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From Monochord to Weather-glass: *musica speculativa* and its development in Robert Fludd's Philosophy

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Abstract

The present thesis is an enquiry into the nature and consistency of the idea of music as a metaphor throughout the works of the English philosopher and physician Robert Fludd (1573/4-1637). Fludd was very fond of a view of the world in which man is made of the same elements and the same proportions of the cosmos. Though this idea was slowly losing credit amongst the intellectuals of the time, Fluddean thought made some impact in the British Isles, and even more so on the continent: Johannes Kepler, for instance, wrote extensively about Fludd's use of numerical symbolism, and stressed the differences between his own idea of harmony of the spheres and Fludd's.

After Fludd's death, his ideas were still taken seriously amongst certain intellectual circles, e.g. in England (John Webster) and Poland (John Amos Comenius), and Fluddean thought influenced German musico-theoretical writers such as Athanasius Kircher, Andreas Werckmeister, and Johann Walther. But the subsequent centuries witnessed a general obliviousness towards Fludd. His figure began to re-emerge only in the second half of the 20th century in an increasing number of essays, papers, articles and a few books dedicated to him.

What is still lacking, though, is a reassessment relying upon a more organic approach, which takes into account the entirety of Fludd's publications and the wide range of topics covered in them. My work attempts to address this issue. The musical metaphor is one of the strongest leitmotifs in Fluddean publications, thanks to its being fit for representing man, the cosmos, and their interrelationship. Indeed the monochord, which well before Fludd was the preeminent practical and philosophical demonstration of the Pythagorean 'divine' proportions, rules the pages of Fludd's earlier volumes. In later volumes, though, a new instrument takes its place: the more up-to-date weather-glass, surprisingly also linked to musical proportions. I argue that the new scientific instrument retains some of the monochord's traits, thus representing an original re-arrangement of 'ancient' music; in fact, Fludd even applies it to the human pulse – an under-studied topic that I survey in detail.

Following the whole Fluddean *opera omnia* is a task that gives one a glimpse of Fludd's reactions to the deep changes that the intellectual and scientific world was undergoing from a perspective that has been, so far, largely neglected. This opens up to new fascinating outlooks on music, medicine and science at the beginning of the seventeenth century.

Table of contents

Acknowledgements i

Author's declaration ii

List of abbreviations iii

Introduction v

Literature review viii

The present thesis xvi

Chapter I • Robert Fludd: life and education 1

I.i 1574-1598/9 2

I.ii 1598/9-1604/5 7

I.iii 1604/5-1637 18

I.iv A chronology of Fludd's publications 21

Chapter II • Intellectual background and associations 27

II.a An overview of the sources 27

II.b Friends and associations 37

II.c The *Declaratio brevis*: kingly support and Continental supporters 43

Chapter III • The *De utriusque cosmi historia*: a lifelong project 48

III.i The first *tomus* of the *De utriusque cosmi historia* 54

III.i.a *DUCH* I, i 58

III.i.b *DUCH* I, ii 72

III.ii The second *tomus* of the *De utriusque cosmi historia* 81

III.ii.a *DUCH* II, i, *sectio* i 86

III.ii.b *DUCH* II, i, *sectio* ii 94

III.iii *DUCH* II, ii 99

III.iii.a *DUCH* II, ii, *sectio* i, *portio* i 100

III.iii.b *DUCH* II, ii, *sectio* i, *portio* ii 117

III.iii.c *DUCH* II, ii, *sectio* i, *portio* iii 122

III.iii.d *DUCH* II, ii, *sectio* i, *portio* iv 134

III.iv *Medicina catholica* 145

III.iv.a *MC* I, i 147

III.iv.b *MC* I, ii, *sectio* i 150

III.iv.c *MC* I, ii, *sectio* ii 155

Chapter IV • *De musica historia* ... 164
IV.i The music of the spheres from Pythagoras to Robert Fludd ... 165
IV.ii The first *musica* (1617) ... 172
IV.iii The music of the cosmos (1617) ... 175
IV.iv The temple of music (1618) ... 197
IV.v The harmony of body, spirit, and soul (1619) ... 220
IV.vi The music of the cosmos revised (1622) ... 230
IV.vii The last *musica* (1626-33) ... 235
Chapter V • The weather-glass and *musica* in Fludd's later writings ... 238
V.i *Musica* and heartbeat in the *Pulsus* (1631) ... 239
V.i.a A short introduction to the pulse lore ... 256
V.i.b *Pulsus, seu nova et arcana pulsuum historia* ... 267
V.ii The fading of the monochord ... 284
Conclusion ... 293
Appendix ... 301
The Dreame ... 303
Scale ... 307
First Pavan ... 309
Second Pavan ... 312
Changes ... 316
Caranto ... 318
First Almayne or Mottle ... 320
Second Almain ... 324
A Toy ... 328
A Brandle ... 330
The May Game ... 331
Bibliography ... 335

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Glasgow, September 2014

Author's declaration

I declare that, except where explicit reference is made to the contribution of others, this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Signed: .....

Date: .....

List of abbreviations

DUCH I, i	First *tomus*, second *tractatus* of *De utriusque cosmi historia* (1617)
DUCH I, ii	First *tomus*, second *tractatus* of *De utriusque cosmi historia* (1618)
DUCH II, i	Second *tomus*, first *tractatus* of *De utriusque cosmi historia* (1619)
DUCH II, ii	Second *tomus*, second *tractatus* of *De utriusque cosmi historia* (1621)
AA	*Anatomiæ amphitheatrum effigie triplici, more et conditione varia designatum* (1623). Also *DUCH* II, ii, *sectio* i, *portio* iii
PS	*Philosophia sacra et vere christiana seu meteorologia cosmica* (1626). Also *DUCH* II, ii, *sectio* i, *portio* iv
MC I, i	First *tomus*, first *tractatus* of *Medicina catholica* (1629)
MC I, ii	First *tomus*, second *tractatus* of *Medicina catholica* (1631)



FLVDDVS hic ille est, quo gaudet terra Britanna,
Quique Machaoniâ clarus in arte micat.

Rr 4 D P

Introduction

The philosopher and physician Robert Fludd (1573/4-1637) lived in what probably remains one of the most exciting and stimulating times humanity has ever witnessed. Europe was bubbling with new ideas and challenges, extravagant people and geniuses, charlatans like Edward Kelley and genuine masterminds like Johannes Kepler. The world was changing: the Earth was being slowly but inexorably taken away from the centre of the cosmos and thrown somewhere else in an increasingly expanding universe. William Gilbert demonstrated, with his pivotal experiments with the loadstone, that the Earth behaves like a giant magnet, and confirmed Copernicus' laws by means of his new 'magnetic' science. Francis Bacon, who was also, like Fludd, much indebted to natural magic and alchemy from the Renaissance,[1] "declared that a new era in the history of humankind was at hand" and that, as a consequence, "traditional philosophy should be refuted".[2] The Thirty Years' War (1618-48) restructured the political and religious map of Europe and weakened the power of the Holy Roman Empire. René Descartes, the 'father of modern philosophy', explained natural phenomena by means of mechanical explanations. These are but a few of the examples one can find amongst the lively seventeenth-century intellectual and scientific milieu.

It has taken us a long time to acknowledge finally that occult and Hermetic currents coming from the past,[3] and still influential in Fludd's time, were not necessarily part of a dichotomy which sees the 'true' scientific method of investigation of nature on one side and the occult on the other. As Brian Vickers reminded us,[4] as late as 1957 Herbert Butterfield could still write that Van Helmont, a coeval with Fludd,

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[1] See J. P. Zetterberg, 'Echoes of Nature in Salomon's House', *Journal of the History of Ideas*, 43, 2, 1982, pp. 179-193 (182); P. Rossi, *Francesco Bacone: dalla magia alla scienza*, Bari, 1957, chapter 1; and B. Farrington, *The Philosophy of Francis Bacon*, Chicago, 1966, chapter 10.

[2] M. Peltonen, 'Bacon, Francis, Viscount St Alban (1561-1626)', *Oxford Dictionary of National Biography*, Oxford, 2004; online edn, Oct 2007
[http://www.oxforddnb.com/view/article/990, accessed 17 September 2014].

[3] With 'Hermeticism' I mean that current based on the writings of the mythical sage Hermes Trismegistus which were considered a source of ancient wisdom from Marsilio Ficino up to the early seventeenth century. I shall briefly describe this tradition in chapter II. See F. A. Yates, *Giordano Bruno and the Hermetic Tradition*, London, 1964; P. O. Kristeller, *Renaissance Thought and Its Sources*, New York, 1979; and F. Ebeling, *The Secret History of Hermes Trismegistus: Hermeticism from Ancient to Modern Times*, Ithaca, 2007.

[4] B. Vickers (ed.), *Occult and Scientific Mentalities in the Renaissance*, Cambridge, 1984, p. 1.

> made one or two significant discoveries, but these are buried in so much fancifulness [...] that even twentieth-century commentators on Van Helmont are fabulous creatures themselves, and the strangest things in Bacon seem rationalistic and modern in comparison. Concerning alchemy it is more difficult to discover the actual state of things, in that the historians who specialise in this field seem sometimes to be under the wrath of God themselves; for [...] they seem to become tinctured with the kind of lunacy they set out to describe.[5]

One can only assume that Butterfield's judgment on Fludd would have not been much more generous – quite the opposite. Yet during, and indeed already before, the years Butterfield was writing, this attitude began to change, and a more balanced view of the so-called scientific revolution began to arise. Scholars like Lynn Thorndike,[6] P. O. Kristeller, Walter Pagel, Paolo Rossi,[7] Allen Debus, Daniel Pickering Walker, Frances Yates, and many others started and continued a reassessment of the role that topics such as astrology, alchemy, natural magic, and Cabala played in the late Renaissance and Early modern thought.[8] The above-mentioned scholars have also stressed the role that speculation on music played in the sixth and seventeenth century, in that music itself guaranteed, so to speak, the cohesion of the cosmos as seen by the eyes of Fludd and his contemporaries. In the course of this dissertation the term 'music', together with its corresponding Latin term *musica*, is used to indicate the wide concept of music that intellectuals from Pythagoras up to the seventeenth century shared. Music for Fludd and his contemporaries was much more than just the art of combining sounds. It was a mathematical science, whose objects were primarily numbers and right proportions.[9] Moreover, it was a model, a tool for enquiring about, and understanding how, the cosmos and the human being work. For instance, a strong belief for the followers of Pythagoras, Boethius and the others up to Fludd and Kepler was that the universe is comparable to a musical instrument tuned by God, who put the right intervals and proportions into it.[10]

Robert Fludd was rather fond of what we would term 'obscure' themes. Like many other past and coeval thinkers, he had a high reverence for the (supposed) writings of Hermes Trismegistus, or Thrice-Blessed, a mythical sage who was

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[5] H. Butterfield, *The Origins of Modern Science*, London, 1957, p. 141.
[6] L. Thorndike, *A History of Magic and Experimental Science*, 8 vols, New York and London, 1923-58.
[7] Rossi, *Francesco Bacone*.
[8] A recent reappraisal of the continuing prominence of occult philosophy in early modern scientific thought is provided in Daniel Stolzenberg. See D. Stolzenberg, *Egyptian Oedipus: Athansius Kircher and the Secrets of Antiquity*, Chicago and London, 2013.
[9] See P. Gozza (ed.), *Number to Sound: The Musical way to the Scientific Revolution*, Dordrech, 2000, pp. 1-63; F. H. Cohen, *Quantifying Music: The Science of Music at the First Stage of the Scientific Revolution, 1580–1650*, Dordrecht, 1984.
[10] See the introduction to chapter III of the present dissertation for a more detailed survey of the concept of music in the pre-scientific revolution world.

believed to have been a contemporary of Moses and to have received divine illumination from God. The Bible was also a fundamental part of Fludd's philosophical system, together with that Neoplatonic view of the world that had enjoyed a large consensus amongst learned men in the previous centuries.[11] The picture I have depicted so far would perhaps seem worthy of a thorough study only for a specialist in Hermetic Renaissance thought in England. But what makes Fludd stand out from his contemporaries is his syncretistic approach and his dealing with the challenges that the intellectual world around was posing for him. Determined to defend his harmonious and all-embracing view of the world, in which every human being mirrors the cosmos thanks to the net of correspondences at work in the universe, Fludd was always ready to engage in debating with anyone criticising or simply making observations about his ideas. I am not here referring to secondary characters, but rather to people like Marin Mersenne, Johannes Kepler, Pierre Gassendi and others who took the trouble to analyse Fluddean philosophy systematically. And Fludd replied each time, often restating his beliefs, sometimes reformulating them, and occasionally reshaping them.

What is noteworthy is the fact that both the attacks coming from other intellectuals (see above), and the new discoveries that were made around him (e.g. Gilbert's experiments, or the weather-glass), forced Fludd to re-shape his thought. He integrated, to some extent, elements taken from the contemporary world in which he was living into his Neoplatonic-Hermetic philosophy. The results, as I shall show, are significant, and following how speculative musical patterns change and develop in this reshaping of Fluddean philosophy is indeed most fascinating.

The reluctance of scholars, until recent times, to deal in depth with 'obscure' matters has, as a consequence, prevented a deeper enquiry into the complex Fluddean philosophy. What the historian John Hawkins wrote in his *General History of the Science and Practice of Music* did not help Fludd's reputation. After having termed Fludd "a crack-brained enthusiast", he continues:

> [t]he rest of this tract [i.e. the *De templo musicæ*], excepting those whimsical devices, such as musical dials, musical windows, musical colonnades, and other extravagances with which the author has thought proper to decorate his work, contains very little that

[11] With 'Neoplatonism' I mean here that current established by Marsilio Ficino, Giovanni Pico della Mirandola and others in the context of the Platonic Academy in Florence. See chapter II.

> deserves notice. Upon the whole Fludd appears to have been a man of a disordered imagination, an enthusiast in theology and philosophy.[12]

Additionally, since "he was of the fraternity of the Rosicrucians [...], his philosophy was none of the soundest".[13] The *Grove Music Online* still agrees, nowadays, that

> Fludd's abstruse fantasies leave most agreeing with Hawkins that he was 'a man of a disordered imagination'.[14]

Literature review

The first full lengthy monograph on Fludd, by James Brown Craven, appeared in 1902.[15] Craven, a clergyman, was particularly keen to stress Fludd's mystical traits and his alleged connections with the Rosicrucians, thus contributing to the relegation of Fludd to the field of esoteric studies and the like. Craven's book presents inaccuracies and misinterpretations. One can note that in the course of his work he employs the term 'curious' in a large number of passages (e.g. "two curious diagrams", "four curious tables", "curious speculations"), and this detail perhaps shows his limited understanding of Fludd's cultural and historical context. Remarkably, Craven dedicates to the pyramidal figure only a short paragraph within the whole book, merely stressing the sacrality of this figure since the earliest ages and its likeness to the rays emanating from the Sun and from Deity.[16] As I shall show, Fludd's pyramidal *scientia* is actually one of the strongest fundaments of Fludd's philosophy and has much deeper meanings. In fact it is, so to speak, the backbone of his philosophy, to which, I argue, both the monochord and the weather-glass are strictly connected. This implication sheds light on the theoretical framework in which Fludd was operating, and by ignoring or minimising it one gets a distorted picture of Fluddean system.

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[12] J. Hawkins, *A General History of the Science and Practice of Music*, 5 vols, iv, London, 1776, pp. 166-173.
[13] Ibid., p. 166.
[14] A. Ashbee. 'Fludd, Robert' *Grove Music Online. Oxford Music Online*, Oxford, online edn [http://www.oxfordmusiconline.com/subscriber/article/grove/music/09883, accessed 16 September 2014].
[15] J. B. Craven, *Doctor Robert Fludd the English Rosicrucian: Life and Writings*, Kirkwall, 1902.
[16] Ibid., p. 116.

From the sixties of the last century onwards both the Hermetic currents of the Renaissance and the figure of Robert Fludd received increasing attention. With his *Spiritual and Demonic Magic from Ficino to Campanella*, published in 1958, Walker problematicised the issue of placing magic in the wider context of Renaissance Europe as nobody had done before him. Walker was able to demonstrate effectively the importance music speculation had for Renaissance thinkers such as Marsilio Ficino and Francesco Zorzi. For them, and Fludd himself, the physical medium of music, i.e. air, resembled the *spiritus* (or *pneuma*), which gives life and connects the material world to the spiritual one.[17]

Frances Yates needs no introduction for any scholar of the 'Hermetic tradition'. Her major achievement has been that of stressing the importance that mystical themes (Cabala, magic, astrology, etc.) played for some of the major figures of the sixteenth and seventeenth centuries, and in the development of the emerging scientific thought. Her major weakness was perhaps her excessive reliance upon inference,[18] even though it is precisely thanks to her approach that her studies are now considered pioneering of a new field of enquiry. She envisaged a solid link between Fludd and Michael Maier, and she firmly maintained that Fludd produced a detailed sketch of the Globe theatre in one of his treatises. I shall explain in Chapter I why I do not think plausible either the Fludd-Maier link or the idea that the publisher they shared, i.e. De Bry, was a Rosicrucian enthusiast, while her claims about the Fluddean theatre have been efficaciously reappraised by other scholars.[19] At any rate, it is with Frances Yates that for the first time the figure of Robert Fludd and his works – mainly the *De utriusque cosmi historia* – were studied in some detail. Unfortunately, some of the conclusions Yates reached on Fludd proved dubious. Moreover, her limiting the field of enquiry solely to the *DUCH* was certainly detrimental to grasping

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[17] See also the fundamental collection of essays D. P. Walker, *Music, Spirit and Language in the Renaissance*, ed. by P. Gouk, London, 1985.

[18] For a punctual critique of Yate's method see B. Vickers, 'Frances Yates and the Writing of History', *The Journal of Modern History*, 51, 2, 1979, pp. 287-316.

[19] The first full account of the treatise (*DUCH* II, ii, *portio* iii) in which one can find the alleged sketch of the Globe theatre was that of R. Bernheimer, 'Another Globe Theatre', *Shakespeare Quarterly*, 9, 1958, pp. 19-29. Yates reassessed Bernheimer's interpretation and placed the discussion in the field of Renaissance studies in her *The Art of Memory* and in 'New Light on the Globe Theater', *The New York Review of Books*, May 26, 1966, pp. 16-21. Yates' arguments have been criticised by I. A. Shapiro, 'Robert Fludd's Stage-Illustration', *Shakespeare Studies*, 2, 1966, 192-209, to which she replied in 'The Stage in Robert Fludd's Memory System', *Shakespeare Studies*, 3, 1967, pp. 138-166. An interesting analysis of both Yates' and Shapiro' views is to be found in H. Berry, 'Dr. Fludd's Engravings and Their Beholders', *Shakespeare Studies*, 3, 1967, pp. 11-21. In her *Theatre of the World*, London, 1969, pp. 136-161, Yates finally refined and confirmed her hypothesis, according to which the stage one finds depicted in Fludd's text is the (second) Globe theatre in London.

a complete picture of Fludd's philosophy or its development through time, which is what I try to do in my work.

