sciences were seen as functioning in accordance with the laws of the great alchemist Nature, and were seen by Dee as capable of being represented by, and deciphered through, universal symbols. It is possible that Dee meant his monad to function as an interpretative key to the corpus of alchemical texts, a standard by which to divide the pure from the impure. Clulee concludes that “[t]he *Monas*, in its treatment of alchemy, is an attempt to illuminate received alchemical discourse by translating it into the universal and standard discourse of Dee’s new hieroglyphical writing.”<sup>33</sup>

### Previous Studies of Dee’s Marginalia in the *Voarchadumia*

Pantheus’s *Voarchadumia* and John Dee’s marginalia in it have received relatively little attention in Dee studies. I. R. F. Calder includes a short discussion of the work in his unpublished thesis, “John Dee studied as an English Neoplatonist,”<sup>34</sup> and also notes that Dee has drawn his hieroglyphic monad on the book’s title page,<sup>35</sup> while both Josten and Clulee have noted several instances where Dee has drawn the monad in the margin alongside specific passages in Pantheus’s work.<sup>36</sup> Recently, however, Deborah Harkness has discovered that the majority of Dee’s annotations in the *Voarchadumia* are merely transcriptions of paragraphs from an earlier work by Pantheus, the *Ars et Theorica Transmutationis Metallicae* (*Ars Metallica*) from 1518.<sup>37</sup> This discovery makes possible a new understanding of Dee’s reading and annotating of the *Voarchadumia*, and also of the significance of both the *Voarchadumia* and the hieroglyphic monad in Dee’s thought.

<sup>31</sup> Clulee, *John Dee’s Natural Philosophy*, 86.

<sup>32</sup> Clulee, *John Dee’s Natural Philosophy*, 85.

<sup>33</sup> Clulee, *John Dee’s Natural Philosophy*, 96.

<sup>34</sup> Calder, “John Dee Studied as an English Neoplatonist,” I, 611–15.

<sup>35</sup> Calder, “John Dee Studied as an English Neoplatonist,” II, 323, n. 199.

<sup>36</sup> Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 137, n. 27; Clulee, *John Dee’s Natural Philosophy*, 101–2.

<sup>37</sup> Harkness, *John Dee’s Conversations*, 89, 204.

In what was the most detailed study of Dee's marginalia in the *Voarchadumia*, Calder uses the marginalia primarily to support his view of Dee as a Neo-Platonic–Pythagorean corpuscularian, a view of Dee that has been more or less completely ignored in later Dee literature. All the passages on which Calder bases his discussion of Dee's views of matter in the marginalia — and that Calder concludes are “perhaps enough to indicate Dee's place in regard to Alchemical theory” — are, however, passages that had been transcribed directly from the *Ars Metallicae*.<sup>38</sup> Since all the marginalia that Calder cites, and on which he bases his assessment of Dee's place in regard to alchemical theory, are in fact transcriptions from Pantheus's *Ars Metallicae*, Calder's statements can have no bearing on Dee's own alchemical theories. Harkness's discovery of the marginalia's relation to Pantheus's *Ars Metallicae* has rendered the significance of the marginalia to our understanding of Dee's thought and intellectual development problematic, and a new assessment is necessary. This article is based on a comparison of the two texts by Pantheus that Dee owned: the *Voarchadumia* and the *Ars Metallicae*. I will make an attempt to assess the extent of his copying of passages from the *Ars Metallicae*, and try to determine what these and the rest of Dee's marginalia in the *Voarchadumia* might tell us about Dee's scientific thought and his intellectual development at the time of his studying the work.<sup>39</sup>

### Dating the Marginalia

Even though Dee's inscription on the title page states that he received the *Voarchadumia* on 18 June 1559, he has not dated his marginalia. We do not know when he acquired the *Ars Metallicae*, which he must already have had access to in order to make a systematic comparison of the two works. However, given the fact that he received the *Voarchadumia* in a period of his life when he was intensely interested in alchemy,<sup>40</sup> it is reasonable to assume that he read it shortly after receiving it. Dee, like his contemporaries, habitually made notes in his books when he read them.<sup>41</sup> William Sherman states that “[e]ven in an age of intense annotational activity Dee stands out as an exceptional annotator.”<sup>42</sup> Thus, had he read the *Voarchadumia* once on receipt and again later, when he compared it with the *Ars Metallicae*, we would expect to find two sets of marginalia in the *Voarchadumia* — one bearing the traces of a first reading, where he would have underlined and annotated parts that he found noteworthy or wished to remember, and one being the notes of comparison between the *Voarchadumia* and the *Ars Metallicae*. The marginalia, however, show no sign of this being the case — all the marginalia suggest that that Dee read the *Voarchadumia* alongside the *Ars Metallicae*. There are very few notes that are Dee's own comments on the text, and virtually no underlinings at all, except for the ones that mark differences between the two works.

<sup>38</sup> Calder, “John Dee Studied as an English Neoplatonist,” I, 613–15.

<sup>39</sup> As Dee's own copy of the *Ars et Theorica Transmutationis Metallicae* was not available to me, and I do not know whether it still exists, my comparison is based on the *Theatrum Chemicum* edition from 1659.

<sup>40</sup> He read 56 alchemical works in July 1556. See Clulee, *John Dee's Natural Philosophy*, 96.

<sup>41</sup> Dee's alchemical books are the most consistently annotated in his collection. See W. H. Sherman, *John Dee: the Politics of Reading and Writing in the English Renaissance* (Amherst: University of Massachusetts Press, 1995), 89.

<sup>42</sup> Sherman, *John Dee: the Politics of Reading and Writing*, 80.

I will therefore base this analysis on the hypothesis that Dee read and annotated the *Voarchadumia* in 1559, shortly after being given the book.

Even though Dee's acquisition and reading of Pantheus's works therefore probably took place five years prior to the writing and publication of the *Monas Hieroglyphica*, the marginalia clearly indicate that he had already developed some of the main principles of his theory of the hieroglyphic monad as well as the graphical symbol itself. A study of these marginalia thus reveals that the relationship between Dee's works and Pantheus's may have been more complex than has formerly been assumed. While Pantheus's art of "voarchadumia" exerted an influence on Dee's alchemical thought, Dee's theory of the hieroglyphic monad influenced his reading of the *Voarchadumia*.

Dee's explication of the hieroglyphic monad in the *Monas Hieroglyphica* is, to a large extent, based on numerological speculations. His annotations in the *Voarchadumia* indicate that numerological speculations along these lines were at the very foreground of his mind in his reading of the work, and even provided the basis for emendations and corrections of the text.

### The Art of *Voarchadumia*

Pantheus's *Voarchadumia* is a short and rather technical handbook of his alchemical art of "voarchadumia." The book contains detailed drawings of chemical equipment such as fans, ovens, cutting, melting and weighing tools, and several tables showing "the mysteries of weight" (*arcana ponderibus*) — weight units and the weight proportions of metal components in mixtures.<sup>43</sup> According to Pantheus, traditional alchemy is a mere colouring of metals, and effects no real physical change:

Truly the established method of manufacturing silver and gold is to colour and change baser metals by the use of dyes and many sophisticated tricks. The real essence and substance of the metal, however, remains the same. This method is, according to common beliefs, called alchemy . . . No real silver or gold is acquired in this way, but a completely worthless and false appearance. It is deservedly condemned (as we will show later on through arguments and authorities), and should be condemned and completely vanquished.<sup>44</sup>

His "voarchadumia," on the contrary, effects real transformation by reorganising the elements that constitute the metals. Matter consists, according to Pantheus, of the elements earth, air, fire, and water,<sup>45</sup> the various configurations and proportions of which, according to mathematical principles, result in the various properties of materials. He refers to the elements as the smallest visible parts of matter (*minima*), which in a mixture are united in

<sup>43</sup> J. Pantheus, *Voarchadumia* (Venice, 1530), 22.

<sup>44</sup> Pantheus, *Voarchadumia*, 6v. "Primo sane[m] modo, luminaria s[ive] Argentum, & Aurum fingendo: hoc est in multis tincturarum generibus, & sophisticationum speciebus imperfectiora metalla colorando, ipsa[m]q[ue] alterando: propria tamen ipsorum essentia, substantia[m]q[ue] remanente. Quam professionem communis omnium consensu Alchimiam (ab Alchimo dicta: quae (profecto) ex Hevraica dictione interpretata Fermentum vani consilii exponitur) vocamus. Quae quum nullam habeat veram Argenti, aut Auri existentiam: sed prorsus inanem, ac falsam apparentia[m]: merito est (uti infra monstrabimus ta[m] rationibus, q[ue] authoritatibus) damnata, & damnanda, penitusq[ue] de medio tollenda."

<sup>45</sup> Pantheus, *Voarchadumia*, 38–38v.

one, referring to the “Philosophum primo de Generatione” (i.e. the first book of Aristotle’s *De generatione et corruptione*).<sup>46</sup> Furthermore, Pantheus viewed the elements, in accordance with the Aristotelian alchemical tradition, as having been created from an original *prima materia*. This material cause of the elements, he says, is “divided in equal and unequal parts” according to rational principles that are also the basis of the Hebrew, Greek, and Latin languages.<sup>47</sup> Both the four primary qualities and the elements are interpreted by Pantheus as states of matter constituted by the proportions of the elements. Matter cannot be destroyed, only reorganised.<sup>48</sup>

Indications of an influence of Pantheus on Dee’s works have been noted earlier. Pantheus uses a peculiar Latin cabbala, which he calls a cabbala of metals,<sup>49</sup> to analyse weight proportions in mixtures of metals. He seeks to establish that the combinations of elements that constitute matter are ordered in specific numerical proportions. The letters in the Latin alphabet are each given numerological values, and are associated with natural principles — the letter R, for instance, is given the value 17 and is associated with “Air, or the lesser light.” In this way, Pantheus seeks to obtain information on the weight proportions of the substances involved in the making of gold: The proportions of natural principles in a perfect, sacred word would be a key to finding the proportions of the same principles in a perfect substance, i.e. gold. In the example shown below, Pantheus is comparing the numerological values of the words RISOO and STAGNO, which are shown to be identical (figure 1).<sup>50</sup> Dee experimented with Pantheus’s method, and in fact developed it further, as he classified the natural principles as belonging to the moon, the sun, mercury, and philosophical mercury, and sought to identify the proportion of each of these principles in the sacred expressions that are the object of Pantheus’s cabballistic analysis.

Elements of this method of describing the qualities of the material world are later found in both the *Monas Hieroglyphica* and the 1568 edition of the *Propaedeumata Aphoristica*, and (as Harkness has noted) some of the theorems of the latter contain combinations of Latin characters that are reminiscent of Pantheus’s cabbala of metals.<sup>51</sup> The 1568 edition also contains an explicit reference to alchemy (pyrology), which is absent from the original 1558 edition of the work.<sup>52</sup> Dee also alluded to the *Voarchadumia* in his dedication of the

<sup>46</sup> Pantheus, *Voarchadumia*, 39.

<sup>47</sup> Pantheus, *Ars et Theoretica Transmutationis Metallicae*, 465. “The first principle in regard to nature, is matter, or the material cause of earth, water, fire and air, in accordance with the will of God — or *Marthek*, as the will of God is called in Greek, and in Hebrew *recon heloim* — as expressed in the letters and numbers . . . and divided in equal and unequal parts” (Primum ergo principium naturale[m] est materia, seu causa materialis terrae, aquae, ignis & Aeris, sub Nutu Dei, vel Marthek: quod graece neusi theu dicitur. & Hebraice recon heloim, positis in literis & numeris . . . ac divisis per aequales et inaequales partes, tali videlicet modo). This passage, which is radically different in the *Voarchadumia*, has been transcribed by Dee on a page inserted opposite 40v in his copy of the *Voarchadumia*.

<sup>48</sup> Pantheus, *Voarchadumia*, 44. “From this it is obvious that the matter of things cannot be destroyed, but is converted, when one nature overcomes another in a mixture.” (Ex quo apparent quod rerum materia non potest anhilari: sed recipit conversionem: cum natura unius naturam alterius superat in misto.)

<sup>49</sup> Pantheus, *Voarchadumia*, 11.

<sup>50</sup> Pantheus, *Voarchadumia*, 18.

<sup>51</sup> Harkness, *John Dee’s Conversations*, 88–89, n. 100.

<sup>52</sup> Shumaker and Heilbron, *John Dee on Astronomy*, aphorism XVIII, 128.



*Monas Hieroglyphica* to the Emperor Maximilian II, where he states that the “voarchadumicus” may find the twenty-first theorem of the *Monas Hieroglyphica* particularly satisfying and helpful to speculation.<sup>53</sup>

### The Marginalia

Dee’s annotations in the *Voarchadumia* are of six main kinds:

- (1) Summaries, cross-references and references to other alchemical works.
- (2) Notes and diagrams of correspondences between the text and the hieroglyphic monad.
- (3) Underlinings of words and sentences.
- (4) Experiments with Pantheus’s Latin cabala and calculations of weight proportions in mixtures of metals.
- (5) Corrections of spelling, calculations, and grammatical errors, and emendations of the text.
- (6) Dee’s own comments on the text.

These kinds of marginalia (or *adversaria*) were commonly used by Renaissance scholars, and can be found in many of the books that Dee owned, as is shown by William Sherman.<sup>54</sup> Sherman criticises modern theories of reading that see the reader as subordinate to the text, and as a passive recipient of meaning.<sup>55</sup> The Renaissance reader, Sherman argues, was an “adverse” reader, who interacted with the texts that they read in complex ways, sifting them for information that they could use for their own purposes. Dee is a prime example of one of these “adverse” readers: an active creator of new meanings, in intense dialogue with the texts that he read. In Dee’s copy of Pantheus’s *Voarchadumia*, there are many examples of his active emendation and elaboration of Pantheus’s text — not least by his recontextualisation of Pantheus’s ideas in relation to his own theory of the hieroglyphic monad.

The marginalia are not, however, evenly distributed throughout the text — long passages have almost no annotations, while others are heavily annotated, and have summaries in the margins and on inserted pages. Abstracts and summaries written directly into the text, which formed an important part of Renaissance reading techniques, are relatively rare in Dee’s copy of the *Voarchadumia* when the many transcriptions from the *Ars Metallica* are discounted. It is therefore of particular interest to note where Dee has actually done this, to see whether a pattern emerges. Even more infrequent are personal comments of Dee’s, which makes the ones he did make all the more interesting. Underlinings of the text are profuse, the vast majority of them marking differences between the *Voarchadumia* and the *Ars Metallica*. There are, however, exceptions, and they can probably be taken to indicate particular kinds of emphasis or interest. Where Dee has made annotations that are not directly related to this work of collation and textual emendation, I will try to give an account

<sup>53</sup> Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 136–37. “Et, si VOARCHADUMICO, nostrae Hieroglyphicae MONADIS, Theoria vigesima prima, satisfaciat, Ipsique, VOARCH BETH ADUMOTH, Speculum ministret.”

<sup>54</sup> Sherman, *John Dee: the Politics of Reading and Writing*, 53–112.

<sup>55</sup> Sherman, *John Dee: the Politics of Reading and Writing*, 55.

of what they may tell us about Dee's thought at the time of his reading of the *Voarchadumia*. Finally, I will try to assess what his use of the hieroglyphic monad in the context of the *Voarchadumia* can tell us about the symbol's role in Dee's thought at this time.

Dee has compared the two Pantheus texts — the *Voarchadumia* and the *Ars Metallica*e — word by word. He has corrected spelling, typographical, and grammatical errors in the *Voarchadumia*, and tried to harmonise the differences between the two texts by inserting missing paragraphs and editing the text of the *Voarchadumia*.<sup>56</sup> Where several chapters of the *Ars Metallica*e are left out of the *Voarchadumia*, Dee has deemed it sufficient to list the running heads,<sup>57</sup> and where the *Voarchadumia* lacks passages that are found in the *Ars Metallica*e and that Pantheus has borrowed from traditional alchemical literature, Dee has inserted the first words of the missing paragraph.<sup>58</sup> He has checked Pantheus's calculations, and noted mathematical errors.<sup>59</sup> Insertions of additional references to other alchemical works reflect Dee's familiarity with traditional alchemical literature.<sup>60</sup>

It seems likely that Dee regarded the *Voarchadumia* as an incomplete re-edition of the *Ars Metallica*e. Thus, his editing of the *Voarchadumia* may have been an effort to establish a true and complete version of the text. In support of the view that he saw the *Ars Metallica*e as the original, authoritative text, we find that in his corrections of the *Voarchadumia* Dee has usually preferred the text version found in the *Ars Metallica*e.<sup>61</sup> The textual corrections and additions that Dee makes independently of his collation of Pantheus's texts are always in accordance with the numerological principles of the monad, i.e. (in Dee's view) in accordance with the basic numerical laws of the universe. What we see is an interaction with the text in which the hieroglyphic monad may have functioned as a tool for interpretation: an

<sup>56</sup> An example of the correction of a printing error is found on page 61 in the *Voarchadumia*, where he has corrected the number “52” to the significant number “252,” as in the *Ars Metallica*e. The number is again found in the *Monas Hieroglyphica* as connected to the philosopher's stone; see Josten, “A Translation of John Dee's *Monas Hieroglyphica*,” 212–13, and 175, n. 71. Another example is the correction of “q Tortam” to “Retortam” on page 28. For examples of Dee's corrections of Pantheus's grammar, see the *Voarchadumia*, 37, where “receptorum” is changed to “receptarum,” and a couple of superfluous suffixes are crossed out, so that “retinentem” and “albificantem” have become “retinent” and “albificant,” as is more correct. Likewise, see the *Voarchadumia*, 54, where the text differs from the corresponding paragraph in the *Ars Metallica*e, which Dee has transcribed on both sides of a leaf inserted between 53v and 54. Dee has underlined the “sua” in “a[b] natura sua mundati,” and his transcription has the correct pronoun, “sui.” On the inserted page facing 54, he has copied a passage under the heading “Dispositiones artis Metallica”e” from the *Ars Metallica*e, 477–78. The entire passage is missing in the *Voarchadumia*.