Building upon, and inspired by, the fundamental work of Walter Pagel,[20] Allen G. Debus explored many of the works of Robert Fludd through the lens of a chemical-medical glass. Fludd has a special place in Debus' studies, which are disseminated in many books and articles. For instance, Debus stressed the similarity between the 'circulatory system' of William Harvey and Robert Fludd's ideas; he edited and published, in 1979, the previously unknown manuscript of *A Philosophicall Key*, providing scholars with a missing piece of the mosaic; he wrote about the experiments with magnetism in the *Philosophia moysaica*; and he understood the relevance of the weather-glass in Fluddean philosophy. On the other hand, his focus being primarily on non-Galenic theories in England at the beginning of the seventeenth century, Debus did not delve into other fields of enquiry. For instance, in his account of the weather-glass he failed to acknowledge properly the role and the relation that musical notation plays in Fludd's philosophical instrument when he summarily surveyed the *Pulsus* – a gap which I aim to fill in chapter V of this dissertation.

In 1972 Serge Hutin published the dissertation that he submitted in 1951 within the department of Sciences religieuses of the Ecole pratique des Hautes Etudes.[21] This contribution focuses on the purely mystic and 'Rosicrucian' aspects of Fludd, adding very little to Fluddean scholarship. In 1988 William Huffman published the first full-scale monograph on Robert Fludd since Craven's.[22] Huffman's effort is praiseworthy and brought in new information, especially regarding Fludd's life and acquaintances. Unfortunately, Huffman seemed to rely uncritically, and almost exclusively, upon the studies of Yates; he therefore failed to properly acknowledge the more recent research of Debus. Moreover, it looks as though he based his research almost exclusively on the few available English texts by Fludd.[23] Accounts about the *DUCH* and *MC* or other Latin writings are much less detailed and rely on his colleague's translations (Robert A. Sellinger, Jr). In addition to ignoring large portions of Fludd's writings, Huffman did not provide solid philosophical and historical

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[20] W. Pagel, 'Religious Motives in the Medical Biology of the 17th Century. Six Parts', *Bulletin of the Institute of the History of Medicine*, 3, 1935, pp. 97-128, 213-231, and 265-312; and *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance*, Basel, 1958.
[21] S. Hutin, *Robert Fludd (1574-1637), alchimiste et philosophe rosicrucien*, Paris, 1972.
[22] W. Huffman, *Robert Fludd and the end of Renaissance*, London, 1988.
[23] *A Philosophicall Key*; *Doctor Fludds Answer unto M. Foster, or, The Squezing of Parson Fosters Sponge*; and *Mosaicall Philosophy*.

backgrounds; for example he only vaguely describes the foundations of Fludd's 'chemical philosophy', which Debus explained at length. The author thus failed to provide a convincing and academically strong picture of Fludd. These and others lacunae I have tried to fill in the course of my dissertation, in particular with chapter III.

Gary Tomlinson published in 1993 his, in some ways, controversial *Music in Renaissance Magic: Toward a Historiography of Others*. Tomlinson is keen to promote a 'musical archaeology', an alternative approach that postmodern historiography cannot ignore, i.e. a reconsideration of our relationship with the 'other'. Nevertheless, his book leaves many questions about the relationship between magic and music unanswered; for instance he does not clarify why magic was held in such esteem by philosophers and musicians in the Renaissance. Paradoxically, by insisting on the 'otherness' of magic, Tomlinson makes this topic feel even more distant and inaccessible. Certainly, as Tomlinson hopes, musicology should welcome an intersubjective and dialogical approach – something I myself try to adopt. Unfortunately, by restricting his field of enquiry to a few characters (mainly Ramos de Pareja, Cornelius Agrippa, Franchinus Gaffurius and Marsilio Ficino) Tomlinson eludes the wider cultural context in which these writers and musicians were operating. This context I shortly recapitulate in chapter II.

One of the books which rapidly came to be considered, with reason, an essential contribution to the history of science and beyond is *Music, Science and Natural Magic in Seventeenth-Century England* by Penelope Gouk.[24] The latter's major accomplishment is the introduction of music within the study of the relationship between magic and natural philosophy in early modern England. In this book Robert Fludd's speculations on music are quickly surveyed with an emphasis on their impact on later authors, especially Kircher and Schott. Gouk even depicts Fludd as an anticipator of "Bacon's emphasis on the role of musical instruments in learning about the properties of sound".[25] The role music played in the transition from natural magic to the birth of the experimental method is in fact manifold, complex, and at first not obvious. Claude Palisca,[26] Daniel P. Walker, Floris Cohen,[27] and Gary Tomlinson had

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[24] Other contributes by Gouk include 'The Role of Harmonics in the Scientific Revolution', in T. S. Christensen (ed.), *The Cambridge History of Western Music Theory*, Cambridge, 2002, pp. 223-245; and 'Music', in N. Tyacke (ed.), *The History of the University of Oxford Vol. IV: Seventeenth-Century Oxford*, Oxford, 1997, pp. 621-640.

[25] P. Gouk, *Music, Science and Natural Magic in Seventeenth-Century England*, New Haven, 1999, p. 101.

[26] C. V. Palisca, *Humanism in Italian Renaissance Musical Thought,* New Haven, 1985.

[27] Cohen, *Quantifying Music*.

already stressed the position music occupied in seventeenth-century thinking. It was with Gouk, however, that this neglected factor was finally investigated at length, and drawn into association with both magic and science, and this certainly opened new paths;[28] one of them led to the present dissertation.

In 2008 a new extensive full-length study on Fludd was published by Johannes Rösche.[29] His book is the first investigation into Fludd's philosophy that takes into account the whole *opera omnia*. Rösche's aim is that of showing that there was, at the beginning of the seventeenth century, an alternative to science as we know it nowadays, and this was represented by Fludd. The author seems to go as far as suggesting that Fludd's approach to nature should be regarded as a modern alternative to empirical research. Leaving aside the fact that this is objectionable, Rösche's attitude shows too often a black-and-white (i.e. Hermeticism vs. rational science) view of historical and cultural processes going on before, during, and after the scientific revolution. There were actually a plethora of different attitudes and approaches to natural philosophy during the period in question, and they often intertwined one with the other, mixing different traditions and 'philosophies' – exactly what happens with Fludd, as I shall show later in the course of this dissertation.

Wilhelm Schmidt-Biggemann has delved into Fludd's Cabalistic theories,[30] Karsten Kenklies has placed Fluddean theories into the mid-seventeenth century educational dispute (the Webster-Ward debate) in England, [31] and Urszula Szulakowska researched into the connection between Fludd's images and his theological ideas.[32]

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[28] I am thinking, for example, of her pioneering treatment of Francis Bacon, Isaac Newton and Robert Hooke. An effort similar to Gouk's, and equally valuable, is the research of Jamie Kassler; see in particular: J. C. Kassler, *Music, Science, Philosophy: Models in the Universe of Thought*, Aldershot, 2001; and J. C. Kassler, 'Music as a Model in Early Science', *History of Science*, 20, 1982, pp. 103-139.

[29] J. Rösche, *Robert Fludd: Der Versuch Einer Hermetischen Alternative Zur Neuzeitlichen Naturwissenschaft*, Göttingen, 2008.

[30] W. Schmidt-Biggemann, 'Bilder des Unsichtbaren: Robert Fludds Konzeption des Weltgeistes', in C. Göttler and W. Neuber, *Spirits Unseen: The Representation of Subtle Bodies in Early Modern European Culture*, Leiden, 2007, pp. 197-210; 'Der Streit um Kosmologie und Harmonie zwischen Robert Fludd und Johannes Kepler', in M. Zywietz, *Buxtehude jenseits der Orgel*, Granz, 2008, pp. 118-150; and 'Robert Fludd's Kabbalistic Cosmos', in D. Hedley and S. Hutton (eds), *Platonism at the Origins of Modernity*, Dordrecht, 2007, pp. 75-92.

[31] K. Kenklies, *Wissenschaft als Ethisches Programm: Robert Fludd und die Reform der Bildung im 17. Jahrhundert*, Jena, 2005. On this issue see also A. G. Debus, *Science and Education in the Seventeenth Century: The Webster-Ward Debate*, London, 1970.

[32] U. Szulakowska, *The Alchemy of Light: Geometry and Optics in Late Renaissance Alchemical Illustration*, Leiden, 2000; and 'Geometry and Optics in Renaissance Alchemical Illustration: John Dee, Robert Fludd and Michael Maier', *Cauda Pavonis*, 14, 1995, pp. 1-12.

In the last forty years or so Fludd has increasingly appeared in musicological studies. In 1967 Peter Ammann published an article that in a way opened the doors to a serious investigation of Robert Fludd's musical thought. In his *The Musical Theory and Philosophy of Robert Fludd*, in fact, Amman surveys the writings in which Fludd explicitly dealt with *musica mundana*, *musica humana* and *musica instrumentalis*. This article brought the previously unexplored musical side of Robert Fludd to the attention of the scholarly world. On the other hand, by stating that music "is perhaps the most eloquent symbolical expression of his [Fludd's] approach",[33] and by only surveying Fludd's symbolic monochords and his treatise on *musica instrumentalis*, Ammann did not touch upon later works such as *Medicina catholica* or *Philosophia moysaica*, where reflection on speculative music is rather limited. After all, right at the beginning of his article Ammann declares that music occupies a "large amount of space in his [Fludd's] writings".[34] If one considers the whole Fluddean output this assertion does not prove true, as will be clear at the end of this dissertation. Nevertheless, Ammann's effort is praiseworthy, and provides without doubt a starting point for my enquiry.

Joscelyn Godwin placed Fludd's musical philosophy into the wider context of *musica speculativa*.[35] Godwin also published a little compendium of Fludd's most beautiful plates, in which he explains them briefly one by one.[36] This admirable work, as Urszula Szulakowska has observed, "is directed more at an audience of twentieth century alchemical adepts".[37] To be sure, many of Godwin's writings seem to be tinged by a vein of zealous advocacy, while this field of study would certainly benefit from a more detached and less uncritical approach. Moreover, though briefly recognising the importance of the weather-glass in the later Fluddean speculation, Godwin did not pursue this path further, and remained more concerned with Fludd's 'mystical-esoteric harmonies'.

In his Ph.D. dissertation which explores the significance of Fluddean musical conceptions in German Baroque musical thought, Kenneth Stephen Mitchell convincingly argued that

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[33] P. J. Ammann, 'The Musical Theory and Philosophy of Robert Fludd', *Journal of the Warburg and Courtauld Institutes*, 30, 1967, pp. 198-227.
[34] Ammann, 'The Musical Theory', p. 198.
[35] J. Godwin, *Music, Mysticism and Magic: A Sourcebook*, London, 1986; *Harmonies of Heaven and Earth: The Spiritual Dimension of Music From Antiquity to the Avant-Garde*, London, 1987; and *The Harmony of the Spheres: A Sourcebook of the Pythagorean Tradition in Music*, Rochester, Vt., 1995.
[36] J. Godwin, *Robert Fludd: Hermetic Philosopher and Surveyor of two Worlds*, London, 1979.
[37] Szulakowska, *The Alchemy of Light*, p. 168.

> Fludd, though largely ignored by his musical contemporaries and most subsequent musical writers, was known and even held in fairly high regard by a handful of German Baroque musical writers including such important figures as Athanasius Kircher, Andreas Werckmeister, and Johann Walther. [...] Philosophical/musical ideas traceable in part to Fludd's works played a tangible role within the complex and still only partially explored German Baroque musico-theoretical tradition.[38]

Number to Sound: The Musical Way to the Scientific Revolution, a collection of essays published in the year 2000 and edited by Paolo Gozza, brought together scholars from the fields of musicology and history of science alike. The book illustrates the concept of music as it was for intellectuals, physicians, scholars of musical theory, natural philosophers, astronomers, and mathematicians from the 15th to the early 17th century. The aim of the collection is to document the "shift from a conception in which the object of music, i.e. sound, is thought of in terms of number to the conception in which sound is thought of in terms of movement".[39] In this certainly valuable collection Fludd is uniquely represented by his *monochordum mundi* and his *musica mundana*. Though having the merit of putting together contributions coming from different scholarly fields, *Number to Sound*, like the previous contributions by Ammann and Godwin, contributes to crystallising the image of the divine monochord as the best representation of Fludd's philosophy. This is to some extent justified, since, as I shall show, Fludd's monochord plays indeed a powerful and highly suggestive role in the earlier works.

Rebeccca Herissone published in the year 2000 a detailed survey of seventeenth-century English music theory.[40] It is no surprise that Fludd is ruled out from her enquiry: Herissone's basic assumption, in fact, is that English theorists were at the forefront of the enormous transformation which music theory underwent in the seventeenth century, i.e. the "rejection of traditional ideas going back in some cases to medieval times". English writers, Herissone argues, concentrated on "concise, clear teaching of the rules an amateur musician would need to understand in order to be able to play or write music".[41] They put an emphasis, she continues, on practical

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[38] K. S. Mitchell, 'Musical Conceptions in the Hermetic Philosophy of Robert Fludd: Their Nature and significance in German Baroque Musical Thought', Ph.D. dissertation, Washington University, 1994.
[39] P. Gozza, 'Preface', in Gozza (ed.), *Number to Sound*, p. xi. This shift is what Hollander called 'the untuning of the sky' (J. Hollander, *The Untuning of the Sky: Ideas of Music in English Poetry, 1500–1700*, Princeton, NJ, 1961). Other contributions to this issue are K. Neal, *From Discrete to Continuous: The Broadening of Number Concepts in Early Modern England*, Dordrecht, 2002; N. Guicciardini, 'The Role of Musical Analogies in Newton's Optical and Cosmological Work', *Journal of the History of Ideas*, 74, 1, 2013, pp. 45-67; B. Wardhaugh, *Music, Experiment and Mathematics in England, 1653-1705*, *in England, 1653-1705,* Farnham, 2008; and P. Pesic, *Music and the Making of Modern Science*, London, 2014. Pesic deliberately excludes Fludd from his field of enquiry (Ibid., p. 285, n. 6).
[40] R. Herissone, *Music Theory in Seventeenth-Century England*, Oxford, 2000.
[41] Ibid., p. 224.

music, and tended to avoid *musica mundana*; on the other hand, pure speculation on music was a trademark of Continental thought. But if it is true that Fludd was more interested in *musica speculativa* than *musica practica*, it is equally true that his *De templo musicæ* is a treatise on *musica instrumentalis* not too detached from other contemporary English treatises on practical music of the time. This has been sufficiently demonstrated by Peter Hauge, who in 2011 published a critical edition of Fludd's *De templo musicæ*.[42] Hauge rediscovered Fludd's *templum* and resituated it into the field of musicological studies, thus filling the gap which Herissone left open. Nevertheless, Hauge's concern was, necessarily, focused on Fludd's contribution to practical music, with little or no mention at all of other important aspects of the multi-faceted Fluddean thought.

Hauge's book is part of the Ashagate on-going series 'Music Theory in Britain, 1500–1700: Critical Editions'. Within this series have been published at least three other contribution which connect, in one way or another, to Fluddean scholarship. First of all, the edition of *A New Way of Making Fowre Parts in Counterpoint* by Thomas Campion and *Rules how to Compose* by Giovanni Coprario, edited by Christopher R. Wilson (2003), has made accessible two English treatises published around the time of Fludd, thus allowing scholars like Hauge to find analogies and differences between Fludd and his contemporaries. Recently (2014) there has appeared an edition of the writings on music by Thomas Ravenscroft edited by Ross W. Duffin. Duffin has realistically suggested that Robert Fludd might be one of the people who read and left annotations on Ravenscroft's *A Briefe Discourse* (see chapter I).[43] Finally, Benjamin Wardhaugh has edited a two-volumes issue (2013) dedicated to writings on music by Thomas Salmon, giving a glimpse into the nature of music as a mathematical science and its relationship with the emerging scientific method at the very beginning of the eighteenth century in England.

More important from the present dissertation's point of view are two books published in the last ten years. The first is by Benjamin Wardhaugh, *Music, Experiment and Mathematics in England, 1653–1705* (2008). Wardhaugh's contribution situates itself in the scholarly tradition I have delineated above, i.e. that of Gouk, Kassler, Gozza and Cohen. Though he examines a later period of historical development of the mathematical and mechanical study of music in England and he

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[42] R. Fludd, *'The Temple of Music' by Robert Fludd*, ed. and tr. by P. Hauge, Farnham, 2011.
[43] T. Ravenscroft, *The music treatises of Thomas Ravenscroft: 'Treatise of Practicall Musicke' and A Briefe Discourse*, ed. by R. Duffin, Farnham, 2014, pp. 46-49.

puts an emphasis on its mathematical side, my approach is for many aspects similar to his. What Wardhaugh shows is a well-documented and thorough study of the forces at work soon after Fludd's death, when "harmony ceased to be a universal given and became a local mechanical accident";[44] the sky, to rephrase Hollander's saying, was 'untuned' and, as Gozza has it, music shifted from the realm of number to the realm of movement (i.e. vibration). The other book to whose approach I feel close is *Music and the Making of Modern Science* (2014) by Peter Pesic. Pesic explores the connection between music and science in his journey from ancient Greece to our days, choosing some examples (Nicole Oresme, Johannes Kepler, Marin Mersenne, Leonhard Euler, Max Plank, and others) in which music led the way towards the development of modern science. As Pesic observes, his investigation is to be placed among the work of scholars like Cohen, Palisca, Walker, Gouk, Kassler, Gozza, and Wardhaugh.[45] My research would like to contribute to this scholarly conversation, though adopting a revisionist approach so far as Fludd's treatment is concerned.

The present thesis

When looking for musical elements in Fluddean philosophy, previous scholars like Yates, Amman, Godwin, Gozza, and Hauge have understandably looked for the treatises on *musica*. The complexity of Fluddean philosophy requires perhaps a more integrated and all-embracing approach – which is now possible thanks to the above-mentioned pioneering studies. The main challenge in dealing with Fludd's *opera omnia* comes from the number of topics one has to master, or at least understand, in order to grasp a complete picture of Fluddean philosophy. Moreover, many of the Fluddean topics are rather distant from our world-view; this may lead to two antithetic approaches, both not beneficial to scholarship. On one side, the enthusiastic and almost 'evangelic' attitude (Craven, Hutin, Goldwin, and partially Huffman and Rösche); on the other side, the condemnation for a world-view which simply does not conform to our post-scientific revolution system of thought (Hawkins, Ashbee). Luckily, the latter approach is nowadays rather uncommon, and scholars like Pagel, Yates and Gouk have amply stressed the need to eradicate such an attitude. Another minor issue is the fact that a great part of Fludd's output is written in a verbose and

[44] Wardhaugh, *Music, Experiment and Mathematics*, p. 113.
[45] Pesic, *Music and the Making of Modern Science*, p. 6.

often pedantic Latin: this is a challenge which has been detrimental to scholars such as Huffman, while it has limited the horizon for others.

The *De utriusque cosmi historia* has received more attention and has been perused in greater detail than Fludd's other works. This could be due to several factors. First of all, the presence of a large number of plates; in fact, from *Philosophia sacra* (1626) onwards Fluddean publications are much less illustrated and more densely written.[46] If one considers the beauty of the plates, Fludd's frequently difficult-to-follow prose, and the variety of topics covered in the *De utriusque cosmi historia*,[47] it is no wonder that scholars have preferred the survey of Fludd's earlier works. Pagel and Debus were the first to describe at length later works such as *Medicina catholica* and the *Philosophia moysaica*, and this is due to their interest in medical and alchemical matters. Still, when they had to deal with the *Pulsus,* or the weather-glass, they overlooked some elements which, if considered from the wider perspective of the entire Fluddean *corpus*, show unexpected connections with the pyramidal *scientia* and, I argue, with the monochord. At the same time, studies coming from the musicological field have limited the field of enquiry to the treatises on *musica speculativa*, all of which fill the pages of early Fluddean production.

Research on Fludd has reached a sort of paradox: studies coming from history of science and history of ideas such as those of Walker or Gouk have gone much closer to what I think the real nature of Fludd's musical speculation is, while musicological studies have either opted for a 'narrow' approach (Hauge), or have focused solely on Fludd's monochord (Gozza, Godwin), or have avoided the problem altogether (Herrisone). As Gouk remarked,

> [i]n writing about musical thought in seventeenth-century England, it is necessary to move between disciplinary specialities which have greatly differing intellectual agendas. The history of music and the history of science comprise two areas of expertise which are most germane to our present considerations. Yet musical thought does not figure at all prominently in either field. [...] [I]n the seventeenth century many of those who wrote about music were part of what is often anachronistically described as the emerging scientific community of the period, and music was still classified among the sciences.[48]

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[46] This has something to do with the fact that the De Bry imprint, publisher of large portion of the *DUCH*, ceased activity in 1626. See M. Van Groesen, *The Representations of the Overseas World in the De Bry Collection of Voyages (1590–1634)*, Leiden, 2008, pp. 79-106.

[47] I mean here that the variety of subjects in the *DUCH* has facilitated the proliferation of studies, each one of each focused on a single topic covered by Fludd; so one scholar would have focused on Fludd's *musica instrumentalis* (Hauge), another on his *musica mundana* (Godwin, Gozza), another on the treatise on the art of memory (Yates), etc.

[48] Gouk, *Music, Science and Natural Magic*, pp. 3-4.

I have set out to investigate the Fluddean philosophical path, and the role speculation on music plays within it, at a deep level. I felt the necessity for an organic study that took into account the somewhat intricate philosophical system that Fludd built with an eye on its development over time. I wanted to integrate in my survey as many elements as possible – within the constraints that a Ph.D. dissertation impose. In a sense, my enquiry follows the steps of scholars like Debus, whose 'medico-alchemical' enquiry I think one of the most complete, and who unlike other scholars studied a large portion of Fludd's works; but my enquiry does this from a musicological standpoint. Fludd's investigation is characterised by a predilection for finding a visual-symbolic representation of the phenomena he set out to describe. For example, he represents God as a triangle, or the darkness before the *fiat lux* as a dark square with the writing "and so on to infinity" at the four corners. In addition, he tries to find not only images, but also mechanical models and instruments/experiments that one may term 'philosophical', since they were not conceived for actually working in reality but just as a representation, a metaphor of what actually happens in the cosmoses. For example, Fludd inscribes a vibrating string in the figure of the human body in search of *musica humana*; he tries to demonstrate the motion of the Earth around the Sun by means of a wheel; or links what happens inside the weather-glass to the forces at work in the human body and in the heavens.

My initial questions were: is it true that music works as a perfect metaphor for the representation of the cosmoses throughout the entire output of Fludd? From a superficial perusal of the first publications, in fact, there is no doubt about the importance placed on the divine monochord as the most efficient tool for the understanding of the cosmos. Does this perfect harmony change? If so, how, when, and why? Is it possible to reconcile the three main tools of Fluddean investigation of the cosmoses, i.e. the monochord, the pyramidal *scientia*, and the weather-glass? If so, how? These are questions that no scholar has hitherto addressed and to which I shall here attempt to give an answer.

Chapter I of my dissertation will focus on Robert Fludd's life, his education, and a chronology of his publications, while with the second chapter I shall delve into the past and contemporary sources Robert Fludd draws from, his influences, and the intellectual circles with which he was associated. All this will provide a detailed introduction to the cultural environment in which Fludd moved, thus allowing us to understand where Fludd intellectually came from and what his place is in the milieu of the early seventeenth-century.

The two encyclopaedic projects Fludd set out to write are *De utriusque cosmi historia*, published between 1617 and 1626, and *Medicina catholica*, published between 1629 and 1631. These two works are extremely complicated in both their taxonomy and the topics covered. This is why I shall give an overview of how they are structured and which arguments are covered when and where. This survey shall help us to orientate ourselves better within the Fluddean map of knowledge. More importantly, this operation shall enable us to see how the Fluddean philosophical path evolved over time. For instance, he often enlarged final sections of his volumes, sometimes even adding new parts and/or changing the original plan – a tendency perhaps symptomatic of his time, when knowledge was quickly expanding its boundaries. Moreover, this operation emphasises a trend, i.e. the abandonment of the monochord and a later preference for the weather-glass as the most important instrument for philosophical enquiry.

While chapter III prioritises breadth of vision over specialised treatment of the many topics Fludd surveyed in his writings, chapter IV will focus on his reflection on music. The musical configuration of the cosmoses, and the 'divine' numbers behind them, have been a frequent topic of discussion from Pythagoras onwards, and reached one of its high points precisely with Fludd, who devised a celestial monochord in order to represent it visually. That monochord, due to its unquestionable beauty, is – with reason – ever-present in studies dealing with cosmology, the history of ideas, Renaissance musical conceptions, and Fludd himself. It is undeniable that music plays a key role in Fludd's philosophy, and this is particularly manifest in the publications dating from 1617 to 1623. The monochord as the metaphorical tool fittest for the survey of harmonies of the heavens and of man fills the pages of the early works, and I shall give a concise and up-to-date account of them, attempting a few new interpretations. As I shall explain in chapters II and III, the background against which Fluddean philosophy evolves is the concept of 'intersecting pyramids', according to which the entire universe can be explained in terms of duality, for instance between light and darkness, matter and spirit, and so on. I shall show how the monochord fits into this idea; in which aspects Fludd's *musica* conforms to the tradition to which it refers; and in what ways it breaks with the past. After 1623, the monochord would virtually disappear from Fludd's publications, leaving room for another metaphorical device: this is the weather-glass, introduced in its definite form in 1626, as I shall show in chapter III.

Finally, chapter V shall analyse in detail *Pulsus*, i.e. the last section of *Medicina catholica* to appear (1631). This treatise, hitherto neglected by Fludd scholarship, presents original characteristics certainly worthy of investigation. In the *Pulsus* one finds medical topics – one needs to bear in mind that Fludd was a physician by profession – combined with musical elements. I shall put this treatise into the wider context of the tradition of pulse lore, and show not only how Fludd had a clear intellectual European awareness, but also that he was the first English author to publish a treatise on the subject. In chapter V I shall also analyse Fludd's very last publication (*De philosophia moysaica*, 1638), in which the 'traditional' musical speculation is only one of the many subjects – only a faint shadow of the glorious expositions of twenty years before. The main concern in that volume would again be the weather-glass, with the addition of the experiments with the loadstone by Gilbert and his followers. This again will show a Robert Fludd well aware of what was happening around him and reacting to it, while maintaining the integrity of his beliefs and giving them, as it were, a new musical meaning.

I. Robert Fludd: life and education

Biographical information about Robert Fludd, especially regarding his early years, is rather scanty. As William Huffman rightly puts it,

> [o]ne of the main problems confronting someone interested in Robert Fludd is the lack of information about his formative years, as well as about his later associations.[1]

It is true; the first short biographical account on Fludd appeared in 1662 in *The History of the Worthies of England* by Thomas Fuller,[2] who gave a summary of the epitaph on the monument to the memory of Robert Fludd (church of Bearsted, Kent). Some thirty years after, Anthony Wood was more verbose and, in his *Athenæ Oxonienses*,[3] expanded on Fuller's account, and provided basic information on the life and works of the English philosopher which remained the standard ones for many years to follow, to which only in recent years William Huffman and Johannes Rösche have added more details. The last of these has unquestionably provided the most up-to-date account of the journey through the Continent which Fludd carried out between 1598/9 and 1604/5, while Huffman's work is strongest in the survey of Fludd's education in Oxford, his status within the College of Physicians of London and his connections. What we have at the moment is still scanty, yet enough to provide a satisfactory picture of the English physician. I have collected all the contributions by the above-mentioned scholars together and added a few particulars, corrected some inaccuracies, identified some hitherto nameless (or incorrectly named) people with whom Fludd came into contact and places Fludd visited. I have done this taking into account current research coming from tangential fields, for instance studies on Fludd's publisher or on philosophers like Michael Maier with whom he is thought to have been closely associated.

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[1] Huffman, *Robert Fludd*, p. 4.
[2] T. Fuller, *The History of the Worthies of England*, London, 1662, pp. 503-504.
[3] A. Wood (ed.), *Athenæ Oxonienses*, 4 vols, ii, London, 1691, cols 510-511.

I.i 1574-1598/9

The date of birth of Robert Fludd is not certain: all we know is that on 17 January 1574 he was baptised at the Parish church of Bearsted, Kent. His family owned a country manor called Millgate House in the same town, and it was there that he was probably born. The origin of the Kentish Fludds is to be found in Wales. The surname was initially Lloyd and then, when the family moved to England, became Floyd/Flood/Fludd, with the 'll' Welsh sound being possibly interpreted as an 'f' by the English clerks and scribes.

Robert was one of the twelve children born to Sir Thomas Fludd and Elizabeth Andrews. Thomas' career was a very successful one:[52] he was trained in law and, after beginning as a victualler at the service of the crown for the armies in England (Berwick) and France (Newhaven), he was elected Bearsted's Justice of the Peace. He then covered other roles and carried out various services for the crown, was Paymaster to the Queen on more than one occasion and was a member of parliament for Maidstone in 1593, 1597 and 1601.[53] In addition, he was a member of the Honourable Society of Gray's Inn;[54] the patron of the Society, which included members such as Francis Bacon, was Elizabeth I, and masques and plays were often performed.[55] He obtained a promotion to a hereditary knighthood in 1590.[56]

There is an interesting passage, so far unknown to Fludd scholarship, which I have found in a work by John Aubrey (1626-1697). He notes that

> *Thomas Fludd* of Kent, Esq told me, that it is an old Observation, which was pressed earnestly to King *James* I, that he should not remove the Queen of *Scots* Body from *Northamptonshire* where she was beheaded, and interred: For that, it always bodes ill to the Family, when Bodies are removed from their Graves. For some of the Family will die shortly after, as did Prince *Henry*, and, I think, Queen *Anne*.[57]

This testifies, once again, to the high connections the father of Robert had, but it might also give interesting insight into the beliefs to which both Thomas Fludd and the King, who was on good terms with Robert Fludd himself, were exposed. The belief

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[52] An exhaustive account of Thomas Fludd's achievements is given in P. W. Hasler (ed.), *The History of Parliament: The House of Commons 1558-1603*, London, 1981, pp. 143-144.
[53] In his *Robert Fludd*, p. 6, William Huffman erroneously writes 1583 instead of 1593, and 1597/8 instead of 1597. See *House of Commons Sessional Papers, Great Britain Parliament*, vol. LXII, part 1, London, 1878, pp. 148, 433 and 438.
[54] J. Foster, *The Register of Admissions to Gray's Inn 1521-1889*, London, 1889, p. 101.
[55] William Shakespeare himself is believed to have performed there.
[56] Huffman, *Robert Fludd*, pp. 5-6.
[57] J. Aubrey, 'A collection of Hermetick Philosophy', in *Miscellanies upon the following subjects collected*, London, 1696, p. 37.

to which the citation above refers, in particular, is much in tune with Fludd's 'magnetical' philosophy, according to which we live in a sympathetic cosmos where everything is interconnected and where there is the possibility of an action at a distance without any contact. This is in contrast with the Aristotelian system, which does not admit action at a distance, and it is something Fludd would be particularly keen to stress later in his works.

Though the most common path to choose for someone of gentle birth would have been to study law,[58] Robert chose not to follow that route. On 10 November 1592 he matriculated at St. John's College, Oxford. As Huffman has already pointed out,

> [b]efore the middle of the [sixteenth] century, [...] some profound changes took place at both Cambridge and Oxford. Humanist ideas about needed changes in the curriculum began to take hold. Within the tradition of the seven liberal arts dating from Roman times, emphasis was shifted from medieval exercises in logic to the study of advanced Latin grammar, Greek, rhetoric and moral philosophy, the better to emulate the great Greeks and Romans.[59]

The founder of St. John's was Sir Thomas White, a Catholic whose aim was that of "improving the education of the clergy".[60] White's will was that

> one-fourth of the Fellows were to study the law, only one should study medicine, and the rest were to study liberal arts as a preparation for theology.[61]

Robert Fludd chose the Faculty of Arts; as I shall show below, it is quite likely that St. John's College also stimulated his interest in medicine. St. John's College in Oxford was one of the few in England to have a Medical Fellow in residence. While Fludd studied there, the resident fellow was Matthew Gwinne (1558-1627). Gwinne, physician, poet and playwright, had been the first Professor of Physic to be appointed at the newly-founded Gresham College in 1597, and successively became a member (and occasionally Censor) of the London Royal College of Physicians, thus a colleague of Fludd's.[62] Frances Yates has pointed out that Gwinne may have had some connection with Giordano Bruno.[63] At St. John's, he lectured in music too, even if for a short period (perhaps only in 1582), before dedicating himself intensely to

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[58] Huffman, *Robert Fludd*, p. 181, n. 28.
[59] Ibid, p. 7.
[60] Ibid, p. 8.
[61] Ibid, p. 9.
[62] W. Munk, *The Roll of the Royal College of Physicians in London*, 11 vols, i, London, 1861, p. 118. See also I. Wright, 'Gwinne, Matthew (1558-1627)', *Oxford Dictionary of National Biography*, Oxford, 2004; online edn, Jan 2008
[http://www.oxforddnb.com/view/article/11813, accessed 2 June 2014].
[63] F. A. Yates, *The Art of Memory*, London, 1966, p. 309.

medicine.[64] Ross W. Duffin has recently argued that Matthew Gwinne could have had a role in acquainting the music theorist and composer Thomas Ravenscroft, who studied at the Gresham College, with Robert Fludd. To be sure, Duffin has identified one of the commendatory writers of Ravenscroft's *A Briefe Discourse* (London, 1614), such R. LL., with Robert Lloyd, i.e. our Fludd.[65]

Also, the president of the St. John's during Fludd's stay, Ralph Hutchinson (*c*. 1552-1606), was a clergyman and a biblical scholar, one of the translators of the Authorised Version of the Bible. He had preceded Matthew Gwinne as the College's medical fellow.[66] In Hutchinson, as Huffman puts it,

> the mixture of a classical education, Anglicanism and medicine is clear, and, since he was President during the entire term of Fludd's studies at St John's, he may well have taken a personal interest in the unusually studious commoner knight's son.[67]

Another piece of information we have about Fludd's years at the College and his influences is that his tutor was John Perrin (1558-1615). Perrin was awarded Doctor of Divinity from St. John's in 1596 and served there as Regius Professor of Greek from 1597 to 1615.[68] Like Hutchinson, he also was on the committee for the translation of the King James Version of the Bible (1604-11). As I shall illustrate in chapter III of this dissertation, there is a brief anecdote about Fludd's tutor in the first *tomus* of the *De utriusque cosmi historia*.[69]

> In fact, during that time, it happened that my tutor named Perinus (Doctor of Divinity), from whose protection I was recently come out, unexpectedly burst into my room, and told me that a certain washerwoman of his had lost his bed linen the previous night. He thus asked to me if my astrology could help him in that affair and where the thief might have escaped, in the name of our love [...].[70]

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[64] Gwinne's inaugural 'Oratio in laudem musices' survived in manuscript and was published in J. Ward, *The Lives of the Professors of Gresham College*, London, 1740. See Wright, 'Gwinne, Matthew'.
[65] T. Ravenscroft, *The music treatises of Thomas Ravenscroft: 'Treatise of Practicall Musicke' and A Briefe Discourse*, ed. by R. Duffin, Farnham, 2014, pp. 46-49.
[66] Hutchinson was appointed president of St. John's College from Joan White, widow of the founder Sir Thomas White, in June 1590. A. Shepard, 'Hutchinson, Ralph (1552?-1606)', *Oxford Dictionary of National Biography*, Oxford, 2004; online edn, Jan 2008.
[http://www.oxforddnb.com/view/article/14286, accessed 11 August 2014].
[67] Huffman, *Robert Fludd*, p. 11.
[68] Perrin was also Canon of Christ Church, Oxford, from 1604 to his death. See A. Hegarty, *A Biographical Register of St. John's College, Oxford, 1555-1660*, Oxford, 2011, p. 115; and Huffman, *Robert Fludd*, p. 182, n. 45.
[69] *DUCH* I, ii, p. 701.
[70] "Eveniebat igitur circa id tempus, ut tutor meus, a cuius tamen tutela noviter exieram, nomine Perinus SS. Theologiæ Doctor ex improviso in cubiculum meum ingrediens mihi narraret, quandam lotricem suam omnia sua linea nocte illa præterita perdidisse: Petebat igitur a me, ut si quid ea in re haberet mea Astrologia, quo furem ipsi detegere valerem, ut ea in parte ipsi pro amore nostro gratificarer". Ibid.