<sup>57</sup> On the page opposite 60v, he has transcribed only the headings of passages from the *Ars Metallica*e that are not in the *Voarchadumia*: “vbi sequitur, de Metalloru[m] spiritis generatione/ De Metalloru[m] animus generatione/ De mixtione corporis, spiritusq[ue] Metalloru[m] Animae./ et in fine sequitur.”

<sup>58</sup> See, for instance, Pantheus, *Voarchadumia*, page inserted opposite 37v: “Luca sic dicente in Turba. Pluribus rebus &c.”

<sup>59</sup> Pantheus, *Voarchadumia*, 41.

<sup>60</sup> See, for instance, Pantheus, *Voarchadumia*, 38v, where Pantheus refers to Geber, and Dee has added the more exact reference “Geberus. Cap. 65. primo partis summo.”

<sup>61</sup> Sherman notes that Dee, in several manuscripts that he owned, has emended the text according to another, more complete copy. Sherman, *John Dee: the Politics of Reading and Writing*, 86.

aid in restructuring the text, and harmonising it with the extensive body of alchemical literature that Dee had already digested at the time of reading the *Voarchadumia*.

### *The Cabbala of Metals*

Since matter is organised in accordance with the will of God, Pantheus sees it as possible to gain information about the nature and organisation of matter through cabbalistic speculation on sacred expressions in Latin, Greek, and Hebrew. In the marginalia, Dee has practised this Latin cabbala, which Pantheus calls a cabbala of metals,<sup>62</sup> and even developed it further, using the hieroglyphic monad as a key. Thus, Dee attempts to establish numerological correspondences between the Latin expression “Nuttu Dei” (by God’s command) and the names of the modes of changes in matter. Dee has transcribed this passage from the *Ars Metallica*, and it is radically different in the *Voarchadumia*: “The first principle in regard to nature, is matter, or the material cause of earth, water, fire and air, in accordance with the will of God — or Marthek, as the will of God is called in Greek, and in Hebrew recon heloim — as expressed in the letters and numbers . . . and divided in equal and unequal parts.”<sup>63</sup> He has also transcribed and further developed Pantheus’s cabbalistic treatment of the words “NUTU DEI,” “MARTHEK DEI,” “NEUSEI THEOU,” and “RACON ALHIM”<sup>64</sup> (figure 2). Dee notes that “Marthek” has the same numerological value as “Nuttu,” which he must have seen to be of some significance. Thereafter, Dee has calculated the numerological values of the words “Putrefactio,” “Generatio,” and “Alteratio,” and compared the results with the above-mentioned Latin, Greek, and Hebrew expressions.<sup>65</sup> In making the names of alchemical processes objects of cabbalistic analysis, in the same way as Pantheus does for sacred Greek and Hebrew words, Dee shows a greater optimism about the possibility of obtaining information about the natural world through cabbalistic analysis of language than does Pantheus. This interest in cabbalistic method is very clearly pronounced in the *Monas Hieroglyphica*, where Dee views all the letters of the sacred alphabets (Greek, Latin, and Hebrew) as imbued with information about nature.<sup>66</sup>

In his marginalia, Dee extends Pantheus’s treatment of the numerical proportions of the relative weights of the substances in a mixture, and goes further than Pantheus in

<sup>62</sup> Pantheus, *Voarchadumia*, 11.

<sup>63</sup> Pantheus, *Ars Metallica*, 465. “Primu[m] ergo principium naturale[m] est materia, seu causa materialis terrae, aquae, ignis & Aeris, sub Nutu Dei, vel Marthek: quod graece neusi theu dicitur. & Hebraice recon heloim, positis in literis & numeris: notatis per Linea[m] perpendicularia[m], ut infra: ac divisis per aequales et inaequales partes, tali videlicet modo.” Dee’s transcription is on an inserted unpaginated page opposite 40v in the *Voarchadumia*.

<sup>64</sup> Dee has taken these words from the *Ars Metallica*, 465–6.

<sup>65</sup> He has repeated this experiment using Hebrew letters and numerological values taken from Hebrew numerology on the other side of the leaf (facing the *Voarchadumia*, 41).

<sup>66</sup> “O Almighty and Divine Majesty, we mortals are compelled to acknowledge what great wisdom and what infinity of ineffable mysteries are contained in Thy tittles and jots, as delineated and set out in Thy law.” (O Omnipotens Diuina Maiestas, QVANTAM TUIS APICIBVS, ET IOTIS, IN TVA DESCRIPTIS, DISPOSITISQVE LEGE INESSE SAPIENTIAM, ET INEFFABILIVM MYSTERIORVM INFINITEM, CON FITERI COGIMVR MORTALES.). Dee, *Monas Hieroglyphica*, Theorem XX, 182–83; see also Theorems XVI–XVII, 168–75, and Theorem XXII, 194–97.

Primum ergo principium naturale, est materia, seu causa materialis tem-  
pore aquae, ignis & Aeris, sub Nutra Dei, vel Martebk: quod gracie  
neus iher dicitur. Et Hebreu*re*c on *h*elom, positis in literis et  
numbris: notatis per *l*ineas *p*erpendiculare*s*, ut infra: at dicens, p  
a<sup>er</sup> a<sup>equales</sup> et in<sup>equales</sup> partes, tali videlicet modo

N	13	M	12
V	20	A	1
T	19	R	17
V	20	T	19
	<u>72</u>	H	8
D	4	E	5
E	5	I	10
I	9	D	72
	<u>18</u>	E	4
	<u>90</u>	I	5
			9
			<u>18</u>
			<u>90</u>
	9		9
	2		2
	<u>18</u>		<u>18</u>
	9		9
	8	Putrefactio	8
	72	Generatio	72
	18	Alteratio	18
	<u>90</u>		<u>90</u>

actually attempting to identify the harmonic–numerical relationships in particular mixed substances. An interesting example of Dee’s testing of Pantheus’s cabballistic assumptions is found on page 19 of the *Voarchadumia*, where Pantheus gives this recipe:

The formative, cohesive, oil-like or sticky essence is thus drawn from 504 measured weight units [e.g. “weight drops”] of brightly shining fire [*Ignis albivivi*], together with 72 weight units of celestial water in which is dissolved 18 weight units of the supreme salt [*Salis calopali*]<sup>67</sup> which has been manufactured from 150 weight units of vegetable salt and 100 weight units of mineral salt, purified through evaporation over a sufficient fire together with 12 weight units of vegetable and 6 weight units of mineral salt; in a sturdy pot of clay, so the salts melt and turn into oil.<sup>68</sup>

In the margin beside this passage, Dee tests Pantheus’s claim that there are harmonic–numerical proportions within the mixture by adding together the numbers 504 and 72 (= 576), which are the numbers of units of “*Ignis albivivi*” and “*Aqua caelestis*” respectively, and thereafter the numbers 18, 150, 100, 12 and 6 (= 286), i.e. the number of units of other ingredients to be dissolved in “*Aqua caelestis*” (figure 3). Apparently in search of a principle of numerical harmony in the proportions of the mixture, he then notes that the sum of units of dissolved ingredients multiplied by two is 572, which he notes is “*Paulo minor qua[m] aequalis*” (a little less than equal, i.e. a little less than 576).<sup>69</sup> Dee mathematically tests Pantheus’s hypothesis, and we may assume, given his remark, that he found the result of his calculation significant.<sup>70</sup>

As we see, Dee has further classified the ingredients in Pantheus’s recipe as belonging either to water (*aqua*) or earth (*terra*). What we see here is Dee trying to identify the proportions of the four elements in a mixture. This was a fundamental problem for alchemists, as the constituent elements of matter — fire, air, water, and earth — could not be isolated, making the task of finding the recipe for a mixture in which the proportions of elements were perfectly harmonised very difficult. These marginalia show that Dee found Pantheus’s ideas interesting enough to try them out, even expanding their area of use, and are sympathetic enough to Pantheus’s claims to note that the numbers are *almost* harmonious.<sup>71</sup> This

<sup>67</sup> According to Pantheus’s etymology on 18v, “*Calopali*” means “*summum bonum*.”