This episode is rather illuminating, since it tells us that when Fludd was at the College in Oxford he was already considered to have good skills in astrology, to the extent that his own tutor asked him for some astrological help. This leads to a second conclusion, which is that a Doctor of Divinity, as Perrin was, did not find it strange or, even more, blasphemous, to engage in astrology.

With this observation we touch upon a wider issue, towards which Mordechai Feingold has already drawn our attention.[71] In fact, it is likely that Fludd's interest in numerology, Paracelsian theories, Cabala, astrology and other so-called 'occult matters' was shared by a whole underground movement, having its roots in the very universities accused (ironically, amongst others, by the same Fludd) of solely relying upon Aristotle and Galen. In spite of the fact that Oxford, where Fludd was educated, was one of the most conservative universities, it is also true that one can find many annotations and notes on books and notebooks by students that show unequivocally many affinities with Fludd's most famous writings. Moreover, besides other illustrious men like John Dee (1527-1609) and William Harvey (1578-1657),[72] there is a long list of lesser known figures such as John Caius, William Butler, William Perkins, William Fulke, John Tichborne, Samuel Norton, Robert Payne and many others. All these people were educated in traditionalist Oxford and Cambridge at the turn of the century, and nevertheless in their writings one finds a good acquaintance with Paracelsian, astrological and Neoplatonic principles, often coupled, in general, with a deep interest in a very broad range of human knowledge: the same range that informs Fludd's works.

Another important aspect to bear in mind is the influence of the Ramist method to which Fludd had certainly been exposed in his formative years. Works of the French humanist Petrus Ramus (1515-1572) influenced the universities of all Europe and had been available in England since the mid-1570s. Fludd refers to the Swiss scholar Johannes Thomas Freigius (1543-1583), a dedicated follower of Ramus, in glowing terms, notwithstanding his Aristotelianism.[73] As I shall show in chapter III,

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[71] M. Feingold, 'Occult tradition at English universities', in Vickers (ed.), *Occult and Scientific Mentalities in the Renaissance*, Cambridge, pp. 73-94.

[72] Up-to-date accounts on John Dee include S. Clucas (ed.), *John Dee: Interdisciplinary Studies in English Renaissance Thought*, Dordrecht, 2006; and S. Clucas, 'Enthusiasm and "Damnable Curiosity": Meric Casaubon and John Dee', in R. J. W. Evans and A. Marr (eds), *Curiosity and Wonder from the Renaissance to the Enlightenment*, Aldershot Hants, 2006, pp. 132-148.

[73] "Nam Iohannes Fregius vir doctus et in disciplina Aristotelis admodum versatus [...]". (Johannes Fregius, learned man and very knowledgeable in Aristotelian philosophy; *De philosophia moysaica*, f. 17^{v}). In the *Mosaicall Philosophy*, i.e. the English translation of the *De philosophia moysaica* published in 1558, the version is slightly different: "[...] very learned Naturalist, and a man who hath taken great

Fludd makes extensive use of complicated diagrams and branched schemes through which knowledge is systematised in a meaningful order. In Fludd, sometimes these organograms are found at the beginning of a book or section, and sum up the content; at other times there are several of them in a book or section – sometimes reaching the extreme of constituting almost the entire content. Frances Yates has put forward an interesting theory according to which "the genesis of Ramism owes something to the Renaissance revival of Lullism",[74] and stressed the idea of Ramism as an art of memory. Nevertheless, she also rightly pointed out the "most profound differences" between Ramism and Lullism: at any rate, it is undeniable that both Ramus and Lull are two important influences in the writings of Fludd and other contemporaries: the German encyclopaedist Johann Heinrich Alsted (1588-1638) is a telling example.

All this information sheds a little light on why and how Robert Fludd, the knight's son from Bearsted, not only progressively nurtured an interest in medicine, but also became exposed to, and imbued with, a multi-faceted intellectual milieu. It must be said that many of the students of noble origin went to university almost exclusively because it was 'fashionable', and therefore it was not uncommon that the level of their social rank was inversely proportional to the number of degrees that were awarded. In fact,

> [d]uring this span of time [1598-1648] 51 have been identified as sons of peers or knights (as Fludd was), and only 7 of this class took degrees. In the same period only 19 of 72 sons of esquires finished a degree. By contrast, half of the sons of gentlemen, 23 of 32 sons of clergy and 134 of 195 plebeian sons completed a bachelor's degree.[75]

Fludd was, thus, deeply interested in the study he was carrying out since he was one of the few amongst the others of his social rank to have successfully completed his academic career. Even though he was always proud of his lineage,[76] never failing to put the title 'armiger' before the 'medicinæ doctor', Fludd showed a genuine interest in, and an eager application to, his studies, regardless of his birth.

After receiving his M.A. on 8 July 1598, Fludd set out for a journey to the Continent. The register of the University of Oxford, in fact, reports that he intended to

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pains in searching out the truth of natural mysteries" (*Mosaicall Philosophy*, p. 36). The work by Freigius that Fludd quotes is the *Quæstiones physicæ* (Basilea, 1579). Interestingly enough, Freigius wrote the preface to F. Beurhusius' *Erotematum musicæ libri duo* (Nuremberg 1580), one of the probable sources of the *De templo musicæ* (see chapter IV).

[74] Yates, *The Art of Memory*, p. 238.

[75] See W. C. Costin, *The History of St. John's College, Oxford 1598-1860*, Oxford, 1658, pp. 1 ff. See also Huffman, *Robert Fludd*, p. 10.

[76] "[...] I had rather bee without any degree in Universitie, than lose the honour was left me by my Ancestors". *Dr Fludds answer unto M. Foster*, p. 5.

go "over sea".[77] Again, we unfortunately do not have much information. All we know is that Fludd kept his room at the College until 25 March 1600, even though there are no details about what he did between his graduation and that date. In this respect, though, William Conrad Costin is clear:

> Robert Fludd came up in Michaelmass 1592, had a room under the new-built library, and left at Lady Day 1600, by which time he was an M.A. of two years' standing. [...] On leaving the College, of which his elder brother had also been a commoner, he went overseas. Coming back in 1605 [...].[78]

Yet, at the beginning of his *De naturæ simia* (*DUCH* I, ii), Fludd states that he travelled overseas for six whole years, visiting France, Spain, Italy and Germany.[79] This has led many scholars to assume that Fludd actually left Oxford in 1598 or, at latest, at the beginning of the year 1599, and not in 1600 as implied by the words of Costin.

I.ii 1598/9-1604/5

Whatever the case, in the course of his works Fludd gave a few details about his voyage, thus helping us in the attempt to recreate his route. The same passage from the *De naturæ simia* mentioned above provides us with another useful piece of information: Fludd drafted the second *tractatus* of the first *tomus* of the *DUCH* while abroad. Moreover, some of the eleven *partes* of it, which correspond to eleven *artes* and *scientiæ*, had been conceived as material for Fludd's tutoring lessons for aristocratic people. Fludd probably enlarged and systematised this draft material upon his return to England.

Fludd's first stop-over on his journey from England was possibly France, and precisely Paris. In his *Anatomia amphitheatrum*, published in 1623, Fludd describes an experiment which a certain chemical operator named La Pierre had carried out near a place in Paris called Le Temple. Fludd relates that this experiment was reported to him by his "dearest friend, noble man and very worthy of trust" Pierre de Bourdaloue via letters sent by the Frenchman to England. Fludd tells us that it was partly for a better knowledge of the experiment, and partly for other commitments, that he set out on a trip to Paris, where he had confirmation of the episode from many people such as a certain Lord Menanton, who was living in that house in that period,

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[77] A. Clark (ed.), *Register of the University of Oxford*, 2 vols, ii, part 3, Oxford, 1888, p. 195.
[78] Costin, *The History of St. John's College*, p. 58.
[79] *DUCH* I, ii, p. 3.

from an unspecified doctor in medicine, from a guest of his, and others.[80] A few pages before, Fludd tells the reader that he has witnessed many experiments with human blood, and mentions in particular a 'peritissimus' (very skilled) German operator in 'chymia vulgaris' (practical alchemy, as opposed to spiritual alchemy) and a French alchemist whom the English physician knows very well. This French operator is, again, the Parisian La Pierre, whom Fludd terms 'amicus meus'.[81] In the same passage Fludd writes that the French alchemist received from the bishop of Noyon,[82] thanks to the intermediation of a 'Lord Menanton' – one of the 'testimonials' of La Pierre's experiment – a 'secret' which is not further specified.

Fludd held the experiences he had made in Avignon as particularly significant for him; the treatise on Geomancy (*DUCH* I, ii, *pars* xi) begins with a detailed account of his encounter with the vice-legate (see below). Another link with Avignon is a certain Reinaudius Avineonensis. None of the scholars who have dealt with Fludd seems to have identified this man. There are two passages where he is mentioned:

> and finally, I composed the treatises on the art of movement, as also the astrology itself, out of gratitude to my dear friend Reinaudius Avineonensis, a young [man] highly educated and of outstanding sweetness of character and kindness.[83]

And:

> moved by the instances of my very dear [friend] Reinaudius, a young man of outstanding parts and modesty, I called on [the Jesuit] and was gracefully received by him. [84]

There is no doubt that Fludd had a great admiration for the young man. It is my opinion that Fludd's friend is Théophile Raynaud (1583-1663).[85] Raynaud entered the Society of Jesus in Avignon on 24 November 1602. At the beginning of that year, or at the end of 1601, in fact, Fludd was with 'Reinaudius' in Avignon, frequenting

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[80] *Anatomiæ amphitheatrum*, p. 233. This passage is quoted, translated into English with a few inaccuracies, in J. Webster, *The Displaying of Supposed Witchcraft*, London, 1677, pp. 318-319.
[81] *AA*, p. 227.
[82] Presumably Charles de Balzac (1597-1626), ordained bishop of Noyon on 8 February 1598.
[83] "Atque tandem etiam artem de motu, uti et ipsam Astrologiam, in gratiam charissimi amici mei Reinaudi Avineonensis iuvenis doctissimi, et morum suavitate seu comitate insignis composui". *DUCH* I, ii, p. 4.
[84] "Precibus igitur charissimi mei Reinaudii, insignis ingenii et modestiæ iuvenis, motum illum adii, et gratiose ab eo exceptus fui". Ibid., p. 719. English translation in C. H. Josten, 'Robert Fludd's Theory of Geomancy and His Experiences at Avignon in the Winter of 1601 to 1602', *Journal of the Warburg and Courtauld Institutes*, 27, 1964, pp. 327-335 (334).
[85] See C. Sommervogel, *Bibliothèque de la Compagnie de Jésus, Bruxelles*, 10 vols, vi, cols 1517-1550, Bruxelles, 1895, and R. García Villoslada, *Storia del Collegio Romano dal suo inizio (1551) alla soppressione della Compagnia di Gesù (1773)*, Rome, 1954, pp. 222 and 323. Raynaud wrote to Marin Mersenne at least once, on 29 April 1648; see J. Havet, 'Bulletin mensuel de l'Académie des inscriptions', *Revue Archéologique*, 11, 1888, pp. 392-396 (394).

Jesuits circles there. The French Jesuit was a theologian and a prolific writer; his huge *opera omnia* encompasses the entire spectrum of Catholic subjects.

In the *tractatus* on motion, Fludd describes a water pump that is to be found in Sainte-Marie-aux-Mines, in Alsace; [86] perhaps Fludd saw this *instrumentum* personally. He might have passed by Lorraine, even though unfortunately we do not know which city or cities he visited there; Strasbourg could have been one of them, since he writes that he was in a place situated not far from the river Rhine.[87] One of Fludd's most important destinations was certainly Paris, since he had been invited there by Pierre de Bourdaloue,[88] secretary of Charles de Lorraine, 4th Duke of Guise (1571-1640).[89] In the French capital Fludd witnessed, and perhaps carried out, alchemical experiments. He then proceeded and stopped in Arras and Lyon.[90] Afterwards, he may have lived for a period in Nîmes,[91] and thence moved to Avignon, also visiting Aix-en-Provence and Marseille.[92] The plan was to head towards Italy but, due to an exceptionally cold and snowy winter, the Saint-Bernard Pass was not accessible, obliging him to prolong his visit – or return – to Avignon. Here he received board and lodging in the house of a "certain captain". He had the occasion to discuss geomancy with other young well-instructed men. Fludd showed his practical skills in that subject to one of them in particular, who then let the others know about his mastery of geomancy. Two of the people present, being envious, referred Fludd's practice to the papal vice-legate, who invited our Englishman to have a conversation with him; this is reported in detail by Fludd himself at the beginning of the treatise on

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[86] *DUCH* I, ii, pp. 454-456.

[87] "Similiter de tali veneficarum cohorte egomet per Lotharingiam a flumine Rheno non multum dissitam, transiens audivi [...]". *DUCH* II, i, *sectio* i, p. 211.

[88] *AA*, p. 233. Unfortunately Fludd does not give his first name; I have found a useful reference in L. Pauthe, *Bourdaloue d'après des documents nouveaux: les maîtres de la chaire en France au XVIIe siècle*, Paris, 1900, p. 12: "[...] Pierre de Bourdaloue, vivant au xvie siècle, *arrière grand-oncle* du jeune Louis et secrétaire de Charles de Lorraine [...]".

[89] See F. Hoefer (ed.), *Nouvelle biographie générale*, 46 vols, xxii, Paris, 1858, cols 788-790.

[90] "Cuiusmodi in civitate Aras, Lugduno, et aliis, tum Italiæ, tum Germaniæ inferioris oppidis observavi". *DUCH* I, i, p. 351. Also, there is an interesting tale of Fludd passing by Lyon and losing his wallet in which all his letters of exchange were. His horse being worn out, the Englishman sent back his dog, a water spaniel, which after half an hour returned with the lost wallet in its mouth. *De philosophia moysaica,* fol. 118r.

[91] "Nam cum Nemosiis Languidochiæ in Gallia viverem, in fonte eius famigerabili sine fundo [...]". *DUCH* II, i p. 192. The episode is also mentioned in *A Philosophicall Key*, fol. 81v.

[92] "Nemosiensem tandem civitatem, invitatus fama, extantium in ea antiquitatum petebam [...]. Mox deinde in urbe Avenione ad flumen Rhodani sita [...]. At ego tandem, reliquis, et iis quidem magnis promissis recusatis Marcelliam perveni [...]. Nemosis igitur primum, mox Avignione, denique Aquæsextiis, et ultimo Marcelliis huius scientiæ penetralia pro virili mea pervestigando, aliquid in ea vidi et didici [...]". *DUCH* II, i, *sectio* ii, p. 48. Incidentally, the university of Aix-en-Provence is where Pierre Gassendi who was one of the protagonist of a polemic against Fludd, studied. Also, a tale regarding Aix-en-Provence is given in the later *De philosophia moysaica*, fol. 122v: "Fuit quidem Eremita prope Aquisextiam Provintiæ degens [...]". (There was a certain eremite living not far from Aix-en-Provence [...]).

geomancy. Unfortunately Fludd never mentions the vice-legate by name, so he has remained hitherto anonymous. A look at the list of vice-legates in Avignon reveals that cardinal Ottavio Acquaviva d'Aragona (1560-1612) was vice-legate in Avignon from 1593 to 1601, followed by cardinal Cinzio Passeri Aldobrandini (1551-1610), who maintained the position until his death. We know that Fludd was in Avignon already in 1601, but we also know that he did not leave before the Saint-Bernard Pass was accessible, hypothetically late spring 1602. Considering that Fludd mentions the year 1602 as the year in which he conversed with the vice-legate and drafted his treatise on geomancy,[93] I would suggest that he met with cardinal Aldobrandini, who therefore is the one to whom he refers as "nobilissimus Vice-Legatus Avineonensis".

In the treatise on geomancy we also gather information on another of Fludd's acquaintances. In fact, the Fludd was not alone when he met cardinal Aldobrandini; he was in the company of his friend Malceau, apothecary of the pope.[94] As S. Hutin correctly pointed out,[95] fortunately for Fludd the vice-legate was deeply interested in the occult. He thus befriended Fludd, accepted his ideas and invited him again to Avignon instead of sending him to the stake.[96] It is on this occasion that Fludd wrote his treatise on the art of geomancy, as he himself tells us in the preface to the *De naturæ simia*. To be sure, this treatise is dedicated precisely to the papal vice-legate (thus to cardinal Cinzio Passeri Aldobrandini), and it looks likely that it was written for him.[97]

Fludd reports that he left Avignon for Marseille, since he had been asked to instruct Charles de Lorraine in arithmetic; to him he dedicated *DUCH* I, ii, *pars* i, i.e. the treatise in arithmetic. Fludd taught Charles' brother, François Alexandre Paris de Lorraine (1589-1614), too.[98] For his instruction, in fact, Fludd writes that he drafted the treatises on geometry, on perspective and on the art of war (*DUCH* I, ii, *partes* iii, iv and vi). Johannes Rösche hypothesises that when Fludd visited the fortress of Malta he was together with him,[99] François being a Knight of the order of Malta.[100]

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[93] And not 1603, as Craven wrote in his *Doctor Robert Fludd*, p. 79. In fact, Fludd writes "[...] anno vitæ et regni Elizabethæ [...] penultimo [...]".
[94] Unfortunately, I have not been able to better identify this monsieur Malceu, and I am not aware of any other scholar who has done so.
[95] Hutin, *Robert Fludd*, p. 44, n. 13.
[96] See Josten, 'Robert Fludd's Theory of Geomancy'. See also Yates, *Theatre of the World*, p. 63.
[97] "Geomantiæ anno penultimo prædictæ Reginæ Elizabethæ [i.e. 1602] nobilissimo Vice-Legato Avineonense conscripsi". *DUCH* I, ii, p. 4.
[98] Chevalier de Guise, Knight of Malta. See Hoefer (ed.), *Nouvelle biographie générale*, cols 791-792.
[99] *DUCH* I, ii, p. 386.
[100] See Rösche, *Robert Fludd*, p. 23.

However, the Knights of Malta constitute a religious order, and its members are not necessarily linked with Malta itself.