<sup>68</sup> Pantheus, *Voarchadumia*, 19. “Extracta enim virtute formativa: co[n]strictiva: continuativa: unctuosa: seu viscosa: ex gutta librarum quinge[n]tarum & quator *Ignis albivivi*, recentisq[ue]: cum libris septuaginta duabus *Aqua caelestis*: in ea[m]q[ue] solutis libris dece[m] & octo *Salis calopali*: facti ex libris centu[m] & quinquaginta *Salis vegetalis*: & ce[n]tum mineralis: simul cum libris duodecim vegetalis: ac libris sex animalis purificati ob evaporationem ignis sufficientis: in olla terrea solida, huiusmodi *Salia* adinstar olei liquefacti, convertantur.”

<sup>69</sup> Pantheus, *Voarchadumia*, 19.

<sup>70</sup> Dee’s calculation does, however, seem a little illogical. The 18 units of “*Salis calopali*” were to be manufactured from 150 units of vegetable salt and 100 units of mineral salt, so either 18 or 250 should have been left out of the calculation.

<sup>71</sup> Pantheus, *Voarchadumia*, 41. Another indication that Dee took Pantheus’s cabballistic method seriously is his checking of Pantheus’s calculations, noting in one instance that he has made a miscalculation of the value of ANTHYBAR. Pantheus gets the result 72, which makes it numerologically equal to MARTHEK, but Dee points out that the sum of the numbers listed by Pantheus is in fact 83.



attention to the significance of numerical proportions would also be a basic and constant concern in the *Monas Hieroglyphica*.<sup>72</sup>

*“Solum Calor est Agens in hoc mundo”*

One topic in which Dee shows a particular interest in his marginalia concerns the principles and modes of change in matter, and the causes of change. Corruption or putrefaction is, according to Pantheus, the primary mode of change in Nature: “I see therefore that the primary impulse of Nature is to cause corruption” (Viso ergo quod primus motus Naturae, est corrumpere).<sup>73</sup> Furthermore, putrefaction is, according to Pantheus, always caused by heat. Talking of the natural principles of alchemy, of which the first is quicksilver, he says:

The second is heat, i.e. artificial fire, which is the only thing in the world that causes the movement of material mixtures towards corruption. Thus says Alphidius: Know, son, that there is one effective means in the whole of this world, namely heat. There is absolutely no movement without heat.<sup>74</sup>

Dee has underlined this last sentence despite its being identical in the *Ars Metallica*, whereas the underlining of the word “mixtures” has been done because the *Ars Metallica* has a different word — “thing” (rem). He has also summed up the paragraph with an additional note in his own words in the margin: “Heat is the only effective agent in this world.”<sup>75</sup> This is one of very few examples of Dee’s summarising one of Pantheus’s points in his own words, and it is therefore reasonable to believe that this was of special interest to him.

Pantheus thus describes the world as an alchemical vessel in which all natural processes are effected by heat. This is very much in accordance with Dee’s own interpretation of the hieroglyphic monad, in which the addition of the sign of Aries (the first of three zodiacal signs assigned to the element of fire) represents the fire that causes the dissolution of the elements of matter: “We have added [in the symbol of the monad] the astrological sign of Aries, therefore, to signify that (in the practise of this monad) the aid of fire is required.”<sup>76</sup> Heat as an agent in natural processes is central also to the physics of the *Propaedeumata Aphoristica*, where the (al)chemical changes in nature are described as caused by the rays emanating from celestial bodies — emanations that are always accompanied by heat.<sup>77</sup>

<sup>72</sup> See, for instance, Dee, *Monas Hieroglyphica*, 148–51.

<sup>73</sup> Pantheus, *Voarchadumia*, 40. The *Ars Metallica*, 465, has “putrefacere” instead of “corrumpere,” and Dee has transcribed the paragraph on the page inserted opposite 40 in the *Voarchadumia*.

<sup>74</sup> Pantheus, *Voarchadumia*, 41. “Secundum est Calor i[d est] Ignis alienus: quod est instrumentum movens ipsam Materiam mistam ad putrefaciendum: & non aliud agens in mundo. Vnde inquit Alphidius: Scito fili: q[uod] substantia agens in hoc toto mu[n]do est unum i[d est] Calor. Calore enim sublato nullus omnino Motus est.” The underlinings are Dee’s.

<sup>75</sup> Pantheus, *Voarchadumia*, 41. “Solum Calor est Agens in hoc mundo.”

<sup>76</sup> “Ad ignis ergo ministerium (in huius Praxi MONADIS) requiri significandum, Arietis adiecimus Astronomicam notam.” Dee, *Monas Hieroglyphica*, 160–61, Theorem X; see also Josten, “A Translation of John Dee’s *Monas Hieroglyphica*,” 103, footnote 95.

<sup>77</sup> Shumaker and Heilbron, *John Dee on Astronomy*, aphorism XCIII, 178–79. “As all the stars are sharers of light, so, apart from the specific powers of their insensible rays, they are efficient causes of some heat.” (Stellae omnes, ut sunt Luminis participes, ita (praeter suorum insensibilium radiorum & specificas suas vires) caloris cuiusdam sunt efficientes causae.) See also aphorism C, 182–83.

Using the principles of *pyronomia*,<sup>78</sup> it is possible to study and manipulate the effects of these rays.<sup>79</sup> Apart from being central to his method of assessing the strengths of the effects of the various celestial bodies by the use of catoptrics, the heat of the sun functions as a catalyst, strengthening the effects of the other planets by warming them up.<sup>80</sup> The astrological-alchemical model of nature that Dee presents in this earlier work, written one year prior to his reading of the *Voarchadumia*, in these respects shows a clear correspondence both with Pantheus's worldview and with his alchemical explication of the hieroglyphic monad.

One year prior to his reading of the *Voarchadumia*, in 1558, Dee in his *Propaedeumata Aphoristica* treated heat as an effective agent in the material world. Here he described his method of effecting change in matter by using catoptrics to concentrate the rays of celestial bodies — which rays, he states, are always accompanied by heat. Dee repeats the analogy of the world as alchemical vessel in the *Monas Hieroglyphica*, where he explains that in a possible alchemical interpretation of his universal symbol, the Aries sign of the monad represents the fire that causes the dissolution of the four elements.<sup>81</sup> This explicitly alchemical passage may be said to be the gist of the work. His emphasis in the marginalia on fire as the *only* active catalyst in the world, later described as the principle of change in the *Monas Hieroglyphica*, shows that this central tenet of the *Monas Hieroglyphica* was in the foreground of his mind already at the time of his reading of the *Voarchadumia*.

### *“One Thing” and Seven Philosophical Bodies*

As we have seen, Dee edited the *Voarchadumia* throughout by way of a thorough comparison with his other Pantheus text. Where he found discrepancies between the two texts, he systematically favoured the version most in accordance with the numerological principles of the hieroglyphic monad; this is usually the *Ars Metallica* version. But, interestingly, he has also made changes that do not have a basis in either of Pantheus's two texts. The changes, being consistently in accordance with the principles of the hieroglyphic monad, indicate that Dee, at the time he made the changes, had a theory of alchemy that was consistent with the numerological principles inherent in the monad symbol, and may even indicate that Dee was, in fact, using the monad as a key, an interpretative tool, to sort the pure from the impure in the diverse and heterogeneous body of alchemical literature.

Pantheus describes the prime matter of alchemy as a mixture of two substances, “Argentum vivum” (quicksilver or mercury) and “Arena alba” (white sand). Interestingly, in this passage, Dee has crossed out “Arena alba,” so that only “Argentum vivum,” or

<sup>78</sup> Shumaker cites Andreas Libavius, who says that *pyronomia* is “the science of using and regulating heat and fire in one's operations.” As Shumaker concedes, the “wonderful changes” that would occur as result of this method would also include alchemical transformations. However, like Clulee, he seems to adhere to the model of Dee's biography as divided into a “scientific” period and a later, “non-scientific” period, when he became involved in alchemy, and therefore insists that alchemical transformation was not Dee's object. See Shumaker and Heilbron, *John Dee on Astronomy*, 206–7.

<sup>79</sup> Shumaker and Heilbron, *John Dee on Astronomy*, aphorism II, 122–23, and aphorism LII, 147–48.