It is noteworthy that the House of Guise was related to the Scottish royal house: the second marriage of Mary of Guise (1515-1560), also known as Mary of Lorraine, was with King James V of Scotland in 1538, after her rejection of Henry VIII. She was the mother of Mary Queen of Scots and grandmother of James VI of Scotland, later I of England.[101] She is known for her resoluteness in wanting Scotland to be independent from England and allied with Catholic France. As Rösche has already observed, one can therefore see that Fludd was in contact with the leaders of the extreme Catholic party in France.[102] Moreover, the father of the two brothers Charles and François, i.e. Henry I (1550-1588), who was the founder of the French Catholic League, maintained relations with Louis de Nevers. Now, De Nevers was the treasurer of Henry IV of France, and it is possible that he had contacts with Thomas Fludd, Robert's father, who had accompanied the English troops sent by Queen Elizabeth in support of the French King.[103]

In Provence, Fludd tutored, in both the art of memory and in music, the Marquis d'Oraison, Vicomte de Cadenet and bishop of Riez.[104] Fludd dedicated to him the treatise on *musica instrumentalis*, i.e. the *De templo musicæ* (*DUCH* I, ii, *pars* ii), and the treatise on the art of memory, published in *DUCH* II, ii, *sectio* ii, *portio* iii.

But let us return to Fludd's trip around Europe. Finally free to enter Italy, Fludd probably began his Italian visit in Leghorn and Genoa,[105] thus proceeding towards Tuscany, where he passed by a "mountain between Siena and Pisa", and

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[101] Henceforth James I.
[102] Ibid.
[103] See Ibid., p. 23; see also Huffman, *Robert Fludd*, pp. 5-6.
[104] Fludd mentions an Episcopo Rhiensi (*DUCH* II, i, *sectio* ii, *portio* iii, p. 48), who has not been so far clearly identified. I think the key to his identification is in that 'Rhiensi'. In J. J. Berns and W. Neuber (eds), *Das enzyklopädische Gedächtnis der Frühen Neuzeit*, Berlin, 2011, p. 81, this is translated as "bishop of Reims", even though the correct Latin word for "of Reims" is Remensis. 'Rhiensi' actually refers to Riez, and Riez, incidentally, is the name of the diocese to which the village of Oraison belonged. As far as I know, Peter Hauge is the only scholar who tried to identify this noble Frenchman. He identifies him as "François (André?) d'Oraison" (Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, p. 310). The dates for François d'Oraison, which are 1544-1594, rule him out, since Fludd was in France in 1601/2. André d'Oraison (also called André d'Ormson, born in 1545) looks more plausible. Both François and André were Marquis of Oraison and Vicomte de Cadenet, but to my knowledge only André has also been bishop of Riez (from 1572 to 1577). On the d'Oraison family, see L. de Waroquier, *Tableau généalogique, historique, chronologique, héraldique et géographique de la noblesse*, 9 vols, vii, Paris, 1789, pp. 333-341. Rösche identifies him as 'Marchino of Orizon' without further specification (Rösche, *Robert Fludd*, p. 21, n. 31).
[105] "In Ligurum civitate primaria Genua Empyricum quendam conveni [...]". *DUCH* I, ii, p. 310. "In multis locis, et inter cætera apud Italiæ civitatem Genuam, vidi bastionum et Courtinarum constructionem". Ibid., p. 373.

visited at least Siena and Lucca.[106] He sojourned for a while in Rome, hosted by "a few French acquaintances".[107] It was in the Italian capital that Fludd met a certain Gruterus, who apparently exerted a great influence on Fludd. In fact, in *DUCH* Fludd terms him "my master in this art" (i. e. the art of motion).[108] In 1631, Fludd wrote:

> I was, whilest I did soiourne in Rome, acquainted with a very learned and skilfull personage, called Master *Gruter*, hee was by birth of Swisserland: and for his excellency in the Mathematick, and in the Art of motions and inuentions of Machins, he was much esteemed by the Cardinall Saint *George*: This Gentleman taught mee the best of my skill in those practices: and amongst the rest, hee deliuered this magneticall experiment vnto me, as a great secret, assuring me that it was tried in his Country, vpon many with good successe.[109]

Gruter therefore mastered not only the art of motion, but also mathematics, 'inventions of machines' and 'magnetical' teachings. Fludd goes on giving an example of action *ad distans* reported by master Gruter, and tells us that the Swiss master taught him the times and seasons most suitable to employ a 'magnetical' cure.[110]

The identification of Gruter is a puzzling one. Craven hypothesises that Fludd is talking about the Dutch humanist, antiquarian and scholar Janus Gruterus (1560-1627),[111] and Hutin follows this path.[112] Gruterus was elected curator of the Bibliotheca Palatina in Heidelberg in 1602; he was born in Antwerp (thus not in Switzerland), and to my knowledge there are no evidences to prove that he was in Rome in 1602/3, while Fludd was in Italy. According to Huffman, the identification with Janus Gruterus is "possible but unlikely",[113] while other scholars simply avoided

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[106] "Huiusmodi etiam munimentum vidi in Hetruria, super montem elevatum inter Siennam et Pisam, quod Apogeum vocitarunt". *DUCH* I, ii, p. 378. "Civitas etiam Luca, in Hetruriæ limitibus sita [...]". Ibid., p. 383. "Huiusmodi etiam speciei sunt Mediolani atque citadella Siennæ Hetruriæ, cum infinitis aliis, quas itineribus meis observavi, inter quas optima est nova illa civitatis insulæ Maltæ descriptio". Ibid., p. 386.

[107] "Dum Romæ inter nonnullos Gallos mihi familiares olim viverem [...]". Ibid., p. 305.

[108] "Dum Romæ manerem, *Gruterus, Cardinalis Sexti Georgii Ingeniator*, mihique in hac arte Magister huiusmodi instrumentum pro Cardinale suo Domino fabricavit [...]". Ibid., p. 460.

[109] *Doctor Fludds answer unto M. Foster*, p. 133.

[110] The text continues: "When (said he) any one hath a withered and consumed member, as a dried arme, leg, foot, or such like, which physicians call an Atrophie of the lims, you must cut from that member, bee it foot or arme, the nailes, haire, or some part of the skin, then you must pierce a willow tree with an Auger or wimble vnto the pith, and afterward put into the hole the pared nailes and skin, and with a peg made of the same wood, you must stoppe it close: Obseruing that in this action the Moone be increasing, & the good Planets in such a multiplying Signe, as is Gemini, and fortunate and powerfull ouer Saturne, which is a great dryer. The selfe-same effect (said hee) you shall finde in you, take the nailes and haire, which is cut off the member, and close them in the roote of an hasle tree, and shut vp the hole, with the barke of the tree, and after couer it with the earth, and (said he) it hath beene tried, that as the tree dayly groweth and flourisheth, so also by little and little, will the patient recouer his health. But you must with diligence obserue, the motion of the heauenly bodies, and especially the places of the Sunne and Moone, when this is effected. And to this intent, he did disclose vnto me, the time and seasons when the preparation vnto such a cure should be effected". Ibid., pp. 134-135.

[111] Craven, *Doctor Robert Fludd*, p. 27.

[112] Hutin, *Robert Fludd*, p. 44.

[113] Huffman, *Robert Fludd*, p. 188, n. 35.

the issue. As it stands, it is indeed difficult to avoid any doubt about who Fludd's master in the mechanical arts and 'magnetic' medicine was, but I would like to stress a few points here which may perhaps be of help in this respect. Janus Gruterus had amicable relationships with Johan Theodore De Bry, Fludd's publisher, and he used the services of Matthaeus Merian, De Bry's close collaborator, who was regarded as one of the best copper engravers in late sixteenth- and early seventeenth-century Europe.[114] Merian engraved many of Fludd's plates until 1626, which certainly played an important role in the success of Fludd's books up until our time, thanks to the accuracy and beauty of the plates he was able to produce.

In the first mention Fludd gives of Gruterus (*DUCH* I, ii, p. 460), he says that the Swiss master is "Cardinalis Sexti Georgii Ingeniator", and both in the English version of *Doctor Fludds answer vnto M. Foster* and in its Latin translation Gruterus (or Gruter) is said to be esteemed for his excellence in mathematics, the art of motion and the inventions of machines by a cardinal S. George.[115] It is my opinion that in the first occurrence the publisher, or Fludd himself, made a mistake and actually meant 'Sancti' in place of 'Sexti'. Incidentally the vice-legate whom Fludd met in Avignon, cardinal Cinzio Passeri Aldobrandini, was also deacon of San Giorgio in Velabro (Rome), and was indeed known as 'Cardinale di San Giorgio';[116] I think this is whom Fludd was actually referring to. Therefore, further research about this cardinal and his networks might shed some light and perhaps disclose new details.[117] Finally, the fact that Fludd in Rome was hosted by some French acquaintances perhaps has connections with his relationship with Avignon's vice-legate.

After sojourning in Rome Fludd visited Capua, Pozzuoli, Naples and Sicily.[118] He is said to have met William Harvey in Padua, and almost all scholars repeat this information, though definitive proof for this has yet to be found.[119] Whilst it is certain that Harvey studied at the University of Padua between 1599 and 1602 under

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[114] Van Groesen, *The Representations*, p. 3.
[115] *Responsum ad hoplocrisma-spongum M. Fosteri presbiteri*, Gouda, 1638, fol. 18^{v}.
[116] F. Parisi, *Della epistolografia di Francesco Parisi. Contiene le memorie della vita del cardinal Cinzio Passeri Aldobrandini, detto Cardinal di S. Giorgio*, Rome, 1787.
[117] Unfortunately, during a first superficial perusal of some of the letters by and to the Italian prelate I have not found references either to Gruter or to Fludd. Moreover, in *De philosophia moysaica*, fol. 132^{r}, Fludd calls the swiss master 'Rutherus', thus opening to other interpretations (e.g. someone called Ruther).
[118] *DUCH* I, i, pp. 192, 196.
[119] See, for example, John Fahie in his *Galileo: His Life And Work*, London, 1903, p. 50: "To the name of William Harvey, whom we have mentioned above as, probably, a friend of Galileo, we may now add the names of a few others of English and Scotch nationality, as, Robert Fludd, "The Father of the English Rosicrucians," who was studying in Padua circa 1602". Repeated, amongst others, in Godwin, *Robert Fludd*, p. 7. The assumption that Fludd met Harvey in Padua is indeed a possible and fascinating one, though difficult to prove.

Girolamo Fabrizi d'Acquapendente (1537-1619), we cannot say for sure that Fludd, four years older than Harvey, was in Padua with him. Yet, it is possible that Fludd visited what was one of the most important universities in Europe at that time, especially if one considers the prominence of the Paduan athenaeum in regard to medical studies.

What is clear is that Fludd passed by Venice, and from there was directed towards Germany, and specifically Augsburg.[120] He also visited Rheinberg.[121] It is often assumed that Fludd travelled extensively in Germany, and that he visited the court of the Elector of the Palatinate in Heidelberg and the Landgrave Moritz of Hesse-Kassel in Kassel. Though this conjecture has been repeated by several scholars, and is indeed an alluring one, it is unproven, and springs mainly from a supposed 'Rosicrucian connection', which sees Fludd and Michael Maier (1568-1622) as close friends. This rumour began at the beginning of the nineteenth century with Buhle's work on the Rosicrucian and Freemasonic orders.[122] Craven picked up the suggestion and maintained the same opinion in his biographies of both Fludd (1902) and Maier (1910). Other writers such as Lennhoff and Naudon promoted the same idea.[123] Frances Yates wrote much about a possible connection between the two, particularly emphasising the facts that the two philosophers shared the same Rosicrucian and Paracelsian ideals and, especially, the same publisher (Johan Theodore De Bry).[124] Huffman uncritically followed Yates and, though admitting that there is no definitive evidence to prove the friendship between the two men, stated that

> there are, however, sufficient points of commonality to warrant a presumption of their acquaintance, or, at the least, correspondence.[125]

Moreover he suggests, as Yates did before him, that it was Michael Maier who carried Fludd's manuscripts overseas in order to be printed by De Bry (see below). Maier and Fludd, however, never mention each other in their writings. True, Maier

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[120] "Ego Venetiis versus Augustam Germaniæ inter montes Alpinos iter faciens [...]". *DUCH* I, i, p. 187. "In itinere meo a Civitate Venetiana Augustam Vindelicorum versus [...]". *Philosophia moysaica*, fol. 47^{v}. See also *A Philosophical Key*, fols 76^{v}-77^{r}.

[121] "Observavi quoque et aliud huius munimentum Rheno flumine circumdatum, quod pro defensione oppidi dicti Rheinberge, illo in loco situatur: Dominium etiam habet super flumen illud; ita ut sine illius, permissione nihil sursum vel deorsum transportari possit". *DUCH* I, ii, p. 378.

[122] J. G. Buhle, *Über den Ursprung und die vornehmsten Schicksale der Orden der Rosen-Kreuzer und Freymaurer*, Göttingen, 1804, pp. 245 ff.

[123] E. Lennhoff, *Die Freimaurer. Nachdruck der Ausgabe von 1929*, Bindlach, 1981, p. 63; P. Naudon, *Les origines religieuses et corporatives de la franc-maçonnerie. Nouvelle édition entièrement refondue*, Paris, 1963, p. 271.

[124] See F. Yates, *The Rosicrucian Enlightenment*, London, 1972, pp. 70-90; and *The Art of Memory*, pp. 324-325.

[125] Huffman, *Robert Fludd*, pp. 153 ff.

referred once to a *Tractatus de tritico* in his *Atalanta fugiens*,[126] and this might be the experiment with wheat carried out by Fludd and described in the first *sectio* of his *Anatomiæ amphitheatrum* (1623), which was available in the manuscript *A Philosophicall Key* only in 1619 or even 1620,[127] whilst *Atalanta fugiens* was published as early as 1618. Moreover, why not mention Fludd by name, especially if he was a close friend? And why did Fludd never mention Maier or his works in his lengthy publications? As Figala and Neumann rightly stress,

> it remains incomprehensible why Maier and Fludd should have kept their relationship strictly private. That they were afraid to «be accused of being members of the Fraternity» R. C. [as Huffman maintained], could not possibly have been the reason: after all, it is known well enough that neither of them hesitated to declare himself favourable to the Rosicrucian movement in public script, just as the *Fama Fraternitatis* demanded.[128]

Already in 1924 Arthur Waite expressed some doubts about this issue,[129] and so did Allen Debus in 1965.[130] Finally, in the last decade of the twenty-first century clear evidence against the Fludd-Maier myth has been given by Figala and Neumann,[131] and later Moran.[132] Rösche respects this tendency, which I also share.[133] After all, Michael Maier himself gives us a significant clue. In a letter addressed to Moritz the Landgrave he wrote that he had asked his servant

> to procure for Your Highness at Frankfort from that Theodor de Bry the big treatises in folio by that Englishman, Fludd [...]. I perceive that the author is very insolent in his censure of nations [...] making the Germans (who share the Empire and are truly in command of things) idle, negligent and slow, whereas he portrays the English (which

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[126] "Hinc dicunt philosophi, quod aurum eorum in terram albam foliata seminandum sit, quasi velint, seminationem tritici spectandam esse pro exemplo et imitanda, quod author tractatus de tritico et Jodoc. Greverus optime in suis descriptionibus fecerunt [...]". (Hence the Philosophers affirm it to be sowed in White foliated Earth, as if they would have said that the sowing of Wheat must be looked upon as an example and consequently imitated. Which the Author of *tractatus de tritico* and Jodoc. Greverus have most excellently performed in their descriptions [...]). M. Maier, *Atalanta fugiens*, Oppenheim, 1618, p. 35. Translation by Clay Holden.

[127] For a dating of the manuscript, see Fludd, *Robert Fludd and His Philosophicall Key*, p. 23. Before Debus, C. H. Josten had proposed 1618-20 ("One may, therefore, conclude that the "Philosophicall Key" may have been begun to be written after 10 August, 1618, and that it was finished [...] in 1619"; C. H. Josten, 'Robert Fludd's "Philosophicall Key" and his Alchemical Experiment on Wheat', *Ambix*, 11, 2, 1963, pp. 2-23 (6)). For consistency with the theory of Maier mentioning Fludd's experiment with the wheat, Huffman even proposed a "1618-20 or earlier" (Huffman, *Robert Fludd*, p. 153).

[128] N. Figala and U. Neumann, ''Author, cui nomen Hermes Malavici'. New Light on the Bio-Bibliography of Michael Maier (1569-1622), in P. Rattansi and A. Clericuzio (eds), *Alchemy and Chemistry in the 16th and 17th Centuries*, Dordrecht, 1994, pp. 121-147 (133).

[129] A. E. Waite, *The Brotherhood of the Rosy Cross*, London, 1924, pp. 314 ff.

[130] A. G. Debus, *The English Paracelsians*, London, 1965, p. 106.

[131] K. Figala and U. Neumann, 'Michael Maier (1569-1622): New Bio-Bibliographical Material', in Z. R. W. M. von Martels (ed.), *Alchemy Revisited: Proceedings of the International Conference on the History of Alchemy at the University of Groningen, 17-19 April 1989*, Leiden, 1990, pp. 34-50 (35).

[132] B. T. Moran, *The Alchemical World of the German Court: Occult Philosophy and Chemical Medicine in the Circle of Moritz of Hessen*, Stuttgart, 1991, pp. 107-108.

[133] Rösche, *Robert Fludd*, p. 74. See also H. Tilton, *The Quest for the Phoenix: Spiritual Alchemy and Rosicrucianism in the Work of Count Michael Maier (1569-1622)*, Berlin, 2003, p. 27, n. 109.

> astonishes me) as magnanimous, reckless, intrepid etc.: indeed I would like to give those immature censors a taste of that whip, if nobody should dissuade me, and show them who, of that sort and importance the Germans are.[134]

This clearly demonstrates at least three facts: it is clear that Maier did not know the English author personally; secondly, the tone of the letter does not suggest any amicable relationship between the two – rather, the opposite; and lastly, Maier did not know Fludd's works until they had been printed, which rules out the possibility of him carrying the manuscripts of the *De utriusque cosmi historia* from England to Germany, as suggested for instance by Yates and Huffman. As far as the bearer of the Fluddean manuscripts is concerned, Ron Heisler has recently proposed instead the German uranographer Johann Bayer (1572-1625):[135] a path certainly worth of further investigation, together perhaps with the suggestion of him being Justus Helt (see chapter II). A final remark has to be made regarding Fludd and Maier's printer, who according to Frances Yates had a conscious role in promoting Rosicrucian ideas. Actually, as Groesen has demonstrated,

> Yates' claim that De Bry should be regarded as 'The Palatinate publisher' is farfetched [...]. Yates' characterisation of Johan Theodore as someone with Rosicrucian sympathies [...] is, at best, speculative, as his religious and spiritual preferences were not reflected in the officina's publications.[136]

At any rate, while in Germany Fludd might have visited the court of the Elector of the Palatinate in Heidelberg and the Landgrave Maurice of Hesse-Kassel in Kassel; but again these are only speculations that previous scholars have made in search of 'Rosicrucian connections'. As Huffman, following Frances Yates, puts it,

> it is highly possible that Fludd visited the court of Moritz the Learned, Landgrave of Hesse, whose sometime personal physician was Michael Maier, Fludd's philosophical brother, from whose presses came the later Rosicrucian manifestos.[137]

That Maier was 'Fludd's philosophical brother' it is not so obvious; they certainly shared some ideals and Rosicrucian sympathies, but a comparison between the works of the two alleged 'brothers' and other details already mentioned lead to

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[134] "Video authorem in censuris de nationibus largiendis esse valde insolentem, dum [...] Germanos (alias imperii participes et vere rerum Dominos) faciat ignavos, negligentes et tardos, Anglos econtra (quod miror) magnanimos, audaces, non meticulosos etc.: Vellem equidem illis immaturis censoribus virgulam illam, si quis non dissuaderet, adimere et monstrare, Qui, quales et Quanti essent Germani". Letter from Maier to Moritz, dated Stockhausen, 17 April 1618. Translation in: Figala and Neumann, ''Author, cui nomen Hermes Malavici'', pp. 134-135. The authors add that it looks like Maier published his *Verum inventum* (Frankfurt, 1619) to "give a taste of that whip" to Fludd and others (Ibid., p. 146, n. 93).

[135] R. Heisler, 'Robert Fludd: A Picture in Need of Expansion', *The Hermetic Journal*, 1989 (http://www.levity.com/alchemy/h_fludd.html).

[136] Van Groesen, *The Representations*, p. 94, n. 66.

[137] Huffman, *Robert Fludd*, pp. 13-14.

different conclusions. Moreover, Groesen's recent study of the presses which the Landgrave Maurice sponsored for almost thirty years, i.e. those of Theodore De Bry, reveals at least two important factors: that Maurice did not exert much influence on what to publish or not; and that the same De Bry did not have particular Rosicrucian sympathies.

It is certain that Fludd was at some point in Prague, since he writes that he visited a synagogue there.[138] He probably came into contact with the political and philosophical circles that formed the environment for the Rosicrucian movement. There is no need to stress the important role that Prague was playing in the years of Rudolph II, emperor of the Holy Roman Empire from 1576 to 1612. Rudolph II was particularly attracted to the occult, and surrounded himself with alchemists, magicians, astrologers and artists alike. In this way, he contributed towards making Prague one of the main European centres of arts and sciences of that time.[139] There is no doubt that Fludd might have felt at home in such an environment; unfortunately, we still know little, if anything, about his visit to the Bohemian capital. Finally, there is evidence that Fludd passed by the Netherlands, since there he saw various casemate fortresses and military fortifications.[140]

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[138] "Et memini, me audivisse in concione cuiusdam Rabbi Judaici, in Pragæ Synagoga sermonen habentis". *DUCH* II, ii, *sectio* i, *portio* i, p. 105.

[139] One of the most worthy accounts on Rudolph II and 'his' Prague remains R. J. W. Evans, *Rudolf II and His World: A Study in Intellectual History, 1576-1612*, Oxford, 1973.

[140] "Huiusmodi autem Cassemattas in Hollandiæ et Gerlderlandiæ fortificationibus vidi [...]. *DUCH* I, ii, p. 351. "Huiusmodi etiam munimenti species est illa iuxta *Bomellam* Hollandiæ, fere super *Wachalis* fluminis ripas per se posita, quæ dicitur munimentum *S. Andreæ* [...], quam tantuum observavi [...]". *DUCH* I, ii, p. 376. 'Bomellam' refers to Bommelerwaard, 'Wachalis' to the river Waal. Fludd is talking about the fort of S. André; I have found a reference to it in J. Hübner, *Volmaakte geography*, 3 vols, i, Leiden, 1733, p. 430.

I.iii 1604/5-1637

After having returned to England about 1604/5, Fludd entered Christ Church College in Oxford, where he studied medicine. On 16 May 1605 he was awarded M.B. and M.D., and received a licence to practice medicine. As Huffman notes, the short time between the matriculation and the award is not exceptional, since the main requisite for being considered entitled was knowledge of the works of Galen and Hippocrates.[141] Then Fludd moved to London, where he set up house in Fenchurch Street and applied to the College of Physicians;[142] in fact, in order to practise in the English capital one had to obtain an additional licence issued from that body. He was tested on 8 November 1605, and

> when he was examined in both Galenical and Spagyrical medicines he was not satisfactory enough in either. They therefore advised him to apply himself more diligently to his studies.[143]

It is interesting to note that Fludd was found deficient in both Galenical and chemical medicine. Debus has already put the stress on what he called the 'Paracelsian compromise' which took place in England during Fludd's time, i.e. the partial acceptance of Paracelsian medicine devoid of its philosophical-mystical background and combined with Galenical elements.[144] Fludd was certainly influenced by the 'more Continental' cosmological and alchemical teachings of Paracelsus as the foundation of chemical medicine.[145] This rejection, thus, may be an early signal of Fludd's European awareness, an element that would be clear later in his published works.

On 7 February 1606 he successfully passed the examination and was granted the licence to practise in London. Nevertheless, his licence was soon withdrawn due to someone having denounced Fludd's Paracelsian enthusiasms and his rejection of Galen. But this was only a temporary hitch: in fact, after several successive examinations, on 20 September 1609 Fludd was admitted as Fellow of the College, and he became a distinguished one. He took the role of Censor of the College four

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[141] Huffman, *Robert Fludd*, p. 15.
[142] Later, he moved to Coleman Street. See Ian Maclean, 'Fludd, Robert (bap. 1574, d. 1637)', *Oxford Dictionary of National Biography*, Oxford, 2004; online edn, Jan 2008 [http://www.oxforddnb.com/view/article/9776, accessed 6 July 2014].
[143] G. Keynes, *The Life of William Harvey*, Oxford, 1966, pp. 134-135. Quoted in Huffman, *Robert Fludd*, pp. 15-16.
[144] A. G. Debus, 'The Paracelsian Compromise in Elizabethan England', in *Ambix*, 8, 2, 1960, pp. 71-97.
[145] Huffman, *Robert Fludd*, p. 16.

times: in 1618, 1627, 1633 and 1634;[146] he also gave a public lecture on anatomy.[147] In 1627,

> the Privy Council ordered that the President of the College along with six other doctors and some London aldermen should look into a complaint about noxious fumes from an alum works in the parish of St Catherine's. Fludd was one of the examiners of the works, and the subsequent report to the Privy Council was signed by John Argent, President; John Gifford, the treasurer; William Harvey; Fellows William Clement, Fludd, Ottuell Meverell (also a 1627 Censor), Sir Simon Baskerville (physician to James I and Charles I); and an alderman, Hugh Hamersley.[148]

Fludd's name appears as one of the authors in the *Pharmacopœia Londinensis*, the guide for the London apothecaries in the matter of pharmaceutical preparations. This was published in 1618 and enjoyed several reprints; its English translation first appeared in 1649.

It has to be mentioned that Fludd also set up an alchemical laboratory where he had a French technician. He even managed to produce a steel of a better quality compared to that produced in England at that time. But

> [o]n 12 May 1618, the two holders of the royal monopoly on steel-making in England complained to the Privy Council that Fludd had brought in a Frenchman, had set up furnaces, and was encroaching on their monopoly by making steel.[149]

Following Fludd's counter-petition, the Council granted the patent to Fludd, who offered to the King one third of the profits from the production of that steel. That the operator of Fludd's alchemical laboratory was French, one can infer from the records of the Privy Council of England:

> [...] Robert Fludd, doctor of phisick, hath, at great charge, drawen over hither from forraine parts certaine persons, and amongst others one John Rochier, a Frenchman, skillfull and expert in makeinge of steele [...].[150]

If the record is faithful, one can deduce that Fludd brought to England not only the technician John Rochier, but also other 'certaine persons', whose names or profession we have unfortunately no way of discovering.

From a letter of the 20 August 1606 we learn that Fludd made at least one other trip to the Continent. In fact, his father Thomas wrote to the Earl of Salisbury that

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[146] Munk, *The Roll of the Royal College of Physicians*, p. 142.
[147] On 27 June 1620. The text of the lecture is included in *AA*; see chapter III.
[148] Cited in Huffman, *Robert Fludd*, p. 18.
[149] Huffman, *Robert Fludd*, p. 23.
[150] J. V. Lyle (ed.), *Acts of the Privy Council of England 1542-1628*, 43 vols, xxxvii, London, 1930, pp. 284-285.

> [a] son of mine being a doctor of physic and greatly desirous to have conference with certain physicians, Italian and French, now in France, his acquaintance and good friends in his travel beyond seas, touching secrets and other things concerning that study, and to return within two months, about a month past went over into France and landed at Dieppe, from whence he wrote the letter herein, which came not to my hands till last night. Although this he writes of was a good while since, yet I thought it my duty to send the letter to you that it may appear whether the men were any searched for, and that a better eye may be had to such boats; for it seems the boat came of purpose, else would he never have landed at Dieppe being of good distance from the town he came from.—Milgate, 20 August, 1606.
>
> The Enclosure:—
>
> Robert Fludd to Sir Thomas Fludd, his father. I was examined lying at Hide (Hythe) because I was of the description of him that was searched after, for he had, they said, a small stature, lean visage, auburn hair, etc.[151]

Since Fludd was granted the licence to practice from the Royal College of Physicians of London on the 7 February 1606, one can assume that he set out just after that date. In July, as the letter says, he was in Dieppe, and during his trip towards France he had been stopped in Hythe (not far from the port of Dover). He had been suspected of being a traitor, since the description the officials had matched with the physiognomy of Robert Fludd. Notwithstanding this hiccup, the English physician managed to arrive in France where, we can imagine, he conversed with other physicians and intellectuals.

Besides his professional life as a member of the College of Physicians, his medical practice and his alchemical activities, Fludd was a very prolific writer, and if his speculations alone were not enough to guarantee an exceptional productivity on paper, his sensitivity to criticism spurred him to reply to any critic he encountered, thus providing us with essential information about the historical context in which Fludd moved. From 1616 onward Fludd published a large number of volumes; I shall deal with the chronology of his publications below. Fludd died on 8 September 1637, leaving in his will precise instructions about his funeral and his burial, to be carried out in the church of his home-parish, in Bearsted.

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[151] M. S. Giuseppi (ed.), 'Cecil Papers: August 1606, 16-31', in *Calendar of the Cecil Papers in Hatfield House*, 24 vols, xviii, 1606, London, 1940, pp. 235-269 (241-242).

I.iv A chronology of Fludd's publications

Though Fludd, as I have shown, started the collection of the material for his *historia technica* of the macrocosm and had finished the manuscript of the entire first *tomus* of the *De ustriusque cosmi historia* by 1611/2, he did not publish anything until 1616. In fact, following the publication of the first two Rosicrucian manifestoes in Germany, i.e. the *Fama fraternitatis* (1614) and the *Confessio* (1615), a growing debate about the ideas expressed in these pamphlets stimulated the intellectuals of Europe (see next chapter). Fludd therefore stepped in and gave his contribution; in 1616 he published a short treatise in defence of the Rosicrucian movement. Published in Leiden, it was printed in time to feature at the biggest European book fair, that of Frankfurt, in the same year. Fludd promised an upcoming longer volume: the promise was maintained and the following year the *Tractatus apologeticus integritatem Societatis de Rosea Cruce defendens* was given to the printers.[152] In the same year another book saw the light of the day; its title is *Tractatus theologo-philosophicus* by Rudolfo Otreb Britanno, an anagram for 'Roberto Fludo'.

As if this was not enough, the year 1617 also witnesses the publication of the first *tractatus* of the first *tomus* of the *De utriusque cosmi historia*, dedicated to King James I. As Fludd attests in a later work, he sent the second *tractatus* to the publisher together with the first, but that would be published only in the following year, 1618, thus concluding the first *tomus*. While reactions to Fludd's first three works (the *Apologia* and the two *Tractatus*) had been rather scanty, the first *tomus* of the *DUCH* caused reverberations both in England and the Continent. I shall address more thoroughly these reactions to Fludd's *historia* of the macrocosm in the next chapter, but for now I shall simply outline the outputs that they produced. First of all, soon after the completion of *tomus* I of the *DUCH* Fludd had to defend his philosophy in front of the King. After a successful meeting with James I, he penned two manuscripts in some ways related to each other: the ten-leaved *Declaratio brevis* and the longer *A Philosophicall Key*. The former was arguably written sometime in 1618, while the latter might have been produced in 1619 or 1620.

As far as the reception outside the British Isles is concerned, Fludd himself, in the above-mentioned *Declaratio*, names a few European intellectuals and physicians who have praised his works, as we shall see in the next chapter. Together with the

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[152] This will be later published in German translation by Adam Michael Birkholz with the title *Schutzschrift für die Aechtheit der Rosenkreutzergesellschaft* (Leipzig, 1782)

praise, particularly emphasised, of course, by Fludd, criticism came too. One of the most prestigious in this respect is that which came from the German astronomer Johannes Kepler (1571-1630). As soon as he read Fludd's *historia* of the macrocosm, in fact, Kepler added an appendix to his own epoch-making *Harmonices mundi* (Linz, 1619) in which he addressed Fludd's theories on *musica mundana* and mathematics. The dispute between Fludd and Kepler gave rise to an interesting debate, which has already been studied at length by other scholars.[153] I shall illustrate the impact which the Fludd-Kepler debate had on Fludd's speculation on music in chapter IV; for now, it is sufficient to say that Fludd published two volumes dedicated to examining and replying to Kepler's objections. These are *Veritatis proscenium* (1621) and *Monochordum mundi symphoniacum* (1623).

In 1623, London, it was published a pamphlet entitled *The tillage of light, or, A true discoverie of the philosophicall elixir commonly called the philosophers stone* by the writer Patrick Scot (*fl*. 1618-1625). In this work "Scot sought to establish sound theological and moral guidelines for the alchemist's quest".[154] He was basically against the practical alchemy. For Scot, alchemy must exclusively be a spiritual development with the aim of gaining the supreme knowledge. The alchemical gold is but an allegory of this achievement and not a real, material metal; in other words, it is 'just' an allegory. Fludd's opinion was different, and he did not wait too much before replying in written form to Scot's little tract. The result was a manuscript that has remained unpublished until modern times.[155] Its title is *Truth's Golden Harrow*, and it is a ten-thousand words treatise in which Fludd defended practical alchemy and maintained that transmutation of metals can happen, even though "the true philosopher is not concerned with such vulgar matters, only with the greater work, the transmutation of the soul".[156]

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[153] A few examples include: W. Pauli, 'The Influence of Archetypal Ideas on the Scientific Theories of Kepler', in C. G. Jung and W. Pauli, *The Interpretation of Nature and the Psyche*, London, 1955, pp. 148-240; R. S. Westman, 'Nature, Art, and Psyche: Jung, Pauli, and the Kepler-Fludd Polemic', in Vickers (ed.), *Occult and Scientific Mentalities*, pp. 177-229; Schmidt-Biggemann, 'Der Streit um Kosmologie'; P. Boner, *Kepler's Cosmological Synthesis: Astrology, Mechanism and the Soul*, Leiden, 2013, pp. 135-166; Rösche, *Robert Fludd*, pp. 465-494.

[154] W. A. Shaw, 'Scot, Patrick (fl. 1618–1625)', *rev*. Elizabeth Haresnape, *Oxford Dictionary of National Biography*, Oxford, 2004; online edn, Jan 2008 [http://www.oxforddnb.com/view/article/24904, accessed 11 September 2014].

[155] The manuscript has been reprinted in C. H. Josten, 'Truth's Golden Harrow. An Unpublished Alchemical Treatise of Robert Fludd in the Bodleian Library', *Ambix*, 3, 3-4, 1949, pp. 91-150.

[156] Huffman, *Robert Fludd*, p. 62. On The Scot-Fludd debate, see B. Janacek, 'Robert Fludd, Natural Theology, and the Alchemical Debate of 1623', in *Alchemical Belief: Occultism in the Religious Culture of Early Modern England*, University Park, PA, 2011, pp. 44-74.

In the meantime, the publication of the *De utriusque cosmi historia* project continued with the volumes concerning the microcosm. In 1621 the first and the second *portio* of the first *tractatus* of the second *tomus* would see the light of the day; in 1623, the third *portio*, and in 1626 the fourth. Instead of completing the original plan of the *historia* of the microcosm, Fludd in 1629 issues the first *tractatus* of the first *tomus* of a new project, namely the *Medicina catholica*. In the same year he replies, with *Sophiæ cum moria certamen*, to the attack the French friar Marin Mersenne (1588-1648) carried out a few years before in his *Quæstiones celeberrimæ in Genesim* (1623). In rapid succession the two *sectiones* of the second *tractatus* would be published shortly thereafter, in 1631, thus completing the first *tomus* of Fludd's *Medicina catholica*.[157]

In the year 1631 Fludd released another publication, this being the reply to the attack in print he had received by the clergyman William Foster (1591-1643) of the parish of Hedgerley, Buckinghamshire, who in 1631 published his *Hiplocrisma-spongus, or, a Sponge to Wipe Away the Weapon-Salve*. As the title suggests, this is a polemical text against the use of the weapon-salve, i.e. the 'magnetical' cure, and accuses its practitioners of involvement with diabolical forces. Fludd did not wait too long to address this challenge, and issues his *Doctor Fludds Answer unto M. Foster, or, The Squezing of Parson Fosters Sponge*, the Latin translation of which would be published even years later. In 1633 Fludd released his *Clavis philosophiæ et alchimiæ Fluddanæ*, this being a reply to the French philosopher and scientist Pierre Gassendi (1592-1655). In fact, Gassendi had been asked by Mersenne to review Fludd's books and to publish an examination of his philosophy. The Fluddean *Clavis* represents, therefore, a second reply to Mersenne himself too.[158] It is the last publication that would see the light of the day while Fludd was still alive. The posthumous *De philosophia moysaica* (1638) is not the continuation of the *Medicina catholica*, which was thus left with only the first of two planned *tomi*, but is rather a stand-alone work divided in two parts. While the first of these is basically a re-statement and a synthesis of the foundations of Fluddean philosophy, the second one shows interesting traits, which I shall analyse in chapter V.

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[157] See chapter III of this dissertation for an in-depth account of the two projects' plans and their interrelations.