<sup>80</sup> Shumaker and Heilbron, *John Dee on Astronomy*, aphorism XC, 176–77.

<sup>81</sup> Dee, *Monas Hieroglyphica*, Theorem X, 160–61.

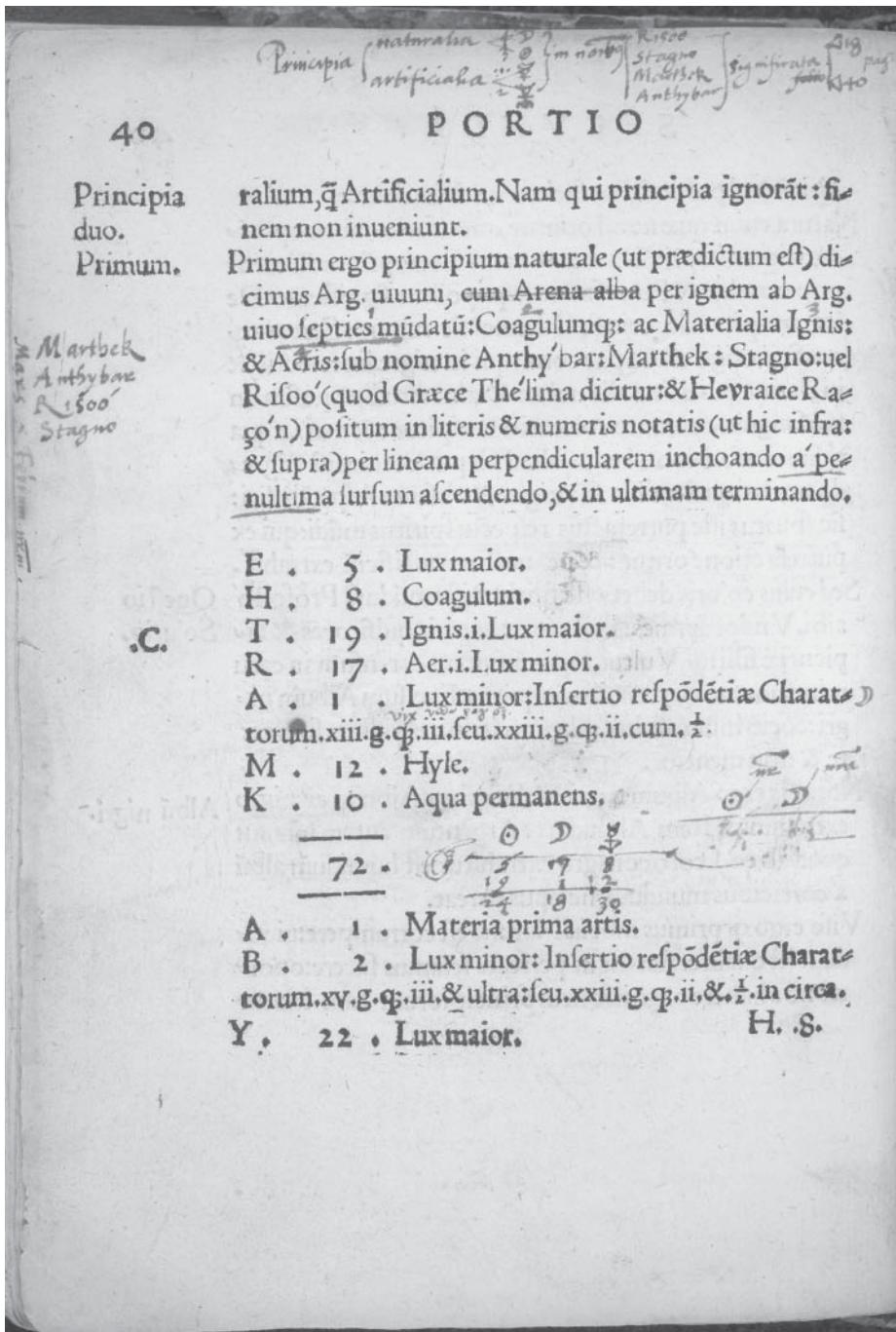


Fig. 4. Mercury, philosophical mercury, fire, and air are numbered 1–4 in the text and connected to the symbols of mercury, the hieroglyphic monad, sun, and moon respectively (see diagram at head of page). Note also Dee's crossing out of "Arena alba." From J. Pantheus, *Voarchadumia* (Venice, 1530), 40v. British Library, C.120.b4 (2). By permission of the British Library.

quicksilver, remains (figure 4).<sup>82</sup> Whereas Dee's emendations of the text of the *Voarchadumia* are most often based on a comparison with the *Ars Metallica*, this is an exception. Both Pantheus's texts describe the prime matter of alchemy as manufactured by purifying quicksilver seven times with white sand. This would mean that two substances are necessary in the process of manufacturing philosophical quicksilver. It is, however, a common idea in traditional alchemical literature that the alchemical process must originate in one substance only, and this is also in line with the principles of the hieroglyphical monad. It is therefore likely that this emendation of the text signifies that Dee found Pantheus's text erroneous.

Pantheus also describes the raw material of the art as a "mixture" (*mistum*): throughout the book, this word is heavily underlined, and in several instances Dee has transcribed the *Ars Metallica* version, which uses "thing" or "body" (*rem, corpus*).<sup>83</sup> Significantly, these transcriptions have primarily been copied from pages discussing the initial stage and raw materials of the process, which could reasonably be taken to indicate that this was a topic that was of special interest to Dee, as he has in most cases deemed it adequate to underline the words that he found were different in his two Pantheus books, without transcribing the earlier version of the paragraph in instances where it is almost identical.

While underlinings in a text are usually interpreted as an expression of emphasis and consent, it is quite plain that this is not the case in Dee's marginalia in the *Voarchadumia*. The principle of unity is central to the concept of the hieroglyphic monad and Dee's description of the alchemical process in the *Monas Hieroglyphica*, and he describes the process as analogous to the creation of the world, with its one principle and source of creation symbolised by the central point of the hieroglyphic monad:

The first and most simple manifestation and representation of things, non-existent as well as latent in the folds of Nature, happened by means of [a] straight line and a circle. Yet the circle cannot be artificially produced without the straight line, or the straight line without the point. Hence, things first began to be by way of a point, and a monad.<sup>84</sup>

This is the starting point of his construction of the monad symbol as explicated in the *Monas Hieroglyphica*, and as it is professed that the hieroglyphic monad gives knowledge of

<sup>82</sup> Pantheus, *Voarchadumia*, 40v. Pantheus's text on 40v is "Therefore we say that the first principle of nature (as is mentioned earlier) is quicksilver, purified seven times with white sand by the aid of fire, [and is] a coagulum and the substance of fire and air." (Primum ergo principium naturale (ut praedictum est) dicimus Arg. Uiuum, cum Arena alba per ignem ab Arg. uiuo septies mu[n]datu[m]: Coagulumq[ue]: ac Materialia Ignis: & Aeris.) The *Ars Metallica* has in its place a different passage, which Dee has transcribed on an inserted page opposite 40v: "The first principle of nature is matter, or the material cause of earth, water, fire and air." (Primu[m] ergo principium naturale, est materia, seu causa materialis terrae, aquae, Ignis & Aeris.) Pantheus, *Ars Metallica*, 465. Pantheus has elsewhere included white sand in the process of making philosophical quicksilver: "Arg. uiuo non vulgaris: quod est Arg. uiuum per ignem & arenam albam septies mundatum" (non-vulgar quicksilver, which is quicksilver that have been purified seven times with the aid of fire and white sand). Pantheus, *Voarchadumia*, 37.

<sup>83</sup> Pantheus, *Voarchadumia*, 41v-42.

<sup>84</sup> Dee, *Monas Hieroglyphica*, Theorems I-II, 154-55. "Per Lineam rectam, Circulumque, Prima, Simplissimaque fuit Rerum, tum, non existensiu[m], tum in Naturae latentium Inuolucris, in Lucem Productio, representatioque. At nec sine Recta, Circulus; nec sine Puncto, Recta artificiose fieri potest. Puncti proinde, Monadisque ratione, Res, & esse caeperu[n]t primo."

the true nature of reality on all levels simultaneously, this idea is essential to Dee's theory of creative processes in nature, i.e. of alchemy. Because creation has one source, and the world originated in one point, by analogy, the alchemical process must also have its root in one initial principle only. The principle is a commonplace in traditional alchemical theory, as the *Emerald Tablet* says: "And as all things were produced by the mediation of one Being, so all things were produced from this one thing by adaptation. Its father is the Sun, its mother the Moon; the wind carries it in its belly, its nurse is the earth. It is the cause of all perfection throughout the whole world."<sup>85</sup>

The *Monas Hieroglyphica* thus describes the creation of the universe as emerging from one point — represented by the initial point in the monas symbol — with a parallel in the alchemical process, where the central point, "hidden away in its innermost centre" (in *Centro Centri, Latens*),<sup>86</sup> represents the first ingredient, mercury, which is "actuated" through divine influence, and which is also termed "the earth of matrimony" (Matrimonij Terram).<sup>87</sup> Even though the point is not present in this version of the hieroglyphic monad, it is probable that the symbol as a whole bears the same significance, and is meant to represent the highly potent, coagulating quicksilver, the philosopher's stone. The symbol thus had already been imbued with the alchemical meaning that it retains in the *Monas Hieroglyphica*.

The question of the number of initial ingredients in the alchemical process was therefore important to Dee. The marginalia contain several personal comments of Dee's regarding the ingredients that are to be used in alchemy. In a passage where Pantheus writes: "Notice however that there is [also] another first matter of the art" (Nota tamen quod est altera Materia prima artis), Dee has inserted this comment in the margin: "But in another sense, i.e. the ordinary, there is not" (sed est alio tame[n] sensu i[d est] vulgari: no[n] est).<sup>88</sup> On an inserted page facing this, he has also transcribed a passage from the *Ars Metallica*: "For as Geber bears witness, this art depends not on a plurality of things, as he says. Our process consists of one stone only, one medicine."<sup>89</sup> Dee echoes this in a marginal note on the same page: "One element and one metal" (Elementa una et Metalla una).<sup>90</sup> Even though Dee was a very "adverse" reader, constantly questioning and emending the text, summaries and comments are relatively rare, and by no means evenly distributed through the text. Given these several comments and summaries within one single subject among all the subjects that Pantheus discusses, we can assume that this principle of unity in alchemy, so central to the concept of the hieroglyphic monad, was central to Dee's alchemical thinking already at the time of his reading of the *Voarchadumia*.

<sup>85</sup> H. S. Redgrove, *Alchemy: Ancient and Modern* (Philadelphia: David McKay, 1910), 41. Josten suggests that Dee's source was probably Agrippa's *De Occulta Philosophia*; see Josten, "A Translation of John Dee's *Monas Hieroglyphica*," 106. Dee does, however, cite the *Emerald Tablet* in the *Monas Hieroglyphica*, Theorem XIII, 166–67. Thomas Tymme also cites the *Emerald Tablet* in his introduction to the *Monas Hieroglyphica*, 17.

<sup>86</sup> Dee, *Monas Hieroglyphica*, 134–35.

<sup>87</sup> Dee, *Monas Hieroglyphica*, 134–35.

<sup>88</sup> Pantheus, *Voarchadumia*, 37v.

<sup>89</sup> "Nam ut testatur Geber, Ars talis no[n] co[n]sistit in pluratitate rerum, cum dicit. Est enim lapis Vnus, Medecina Vna, in q[uo] magisteriu[m] n[ost]r[u]m co[n]sistit." Pantheus, *Voarchadumia*, page inserted opposite 37v, transcribed from the *Ars Metallica*, 463.

<sup>90</sup> Pantheus, *Voarchadumia*, 37v.

In reducing the number of ingredients to one, Dee has therefore brought Pantheus's text into accordance with the theory that he was to publish five years later. This one principle can be assumed to be a form of *argentum vivum*, or mercury. In the *Monas Hieroglyphica*, Dee combines the symbols of the sun, the moon and the four elements, and ends up with the symbol of Mercury with an additional solar point in its "head." With the addition of fire, represented by the Aries symbol at the monad's "feet," his monad thus encompasses all the principles that are active in an alchemical process. The fact that this symbol is similar to the traditional symbol of mercury is, of course, no coincidence — there are no coincidences in Dee's cabbala of nature. Even though all the metals and planets are represented by the hieroglyphic monad, mercury possesses a particularly prominent position, as it traditionally did in alchemical literature. Two forms of mercury are explicitly discussed in the *Monas Hieroglyphica*: a lunar form, which corresponds to a stage in the purification process,<sup>91</sup> and a solar form, "that other Mercury — who indeed is the uterine brother of the first — [which appears] when the lunar and solar magic of the elements is completed."<sup>92</sup> This mercury is "(by the will of God) that most famous Mercury of the philosophers, the microcosm, and Adam,"<sup>93</sup> i.e. an activated form of mercury that is the prime matter of alchemy.<sup>94</sup>

The triangular constellation of Mercury, the sun and the hieroglyphic monad repeatedly occurs among Dee's marginalia in the *Voarchadumia*.<sup>95</sup> The sun may here represent the solar power that in the *Monas Hieroglyphica* is described as necessary for the actualisation of the monad, and may be a parallel to the heat that is represented by the Aries symbol in the

<sup>91</sup> "Et Lunam, tertia elementatam vice, obscuriussc notabant. Quem, MERCVRIVM vocare solent." (And [also] in a more obscure fashion they represented the Moon, when it had the third time been applied to the elements, thus: which figure they usually call Mercury). Josten, "A Translation of John Dee's *Monas Hieroglyphica*," Theorem XII, 162–63.

<sup>92</sup> Dee, *Monas Hieroglyphica*, Theorem XIII, 164–65. "Mercurius ille alter: Prioris quide[m] Vterinus Frater. Lunari scilicet Solarique Elementorum Co[m]pleta Magia."

<sup>93</sup> Dee, *Monas Hieroglyphica*, Theorem XIII, 164–65. "Et, (NVTV DEI,) iste est Philosophorum MERCVRIVS, & ADAM." Dee proceeds to describe a method of producing gold by infusing silver or mercury with the spirits of copper and iron, but he says that this cannot be performed in our present time. The purpose of mentioning this method seems to be to show that the monad can also illustrate other alchemical methods known from tradition.

<sup>94</sup> Thomas Tymme, in his introduction to the *Hieroglyphic Monad*, similarly writes, "There are two Mercuries used in the worke of Alchemy. The one is the Male, not flying which is the Philosophers ♀ the other is the female or common ♀ whiche has wings and flyeth." T. Tymme, *A Light in Darkness*, 19. Josten notes that the *mercurius philosophorum* can also denote "an advanced stage of the preparation of the phil[o]sophers' stone, or the stone itself," but seems to agree with me that, in this context, it is meant to represent the prime matter of alchemy. Josten, "A Translation of John Dee's *Monas Hieroglyphica*," 165, footnote 53. See also L. Abraham (ed.), *Arthur Dee: Fasciculus Chemicus*, transl. E. Ashmole, *English Renaissance Hermeticism*, 6 (New York and London: Garland Publishing Inc., 1997), lxxii. "Mercury was one of the major yet most enigmatic symbols of alchemy. It symbolised the paradoxical transforming *arcانum* which was present at the crude, dark beginning of the *opus alchymicum* and transformed itself into the Philosopher's Stone at the culmination of the *opus*. Through the medium of Mercury all that is base could be transmuted into gold."

<sup>95</sup> Pantheus, *Voarchadumia*, title page; see also 16, where Dee has drawn the three symbols above each other.

monad. In a different constellation, Dee has associated the symbols of mercury, the hieroglyphic monad, the moon, and the sun with quicksilver, “Coagulum,” air, and fire, respectively, by numbering the principles of the art in Pantheus’s text and drawing symbols in the margins (see figure 4). Here, quicksilver and the hieroglyphic monad are labelled “artificial principles” (*principia artificalia*), and the moon and the sun “natural principles” (*principia naturalia*).<sup>96</sup> Again, looking at the context in which the monad symbol is used may give some indication as to what significance the symbol had for Dee at this time. As previously, we find that “ordinary” mercury is associated with the moon, and the hieroglyphic monad with the sun, as in the *Monas Hieroglyphica*, signifying philosophical mercury.<sup>97</sup>

Dee also associated the monad with the philosopher’s stone in several places in the *Voarchadumia*. Where Pantheus discusses the alchemical principles “soft water” (*aquis mollibus*) and “hard water” (*aquis duris*), Dee has drawn a mercury symbol above the word “mollibus” and the hieroglyphic monad above the word “duris.” “Soft water” is ordinary mercury, and “hard water” is mercury from which the fluidity and humidity have been removed, e.g. the philosopher’s stone.<sup>98</sup> Again, the symbol of the hieroglyphic monad represents quicksilver as “actualised” by solar influence, i.e. the same creative principle as in the description of the initial stage of the alchemical process in the *Monas Hieroglyphica*. This, and the conjunction of mercury, the sun, and the hieroglyphic monad drawn on the title page of the *Voarchadumia* (figure 5), indicates that this process was already part of Dee’s concept of the monad.