[158] On the Mersenne-Gassendi-Fludd debate see, amongst others, S. Taussig, *L'examen de la philosophie de Fludd de Pierre Gassendi par ses hors-texte*, Pisa, 2009; L. Cafiero, 'Robert Fludd e la polemica con Gassendi', *Rivista critica di storia della filosofia*, 20, 1965, pp. 4-15; J. Rösche, *Robert Fludd*, pp. 495-529.

For the sake of completeness, I include here a note on the publishers of Fludd's works. The publisher of the first two works (the *Apologia compendiaria* and the *Tractatus apologeticus*) was Godfrey Basson in Leiden. Godfrey was the son of the English printer Thomas Basson, who established the printing activity in the Dutch city. With the *Tractatus theologo-philosophicus* (1617), though, a new successful venture with the prominent Johan Theodor De Bry firm began; it was this latter who published all the volumes belonging to the *De utriusque cosmi historia* project, except for the *Philosophia sacra* (1626). As Fludd himself refers, the reason why he chose to publish his *historia* in Germany and not in his homeland was purely economical:

> I sent them beyond the Seas, because our home-borne Printers demanded of me five hundred pounds to Print the first Volume, and to find the cuts in copper; but beyond the Seas it was printed at no cost of mine, and that as I would wish: And I had 16. coppies sent me over with 40. pounds in Gold, as an unexpected gratuitie for it.[159]

Notwithstanding these advantages of publishing abroad, this led to an issue about the dedication of the first *tomus*. Again, it is Fludd himself to give us particulars of this incident in his *Declaratio brevis*:

> [...] since from a letter sent by a certain friend I realised that there was some controversy between the individual to whom I entrusted this volume in England and the engraver and printer concerning the dedication of my work. While the former endeavored to assign the honor of my book and labor to the Landgrave of Hesse, the latter individuals in fact endeavored to assign it to the Count Palatine, their own prince, and (as I have here some witnesses to this matter), at last I was compelled to transmit, unexpectedly, that twofold dedication, namely to God and to you, my King, so that I might absolutely prohibit them from assigning these works of mine to any mortal except to my King alone, to whom I acknowledge I owe what is mine. And this is the reason that I, a fosterling, have chosen you alone before any foreign prince as my Mecaenas and patron, not by any presumption, but induced by a love of Your Majesty, who is far better deserving than those who would have been substituted for you.[160]

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[159] *Doctor Fludds answer unto M. Foster*, pp. 21-22.

[160] "Porro etiam, quoniam ex literis a quodam Amico missis intellexi, aliquam inter ipsum, cui volumen hoc in Anglia commisi et Chalcographum cum Typographo iunctum de operis mei dedicatione fuisse controuersiam, dum ille Landgrauio Hassiæ, hi vero Comiti Palatino, Principi suo, libri et laboris mei honorem attribuere contenderunt, coactus tandem fui (quemadmodum eius rei testes hic habeo nonnullos) dedicationem illam duplicem, DEO videlicet et tibi Regi meo subito transmittere, ut absolute eos prohiberem, ne ulli mortalium præterquam soli Regi meo, cui quod meum est me debere agnosco, lab ores hosce meos asscriberent. Atque hæc est ratio illa, quod sine Regia Mtis. Vae. venia non quidem præsumptione aliqua, sed amore erga Mtem. Vam. ductus, earn solam optime de subditis merentem ante ullum Principem exoticum pro Mecænate et fautore mea alumnus elegi. Sed et ut illud non temere aut inconsulte a me factum fuisse sentiat Mtas. Va. æquum erit Mtem. Yam. intelligere, me plures e Germania accepisse literas certiorem me facientes, quod maxime illius nationis literati, Doctoresque cuiuslibet professionis tam Pontificÿ et Lutherani, quam Caluiniani longe supra mea merita Volumen hoc meum laudauerint operaque mea unanimi consensu approbare visi sint: Vnde neminem in omni terrarum orbe horum meorum laborum et lucubrationum a Doctis ita approbatarum honore et dedicatione digniorem esse reputans, quam Mtem. Vam. Regem videlicet meum tum honore tum scientia et literis eminentissimum, ei præcipue præ omnibus alÿs opera hæc mea dicare libens lubens decreui". *Declaratio brevis*, fols 5^{r}-5^{v}. Latin text and English translation in W. Huffman and R. A. Seelinger, 'Robert Fludd's "Declaratio Brevis" To James I', *Ambix*, 25, 1978, pp. 69-92 (84-85).

Since the individual entrusted of carrying the manuscript of the first *tomus* of the *De utriusque cosmi historia* wanted to dedicate it to the Landgrave Moritz of Hesse-Kassel, this has lead William Huffman to conclude that the carrier was Michael Maier, whose prince was indeed the Landgrave Moritz.[161] Nevertheless, I have noticed that while Robert A. Seelinger correctly translated that "Principi suo" as referred to the engraver and printer ("their own prince"), Huffman erroneously and inconsistently refers it to the carrier:

> [...] in the "Declaratio Brevis," Fludd said that the person "to whom I entrusted this volume [the *History of the Macrocosm*] in England" wanted to dedicate it to his own prince, the Landgrave of Hesse.[162]

In this way, he can easily jump to his conclusion that the carrier was Maier, an idea which had already been suggested by Frances Yates and which I think not so convincing.[163]

After the death of Johan Theodor De Bry in 1623 Fludd turned to William Fitzer, an English printer settled in Frankfurt who was well connected with the De Bry firm. The *Philosophia sacra* was thus published by an 'Officina Bryana' (Frankfurt), which was a short-lived collaboration between Matthaeus Merian and Fitzer, while the volumes pertaining to the *Medicina catholica* project (1629-31) and the *Clavis philosophiæ* (1633) would be published by William Fitzer alone.[164] It must be said that William Harvey's famous work *De motu cordis* was published by William Fitzer in 1628; this is likely to be no coincidence because, as other scholars have observed, Fludd might well have had an influence on his friend and colleague Harvey in choosing that printer.[165] The frontispieces of the *De motu cordis* and of the first *tomus* of *Medicina catholica* are indeed rather similar, almost testifying to a strong link between the two physicians.

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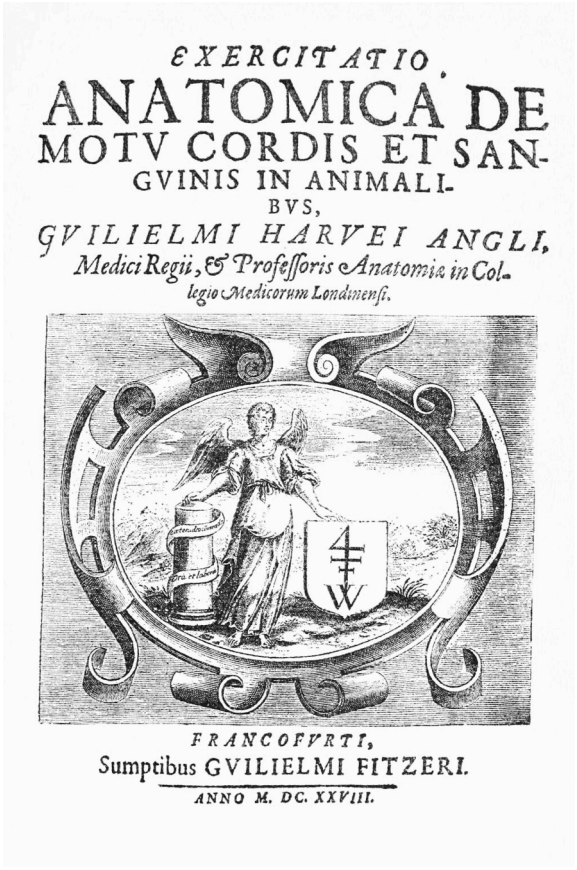
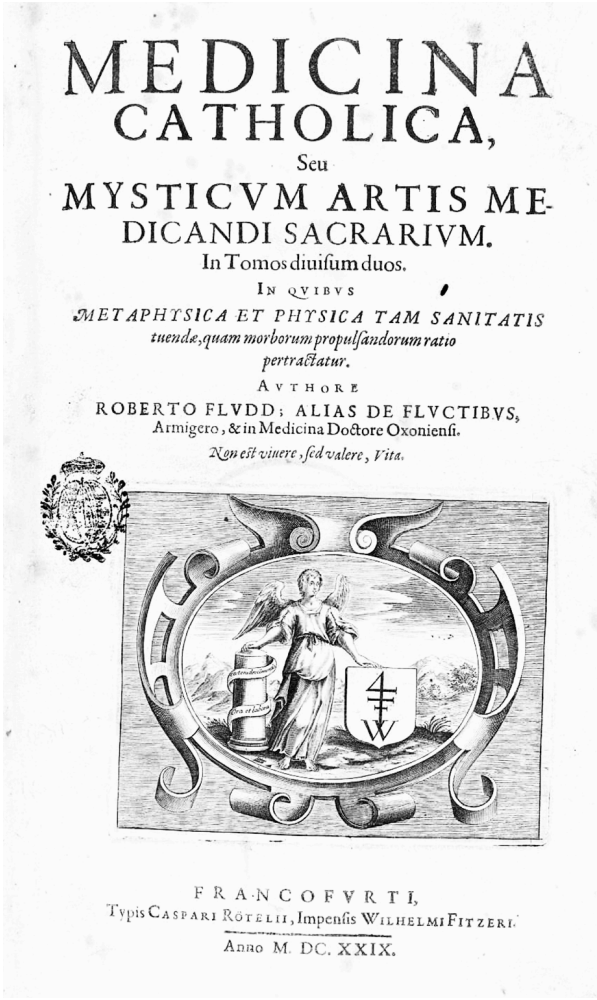
[161] Huffman, *Robert Fludd*, pp. 31 and 155-156.
[162] Ibid., p. 155. The text between square brackets is by Huffman himself, who translates, similarly to other scholars, *historia* with 'history', a translation rather inaccurate (see chapter III).
[163] Yates, *The Art of Memory*, pp. 324-325.
[164] E. Well, 'William Fitzer, The publisher of Harvey's *De Motu Cordis*, 1628', *The Library*, s4-XXIV, 3-4, pp. 142-164 (143).
[165] Ibid.



EXERCITATIO
ANATOMICA DE
MOTV CORDIS ET SAN-
GVINIS IN ANIMALI-
BVS,
GVILIELMI HARVEI ANGLI,
Medici Regii, & Professoris Anatomiæ in Col-
legio Medicorum Londinensi.

FRANCOFVRTI,
Sumptibus GVILIELMI FITZERI.
ANNO M. DC. XXVIII.



MEDICINA
CATHOLICA,
Seu
MYSTICVM ARTIS ME-
DICANDI SACRARIVM.
In Tomos diuisum duos.
IN QVIBVS
METAPHYSICA ET PHYSICA TAM SANITATIS
tuendæ, quam morborum propulsandorum ratio
pertractatur.
AVTHORE
ROBERTO FLVDD; ALIAS DE FLVCTIBVS,
Armigero, & in Medicina Doctore Oxoniensi.
Non est viuere, sed valere, Vita.

FRANCOFVRTI,
Typis CASPARI RÖTELII, Impensis WILHELMI FITZERI.
Anno M. DC. XXIX.

Fludd's reply to Mr Foster (1631) was published in London by Nathaniel Butter, publisher, amongst others, of the first edition of the *King Lear*. *De philosophia moysaica* and the *Responsum ad hoplochrisma* (translation into Latin of Fludd's reply to Mr Foster) were both issued in 1638 by Petrus Rammaseyn in Gouda. Finally, the *Mosaicall Philosophy*, i.e. the translation into English of the *De philosophia moysaica*) would be published in London by Humphrey Moseley in 1659.

II. Intellectual background and associations

The aim of this chapter is to give an outline of the intellectual field in which Robert Fludd moved. I shall begin with a summary of the most important past and contemporary influences, followed by a survey of the learned men with whom Fludd was associated. All this, combined with the information given in the previous chapter, will provide the necessary background for an understanding of Fluddean thought expounded in the works which will be surveyed in the following chapters.

II.i An overview of the sources

In order to fully understand Robert Fludd's view of the world, which is certainly distant and in many aspects incomprehensible to modern thought, one needs to look far back into the past. The philosophy of Fludd is in fact part of that current which saw the ancient teachings as the purest and most virtuous. According to this current, human knowledge fell increasingly into decay and corruption, forgetting the original divine teachings and following false truths. As Frances Yates put it,

> [t]he great forward movements of the Renaissance all derive their vigour, their emotional impulse, from looking backwards. The cyclic view of time as a perpetual movement from pristine golden ages of purity and truth through successive brazen and iron ages still held sway and the search for truth was thus of necessity a search for the early, the ancient, the original gold from which the baser metals of the present and the immediate past were corrupt degenerations. Man's history was not an evolution from primitive animal origins through ever growing complexity and progress; the past was always better than the present, and progress was revival, rebirth, renaissance of antiquity.[1]

One has to turn towards the real wisdom as it was passed down to the first worthy men directly from God: these men were Moses, author of the book of Genesis, and Hermes Trismegistus.[2] The story of Hermes is an intriguing one, and many scholars have already delved into the study of this mythological figure and its legacy.[3] It is enough here to say that in the Hellenistic period the Greeks began to associate the Egyptian god Thoth with the Greek god Hermes. A large number of writings in Greek attributed to Hermes began to circulate; their topics were mainly astrology, alchemy,

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[1] Yates, *Giordano Bruno*, p. 1.
[2] See Kristeller, *Renaissance Thought*.
[3] For a recent contribution see Ebeling, *The Secret History of Hermes Trismegistus*.

and other occult themes. According to a tradition which St. Augustine and Lactantius helped to establish, Hermes lived around the time of Moses. In fact, Augustine in his *De civitate Dei* (18, 39), Lactantius in his *Divinæ institutiones* (1, 6, 2-3), and even Cicero in the *De natura deorum* (3, 56) confirmed that Hermes Trismegistus lived a long time before Plato, approximately at the same time of Moses. To be sure, Augustine condemned Hermes of idolatry, whereas Lactantius expressed a more favourable opinion. The fact that two important Fathers of the Church like Augustine and Lactantius, and an authority like Cicero, acknowledged the antiquity of Hermes gave many Renaissance writers enough ground to consider Hermes as a great authority to follow.[4]

There is a time and a place that one can isolate as deeply significant in the history of this Hermetic current, and this is late fifteenth-century Florence. The wealthy and powerful Cosimo de' Medici (1389-1464), *de facto* ruler of Florence and one of the richest men in Europe, played a key role in providing a fertile ground for the flourishing of culture, arts and philosophical studies. He supported Marsilio Ficino (1433-1499) in his philosophical studies and, especially, in his activity as a translator of ancient texts. The primary aim of Ficino was that of rediscovering and reviving the teachings contained in the writings of Plato and other sages from the past, sponsoring a Renaissance Neoplatonic revival. In his hugely influential *Theologia platonica* (1482), composed between 1469 and 1474, Ficino tried to reconcile Christianity with Platonism; for him the Platonic philosophy, if correctly interpreted, could lead to the contemplation of the Christian God, and its deep study could start a process of restoration of the lost golden age.[5]

While Ficino was busy with his translation of the Platonic *opera omnia*, Cosimo de' Medici asked him to interrupt his work on Plato in order to begin as soon as possible the translation into Latin of some Greek texts attributed to Hermes; these had been brought to Italy by a Monk from Macedonia. Ficino completed the task just before the death of his patron. The success of the Latin *Corpus Hermeticum* (or *Pimander*, as it is sometimes called after the first treatise of the collection) was enormous, and its influence in Western thought reached up until the seventeenth

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[4] S. Gentile and C. Gilly, *Marsilio Ficino e il ritorno di Ermete Trismegisto*, Florence, 1999, pp. 27 ff; see also Yates, *Giodano Bruno*, pp. 1-19.

[5] On Ficino on alchemy, see P. Forshaw, 'Marsilio Ficino and the Chemical Art', in S. Clucas et al. (eds), *Laus Platonici Philosophi: Marsilio Ficino and His Influence*, Leiden, 2011, pp. 249-271.

century.[6] But in 1614 a fierce blow to this Hermetic tradition arrived: in that year the scholar Isaac Casaubon (1559-1614) argued that the Hermetic texts dated not earlier than the third or fourth century A.D. In doing so he broke that tradition started by Lactantius according to which they were contemporary with Moses. But the momentum the Hermetic philosophy had gained by then was still strong. To quote again Frances Yates,

> the de-bunking of Hermes Trismegistus could be, and was, disregarded and ignored by those who, though living in the seventeenth century with its entirely new movements of thought, still clung to the Renaissance traditions.[7]

Causabon, in other words, was demolishing the Hermetic tradition right at its foundations, and it is not surprising that for the followers of Hermes it was all but easy to accept that the *Corpus Hermeticum* was actually much more recent than previously thought and that it did not contain a divine truth proceeding directly from the pristine fountain of divine knowledge.

Robert Fludd was very influenced by the Hermetic writings, and the enormous number of times he quotes from the *Corpus* testifies to this; Fludd died in 1637 without ever questioning the truth of the Hermetic revelations. For him, they almost had the same importance as the Bible. He was not alone in ignoring Casaubon's discovery: two illustrious examples amongst other 'reactionary Hermeticists' are certainly those of Tommaso Campanella (1568-1639) in Fludd's time, and the Jesuit Athanasius Kircher (*c*. 1601-1680) thereafter.

There is another important philosopher we need to mention together with Ficino; this is Giovanni Pico della Mirandola (1463-1494). Amongst the many reasons why he became a celebrity both in his lifetime and afterwards are his original and syncretic thought and his battles with the Church. His most important achievement, though, is arguably the joining together of Ficinian natural magic, astrology, Hermeticism and Cabala under the aegis of Christianity. According to Pico the study of the Cabala could – and should – be used in order to confirm the truth of the Christian religion. By analysing the Hebrew text of the Bible, which was communicated to Moses in first place,[8] the learned man can find the true meaning of the Bible and prove that Jesus Christ is the Son of God. Already in the twelfth century

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[6] The standard English translation is B. P. Copenhaver (ed.), *Hermetica: The Greek Corpus Hermeticum and the Latin Asclepius in a New English Translation, with Notes and Introduction*, Cambridge, 1992.
[7] Yates, *Giordano Bruno*, p. 402.
[8] Note that Pico in this respect disagrees with Ficino, who instead believed that the very first ancient priests were Zoroaster and Hermes Trismegistus.