Dee’s reservation regarding the existence of an additional first matter of the art — that “in another sense, the ordinary, there is not” — may seem rather inscrutable. However, by taking a closer look at the alchemical theories of the *Monas Hieroglyphica* alongside various alchemical works that were popular with alchemists in Dee’s time, it is possible to formulate a tentative interpretation that can shed some light on Dee’s use of the symbol of the hieroglyphic monad as a symbol of the prime matter of the alchemical art.

The idea of unity in the alchemical process is a recurring theme in the *Turba Philosophorum*, a common medieval alchemical sourcebook and an authority that Pantheus also cites several times, and that Dee already owned several copies of when he received the *Voarchadumia*:<sup>99</sup>

[T]he Masters have said that what is perfected is one, and a diversity of natures does not improve that thing . . . Do not heed, therefore, the plurality of these compositions, nor those things which the philosophers have enumerated in their books. For the nature of truth is one, and the followers of Nature have termed it that one thing in the belly whereof is concealed the natural arcanum . . . there are not many or diverse Natures, but one having in itself its own natures and properties, by which it prevails over other things. Do you not see that the Master has begun with one and finished one?<sup>100</sup>

<sup>96</sup> Pantheus, *Voarchadumia*, 40v.

<sup>97</sup> Dee, *Monas Hieroglyphica*, Theorem XIII, 164–65.

<sup>98</sup> Pantheus, *Voarchadumia*, 21v. According to Clulee, this principle is “Pantheus’s version of the philosophers’ stone.” Clulee, *John Dee’s Natural Philosophy*, 102.

<sup>99</sup> See, for example, Glasgow University Library, MS Hunter U.4.11 (Roberts and Watson, M4), inscribed “Johannes Dee 1556,” which Julian Roberts and Andrew Watson describe as “heavily annotated.” See J. Roberts and A. G. Watson, *John Dee’s Library Catalogue* (London: The Bibliographical Society, 1990), 112 (I would like to thank Stephen Clucas for drawing my attention to this reference).

<sup>100</sup> A. E. Waite (ed.), *The Turba Philosophorum* (New York: Samuel Weiser, 1970), 198–99; see also 50–55 and 184–86.

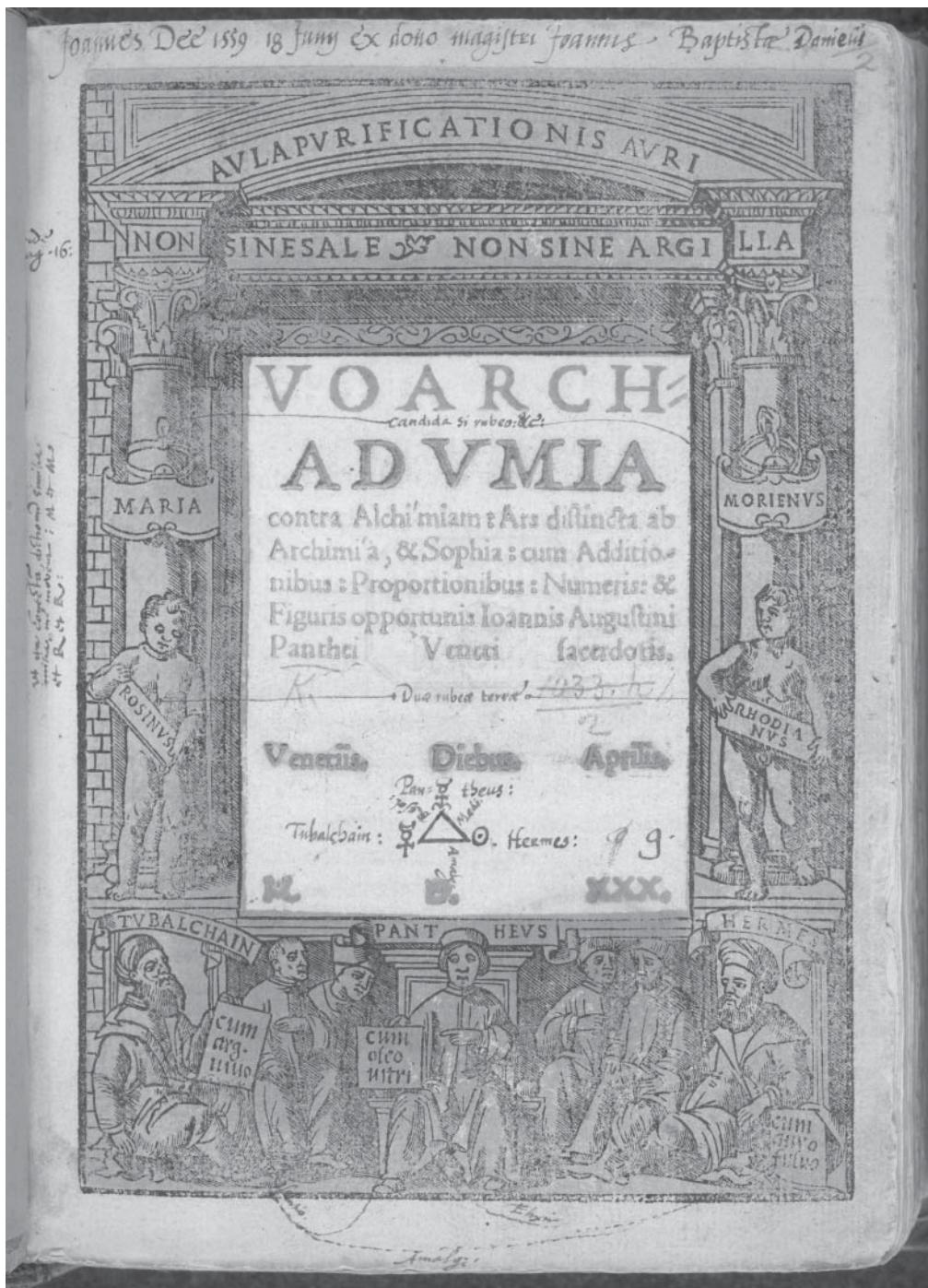


Fig. 5. Title page of the *Voarchadumia*, with diagram by Dee showing the triangular constellation of the sun, mercury, and hieroglyphic monad. British Library, C.120.b4 (2). From J. Pantheus, *Voarchadumia* (Venice, 1530). By permission of the British Library.

The *Turba Philosophorum* proceeds to warn the seekers after wisdom not to be confused by the plurality of names of the one substance, since alchemists have used these many names merely out of caution:

Do not then be deceived by the multiplicity of names, but rest assured that it is one thing, unto which nothing alien is added. Investigate the place thereof, and add nothing that is foreign. Unless the names were multiplied, so that the vulgar might be deceived, many would deride our wisdom.<sup>101</sup>

Still, this one substance may be understood as a composite of two substances:

[W]hen ye read in the books of the philosophers that Nature is one thing only, and that she overcomes all things: Know that they are one thing and one composite. Do ye not see that the complexion of a man is formed out of a soul and body; thus, also, must ye conjoin these, because the Philosophers, when they prepared the matters and conjoined spouses mutually in love with each other, behold there ascended from them a golden water!<sup>102</sup>

What is meant by the “body” and the “spirit” of the substance (the “spouses”) becomes clearer when the *Turba Philosophorum* goes on to describe how the alchemist should “conjoin the male to the female, which are vapour and quicksilver.”<sup>103</sup> Vapour was regarded by alchemists as the spirit of the substance, and often as having primacy over the substance itself: “The first matter of bodies is not the mercury of the vulgar, but is an unctuous and humid vapour. The mineral stone is made from the humid, and the metallic body from the unctuous.”<sup>104</sup> This is the reason why extreme pains were often taken to ensure that the vapour did not escape during the alchemical process — which, of course, resulted in many explosions. A parallel is found in the preface to the *Monas Hieroglyphica*, where Dee describes the first stage of the alchemical process as the “actualisation” of an earthly body by “a divine power” and solar and lunar influence, which results in “the earth of matrimony” (Matrimonij Terram). Like the author of the *Turba Philosophorum*, Dee ascribes primacy to the “spirit” of matter in stating that this is merely the visible sign of the actual union of influences (Influentialis Coniugij, Terrestre Signum).<sup>105</sup> In agreement with the *Turba Philosophorum*, Dee believed that nothing alien should be added to this substance, which is both one and composite.<sup>106</sup> Philosophical mercury is also often described as containing a core of philosophical sulfur, which is a non-volatile and non-flammable sulfur.<sup>107</sup> The resulting substance is, however, seen as one integrated substance, and not a mixture. Sulfur was also classified by Pseudo-Geber among the spirits.<sup>108</sup> Thus, it would be possible for Dee partially to accept Pantheus’s statement that the initial substance of alchemy is a mixture — of quicksilver and the creative seed of an inherent, sulfuric spirit — while

<sup>101</sup> Waite, *The Turba Philosophorum*, 207.

<sup>102</sup> Waite, *The Turba Philosophorum*, 134.

<sup>103</sup> Waite, *The Turba Philosophorum*, 135.

<sup>104</sup> Waite, *The Turba Philosophorum*, 135n (a quote from *The Rosary of the Philosophers*).

<sup>105</sup> Dee, *Monas Hieroglyphica*, 134–35.

<sup>106</sup> “[T]he monad can no longer be fed or watered on its native soil, until the fourth, great, and truly metaphysical, revolution be completed.” Dee, *Monas Hieroglyphica*, 134–35.

<sup>107</sup> Pantheus subscribes to a version of this view; see Pantheus, *Voarchadumia*, 15v, 37. See also Clulee, *John Dee’s Natural Philosophy*, 99.

<sup>108</sup> F. Sherwood Taylor, *The Alchemists, Founders of Modern Chemistry* (London, Toronto: William Heinemann, 1951), 80.

“in another sense, the ordinary,” still maintaining the monad’s principle of substantial unity.<sup>109</sup>

Pantheus’s two books also vary in regard to the number of “philosophical bodies” or metals. In the *Voarchadumia*, they are said to be six: “The metals of the philosophers are six (for quicksilver is not a metal, but the matter of metals).”<sup>110</sup> Even though the wording of the passage as a whole is different in the *Ars Metallica*, only the word “six” is heavily underlined by Dee. In the *Ars Metallica*, the number of “philosophical bodies” (*Philosophoru[m] corpora*) is seven. Dee has transcribed the passage on an inserted page, and again heavily underlined the word “seven.”<sup>111</sup> In Dee’s construction of his symbol of the hieroglyphic monad, he utilises the traditional seven astrological planet signs, each of which has a counterpart in the “lower world,” a metal, which for Dee makes the correct number of philosophical bodies seven. I believe that the fact that Dee in this paragraph has only underlined the numbers — and that he did this even in the transcribed paragraph, which is a rare occurrence — could indicate that he found this change significant. It is not unlikely that he disagreed with it, as it is not in accordance with his own numerical theory as expressed in the symbol of the monad, which is composed of the signs of the seven planets or metals.<sup>112</sup> Dee is thus more concerned with the qualities of specific numbers than is Pantheus. To Pantheus, it seemingly does not matter whether there are six or seven philosophical bodies, whereas the number is significant to Dee.

These marginalia in the *Voarchadumia* show that several of the central principles of the theory of the hieroglyphic monad were present in Dee’s mind and already contained in the monas symbol in 1559. The principles of unity in all natural processes and of the seven philosophical bodies are present, and he shows a concern for the qualities of individual numbers that surpasses that of Pantheus’s. His belief in the analogy between the proportions in language and those of the elements of metals also exceeds Pantheus’s, and he has already experimented with cabbala and numerology as keys to knowledge about the natural world. Thus, all the elements that, according to Clulee, are first seen in the *Monas Hieroglyphica* — magic, cabbala, and numerology — are already present in his marginalia in the *Voarchadumia*, and Dee’s statement in the *Monas Hieroglyphica* that the writing and publication of this work in 1564 was merely an explication of ideas that had been with him for seven years should probably be given more credit than has hitherto been the case.<sup>113</sup> The

<sup>109</sup> Possibly, the solar point in the middle of Dee’s hieroglyphic monad could be seen to denote this component, which is one with the substance of mercury.

<sup>110</sup> “[S]apientum metalla sunt sex (no[n] enim Arg. uiui est metallum: sed Materia . . . metallorum.” Pantheus, *Voarchadumia*, 38v.

<sup>111</sup> Pantheus, *Voarchadumia*, page inserted opposite 38v, transcribed from the *Ars Metallica*, 464: “Philosophoru[m] corpora sunt septem: quoru[m] primus est Sol, eorum optimus rex & Caput.” (The philosophical bodies are seven: of which the first is the Sun, their excellent king and Head.)

<sup>112</sup> The planets are listed in the *Monas Hieroglyphica*, Theorem XXI, 187. That Dee also considered the moon and sun to be planets is seen in Theorem III, 154–55. The septenary is also mentioned as significant in Theorem VI, 156–57, as the cross of the hieroglyphic monad can be seen to consist of two straight lines and the point that they have in common, and four straight lines. The number six is not granted any similar significance in the *Monas Hieroglyphica*.

<sup>113</sup> Dee, *Monas Hieroglyphica*, 146–47. “Nam quem Annos prius continuos Septem, Mente gestauimus.” (My mind had been pregnant with it during the whole course of seven years.)

geometrical construction of the monad, and the speculation on letters and numbers in the *Monas Hieroglyphica*, may be seen as rhetorical exercises that confirm Dee's theories but do not signify a drastic change in his scientific outlook. This may indicate a greater continuity in Dee's intellectual development than is suggested by Clulee's hypothesis that a "radical disjuncture" and "great metaphysical revolution" occurred in Dee's life in connection with the writing and publishing of the *Monas Hieroglyphica*.

### Conclusion

Traditionally, the Dee historiography that presents Dee as a standard-bearer of modern science has tended to marginalise Dee's alchemy, which, along with his angel magic, was viewed as more premodern and irrational than his other activities. The relegation of the more "fantastic" of his alchemical projects to an episode late in his life, i.e. the 1580s and 1590s, made it possible to "blame" his assistant and skryer, Edward Kelley. Even within the Warburg school, which usually emphasised the close and mutually fruitful relationship between Dee's science and his magic, a line was drawn at the transmutation of metals. Thus, Calder writes: "[P]robably it was not until a later period of his life than the present, impelled by the enthusiasm of Dyer and the greedy curiosity of Kelly, that Dee became at all deeply involved in the pursuit of transmutation and the Philosophers' Stone on any practical level."<sup>114</sup> The implication is that Dee's clear expressions of an interest in alchemy as early as the 1550s and 1560s in fact expressed a purely metaphysical or religious orientation, which he did not "pollute" by putting it into practice. Calder established a "scientific," mathematical (and even Copernican) Dee persona that lasted until about 1583, when, through the influence of the necromancer Kelley (and very much in accordance with the Faustian myth), he began to dabble in magic, left science for ever, and died poor and unhappy.<sup>115</sup> Even the Warburg school's critic Clulee adheres to this part of the "myth of the Magus," and states that "even after separating from Kelley and returning to England in 1589 he never resumed any significant work in natural philosophy or science."<sup>116</sup> However, as late as 1592, Dee expressed a continuing interest in science, as he proposed to establish an international centre for catoptric experimentation at St. Cross Hospital.<sup>117</sup>

According to Clulee, the publication of the *Monas Hieroglyphica* in 1564 marks a dramatic turning point in Dee's career, a "great metaphysical revolution,"<sup>118</sup> after which his

<sup>114</sup> Calder, "John Dee Studied as an English Neoplatonist," 6, VII, 584.

<sup>115</sup> This Faustian myth about Dee has been criticised by William Sherman, who has shown that Dee was still in good grace with the court at the end of his life, and "reached as high a position as was possible for someone of his class and occupation." Sherman, *John Dee: the Politics of Reading and Writing*, 16.

<sup>116</sup> Clulee, *John Dee's Natural Philosophy*, 204.

<sup>117</sup> "The Compendious rehearsal of John Dee his dutifull declaration, and proofe of the course and race of his studious life," in *Johannis Glastoniensis Chronica* (Oxford, 1776), II, 544–46. See also Sherman, *John Dee: the Politics of Reading and Writing*, 18.

<sup>118</sup> This ironic expression is borrowed from the *Monas Hieroglyphica*, 134–35, where the monad in the alchemical process is described as being completed through a fourth "great, and truly metaphysical revolution," after which the alchemist will "go away into a metamorphosis and will afterwards very rarely be held by mortal eye." See Clulee, *John Dee's Natural Philosophy*, 118.

scientific pursuits turn into a spiritual quest for God. Clulee's critique of Frances Yates and Peter French and their attempt to construe one coherent Dee biography within the framework of the Hermetic Neo-Platonism of the Renaissance was clearly a decisive step towards an understanding of Dee's intellectual development on its own premises. However, this study of Dee's marginalia in the *Voarchadumia* may indicate that a division of Dee's intellectual life into phases, involving a "great metaphysical revolution" in 1564, may be too schematic, and that there was in fact greater coherence and continuity in Dee's biography than Clulee's tripartite construction allows for.

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