Cabalist texts were circulating in the Western world, but for several reasons the study of Hebrew was a field "not at all well known in Christian Europe".[9] Moreover, it was Pico who for the first time had sufficiently mastered Hebrew to understand, interpret, and make use of those texts with their full potential. His notorious *Conclusiones sive theses DCCCC* (900 conclusions or theses), introduced by his even more famous *De hominis dignitate* (On the dignity of man), collect together Christian, pagan, Muslim and Jewish knowledge. He even criticised the use of astrology, though without condemning it *in toto*; this is an approach that one also sees in Fludd, who quotes considerably from Pico's work, where he condemns the 'bad astrology' and welcomes the good one.[10]

Pico della Mirandola exerted a great influence on many; among those who better grasped Pico's syncretistic approach one finds the German humanist scholar Johannes Reuchlin (1455-1522). Reuchlin met Pico during a diplomatic visit to Florence in 1490;[11] on that occasion, the Italian scholar encouraged Reuchlin in furthering the study of the Cabala. This advice would prove of great influence, since Reuchlin would later embody, as it were, the centre of Cabalistic studies in Germany, and his works would be highly influential. The beliefs of Reuchlin were very similar to Pico's: the Christian study of the Cabala can open the doors to the deepest meanings of the Bible. If Pico can rightly be considered the founder of the Christian Cabala, it was Reuchlin who made Pico's seeds marvellously flourish. Robert Fludd makes extensive use of Reuchlin's *De verbo mirifico* (1494) and of the *De arte cabbalistica* (1517).[12]

The Swiss-German Philippus Aureolus Theophrastus Bombastus von Hohenheim (1493-1541), better known as Paracelsus, further elaborated the thought of Marsilio Ficino and Pico della Mirandola in a different way, establishing one of the most controversial and influential currents of thought, usually referred to as Paracelsianism. A man of bold and turbulent personality, Paracelsus saw himself as the founder of a new science strictly connected with medicine. One of his main characteristics is the rejection of the ancient 'pagan' authorities, Aristotle, Galen and Avicenna *in primis*, who were accused of knowing nothing about chemistry and,

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[9] J. Reuchlin, *On the Art of the Kabbalah*, ed. by S. and M. Goodman, New York, 1983, p. 8.
[10] See chapter III. It has to be noted that also Marsilio Ficino wrote against judicial astrology; see A. Voss, 'The Astrology of Marsilio Ficino: Divination or Science?', *Culture and Cosmos*, 4, 2, 2000, pp. 29-45. In a letter addressed to Angelo Poliziano Ficino expressed his disapproval for the 'superstitious vanity' of some astrologers (Forshaw, 'Marsilio Ficino', p. 270).
[11] Reuchlin, *On the Art of the Kabbalah*, p. 10.
[12] See chapter III.

moreover, had been condemned by the Church.[13] He put a particular stress on medical experience and on the use of chemical preparations, which were to be preferred to herbal remedies. His insistence on the importance of maintaining the balance within man, seen as a microcosm reflecting and being influenced by the higher forces of the macrocosm, would be a powerful concept which Fludd brought, as I shall show, to its heights. Walter Pagel correctly noted that

> [t]he distinguishing feature of Paracelsus' own philosophy is the consequential view of cosmology, theology, natural philosophy and medicine in the light of analogies and correspondences between macrocosm and microcosm. 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.[14]

The true knowledge of nature is not to be attained by the study of Hippocrates and Galen at the universities: these were useless and spurious sources of knowledge. Rather, the physician should achieve the understanding of the true sympathetic forces at work between micro- and macrocosm through personal observation, contemplation and the acquaintance with natural magic, i.e. natural philosophy.[15]

For Paracelsus, as for Fludd, a particular emphasis was to be placed on the alchemical interpretation of the Creation; this idea, already present in the Hermetic writings, was greatly expanded and systematised by the Swiss-German physician. The first book of the Bible, i.e. Genesis, turns out to be pivotal for a correct understanding of nature.[16] Fludd grandiosely developed this Paracelsian theme and, as Michael Walton observes, "scrutinized Genesis with a knowledge of and devotion to Cabala far beyond that of Paracelsus".[17] Another important Paracelsian concept is the analogy between the human body and an alchemical laboratory: the human organs are

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[13] An early example of this thought in England is that of Richard Bostocke, who published a book with the following title: *The difference betwene the auncient Phisicke, first taught by the godly forefathers, consisting in vnitie peace and concord: and the latter Phisicke proceeding from Idolaters, Ethnickes, and Heathen: as Gallen, and such other consisting in dualitie, discorde, and contrarietie. And wherein the naturall Philosophie of Aristotle doth differ from the trueth of Gods worde, and is iniurious to Christianitie and sounde doctrine* (London, 1585). An example coeval with Fludd is that of Helkiah Crooke, who will be mentioned later in this chapter.

[14] W. Pagel, *Paracelsus. An Introduction to Philosophical Medicine in the Era of the Renaissance*, New York, 1958, p. 50.

[15] A. G. Debus, *The Chemical Philosophy: Paracelsian Science and Medicine in the Sixteenth and Seventeenth Centuries*, New York, 1977, pp. 53-54.

[16] On the influence the Bible played on seventeenth-century natural philosophers see K. Killeen and P. Forshaw (eds), *The Word and the World: Biblical Exegesis and Early Modern Science*, Basingstoke, 2007; and M. T. Walton, *Genesis and the Chemical Philosophy: True Christian Science in the Sixteenth and Seventeenth Centuries*, Brooklyn, NY, 2011. The writer of Genesis was believed to be Moses: as a consequence, the philosophy of some of the followers of this concept is said to be 'Mosaical'. Fludd himself would entitle his last work *De philosophia moysaica*.

[17] A. Debus and M. T. Walton (eds), *Reading the Book of Nature: The Other Side of the Scientific Revolution*, Kirksville, MO, 1998, p. 8.

responsible for chemically isolating the nourishing substances from the waste, again a trait one finds in Fludd. Almost a hundred years after the death of Fludd, the model of the human body as an apparatus of distillation would still be alive, and one can find it for instance in the works of the Polish-Jewish physician Tobias Cohn (1652-1729). The Paracelsian writings have the characteristic of not always being consistent; his works, as Debus commented, are "at the same time conservative and radical"; but more importantly they are often not too intelligible. To cite again Debus,

> [t]he chemical philosophy of the sixteenth century is seen best in the work of the first-generation disciples of Paracelsus rather than in the work of their master, for they were the ones who were forced to collect, interpret, and systematize the Paracelsian corpus.[18]

Most of the themes one can find in the Paracelsian thought infuse two short pamphlets that were published in the second decade of the seventeenth century in Kassel, Germany. These are the *Fama fraternitatis* (1614) and the *Confessio fraternitatis* (1615), destined to become famous as 'the Rosicrucian manifestoes' already mentioned in the previous chapter. They reflected a general disillusion with the training given by the universities, and called for all the learned men of Europe to team up and form a new movement for the rediscovery of the real and uncorrupted Christian truths: the entirety of humankind would gain from this. The chief discipline around which the new philosophical edifice has to be built was medicine; other learned men had already understood this, Paracelsus being amongst the most notable examples. A deep knowledge of the microcosm, in fact, would lead to the understanding of the entire universe, the one being the mirror of the other. But, in general, all the arts and *scientiæ* had to be renewed and rediscovered.

It is an understatement to say that the *Fama* and the *Confessio* had an immense reception.[19] A huge number of intellectuals from all over Europe hastened to publish books in which they were asking to be admitted to the elusive secret society of the Rose Cross. Together with them came critics too; one of the major representatives of the criticism towards the Rosicrucian movement was the German physician and alchemist Andreas Libavius (1540-1616) who violently attacked the fraternity with his *Analysis confessionis Fraternitatis de Rosæ Cruce* (Frankfurt, 1615).[20] This work spurred Fludd to write and immediately publish in 1616 his first book, in which he

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[18] A. G. Debus, *The Chemical Philosophy*, p. 60.

[19] For an up-to-date account of the reception of the Rosicrucian manifestoes in Britain, see T. Willard, 'De Furore Britannico: The Rosicrucian Manifestos in Britain', *Aries*, 14, 2014, pp. 32-61.

[20] Libavius also criticised the German professor of medicine and alchemist Oswald Croll (1563-1609), whose *Basilica chymica* (Frankfurt, 1609) was surely known and appreciated by Fludd.

defended the fraternity and asked for admission into it, and a second more extensive defence in 1617. In the latter, amongst other things, Fludd stated that

> […] the key to knowing the interrelatedness of all things in the cosmos, great and small, comes from an occult understanding of the musical harmony throughout the universe.[21]

I shall discuss this 'musical harmony', one of the main characteristic traits of Fludd's philosophy expounded at its best in his earlier works, in chapter IV. To our knowledge, nobody ever received any answer from the brethren; true, the secrecy for which the Society asked could have obtained the astounding result of assuring that all the associates maintained a perfect silence about their Rosicrucian connection. But the correct solution to an enigma is often the easiest one, and one can safely infer that nobody received any answer because at the time there simply was no such a thing as an organised Rosicrucian brotherhood. Fludd's Rosicrucian enthusiasm seemed to decline year after year; he himself had later to admit that he never heard back from the society of the Rose Cross, and he even termed his Rosicrucian apology a "certaine silly and poore Apology of mine".[22] This did not prevent him from developing his philosophy around Rosicrucian-Paracelsian ideals, even though Fludd's original synthesis, as we shall see, reached a level of complexity that has been matched by few, owing to the number and variety of its sources.

A work which plays an important role in Fludd's philosophy is the *De harmonia mundi totius cantica tria* (Venice, 1525), an ambitious project of the Venetian friar Francesco Zorzi (1466-1540). Zorzi's *De harmonia mundi* is organised around the idea of a divine harmony which permeates the entirety of the micro- and macrocosm, mirroring it even in its structure. It is divided into three *cantici* (surveying God, Christ, and man), each one containing eight *toni*, which correspond to the steps of a musical scale. As Saverio Campanini has noted, Zorzi's 'musical' synthesis of Christian elements with Ficinian, Platonic-Pythagorean and especially cabalistic themes influenced, to name a few, Ulisse Aldrovandi, Guillaume Postel, Robert Fludd, Henry More and the Cambridge Platonists.[23] In the preamble to his *Harmonia*, Zorzi writes:

> [i]t should not be considered superfluos and useless if we seem to repeat some things frequently, because when the same things have to be fitted to different things they should be repeated as many times as they have to be fitted to them. For they are different in the context of different things, and they should be (so) composed with many

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[21] Huffman, *Robert Fludd*, p. 145.
[22] *A Philosophicall Key*, 5^{v}.
[23] See F. Zorzi, *L'armonia del mondo*, ed. and tr. by S. Campanini, Milano, 2010, p. CXVIII.

> things that everything is demonstrated to be in harmony with everything else, and a most sweet agreement of all the works of God is drawn from every side, with the inspiration (as we pray) of the Holy Ghost and of the Creator of everything.[24]

These are words that shed light on Fludd's verbose prose and make us better understand the English physician's background.

A mention has to be made of the German philosopher and ecclesiastical reformer Nicholas of Cusa (1401-1464). A brilliant mind and a "figure who strains the usual categories",[25] he wrote about mathematics, philosophy and many other subjects; his thought was mainly rooted in the Neoplatonism of Dionysius the Areopagite and Proclus, and influenced both Giordano Bruno and Robert Fludd. What Ernst Cassirer wrote about him can certainly be said of Fludd himself:

> [h]is thought knows no barriers that separate disciplines. When Cusanus takes up and elaborates anything, it comes to fit into an intellectual whole, and combines with his other efforts to form a subsequent unity.[26]

There is an important 'visual' concept by Nicholas of Cusa which Fludd seems to have assimilated and taken to its greatest realisation. In Cusa's *De coniecturis* (1442-1443), in fact, one finds explained the notion of 'unity'. It is worth mentioning the whole passage, since it particularly resounds with Fludd's thought.

> Notice that God, who is One, is at the base-of-light; but the base-of-darkness is as Zero. Every creature, we surmise, lies between God and nothing. Hence, the uppermost world abounds with light, as you see visually [in the diagram]; yet, it is not free of darkness, although because of the upper-world's simplicity the darkness is thought to be absorbed in light. By contrast, in the lowest world darkness reigns, although it is not the case that in that darkness there is no light at all. Yet, the diagram shows that the light is hidden in the darkness rather than shining forth. In the middle world the relationship [between light and darkness] is also a relationship that is in-between [the relationship of light to darkness in the other two worlds]. And if you want to know about the intervals that belong to the Orders and to the Choirs, obtain this [knowledge] by means of subdivisions.[27]

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[24] "Nec superfluum iudicetur, et inutile, si aliqua sæpius repetere videamur, quia eadem cum diversis coaptanda toties necessario repetuntur, quoties coaptantur. Sunt enim diversa cum diversis, et eadem cum multis componenda, ut omnia concinna ad invicem demonstrentur, et ex omni parte omnium operum Domini suavissimus hauriatur consensus flante (ut precamur) Divino spiritu, et omnium rerum Artifice". F. Zorzi, *De harmonia mundi totius cantica tria*, fol. 4^{v}.

[25] B. P. Copenhaver and C. H. Schmitt (eds), *Renaissance Philosophy*, Oxford, 1992, p. 177.

[26] E. Cassirer, *The Individual and the Cosmos in Renaissance Philosophy*, Oxford, 1963, p. 8.

[27] "Adverte quoniam Deus, qui est unitas, est quasi basis lucis; basis vero tenebræ est ut nihil. Inter deum autem et nihil coniecturamur omnem cadere creaturam. Unde supremus mundus in luce abundat, uti oculariter conspicis; non est tamen expers tenebræ, quamvis illa ob sui simplicitatem in luce censeatur absorberi. In infimo vero mundo tenebra regnat, quamvis non sit in ea nihil luminis; illud tamen in tenebra latitare potius quam eminere figura declarat. In medio vero mundo habitudo etiam exstitit media. Quod si ordinum atque chororum interstitia quæris, per subdivisiones hoc age". N. of Cusa, *De coniecturis I*, cap. IX, 42, in *Opera omnia* (Paris, 1514), fol. 46^{v}. Translation based on the one provided in N. of Cusa, *Complete Philosophical and Theological Treatises of Nicholas of Cusa*, ed. and tr. by J. Hopkins, 2 vols, ii, Minneapolis, 2001, pp. 182-183. Professor Charles Burnett pointed out to me, in private correspondence, that Cusa could have provided a precedent for the binary numeral

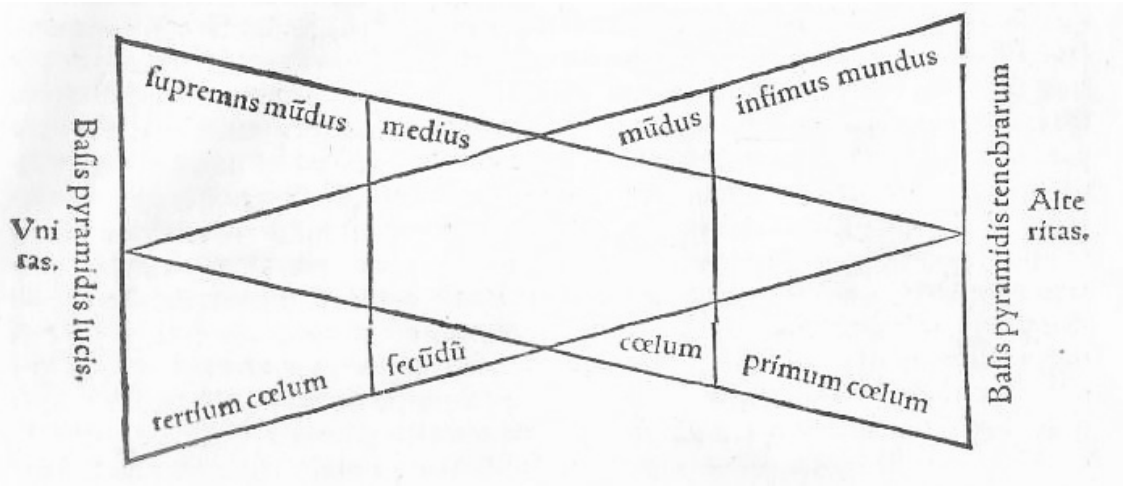

Figure 1 (N. of Cusa, *De coniecturis*, fol. 46v)

As I shall show in the course of this dissertation, Robert Fludd founds his philosophy on the concept of the intersecting pyramids. The result is particularly interesting, especially when one looks at the development of his thought. The two-pyramids diagram, with the two extremes and the point of balance in the middle, will work as a background of the three monochords in the first place, i.e. the celestial, the human and the elemental one, and of the weather-glass in the later years. The pyramidal *scientia* is certainly a trait of the Fluddean philosophy which simply cannot be left unmentioned when analysing the writings of Fludd. I must pay a tribute to Luis Robledo, who many years ago was the first to draw attention to the similarity between Cusa's and Fludd's 'pyramidal system'.[28] Unfortunately, very few scholars have picked up Robledo's specific suggestion about the similarity of these two pyramidal systems.[29] Fludd's intersecting pyramids might also have been influenced by medieval optics, as Urszula Szulakowska has argued; his optical genealogy, thus, "produced an image of God and his created universe as being perpetually locked in a mutual gaze", God being the source of the creating light.[30] Finally, as Robert Westman has suggested, another likely influence for Fludd's intersecting pyramids is the *Vier Bücher von Menschlicher Proportion* (Four books on human proportion; 1528) by

system, since in the concept expounded in this quotation there is a clear contrast between the numbers 0 and 1. An enquire into this aspect would certainly prove interesting and bring perhaps surprising results.

[28] R. Fludd, *Robert Fludd: escritos sobre musica*, ed. and tr. by Luis Robledo, Madrid, 1979, pp. 55-58.

[29] Recently, Johannes Rösche has delved into a comparison between Cusa's and Fludd's philosophy in his *Robert Fludd*.

[30] Szulakowska, *The Alchemy of Light:*, p. 170.

Albrecht Dürer, from which Fludd took inspiration also for his treatise on the art of painting (see chapter III).[31]

In the *De philosophia moysaica* one finds the name of the German physician Johannes Pharamond Rhumelius (1597-1661).[32] Though Fludd does not give the title of the book from which he is drawing, he nonetheless specifies that the book was written in German, while Rhumelius published mainly in Latin. There is a treatise, though, which addresses the ways of curing gout with 'magnetical' remedies, which is exactly the topic Fludd is focusing on the section in which he mentions the German; the book is entitled *Panacea aurea* (Nuremberg, 1630), and this is almost certainly the volume Fludd referred to.

There are, finally, two more people who have to be mentioned here, and they both were close in space and time to Fludd. The importance of the English natural philosopher William Gilbert (*c*. 1544-1603) in the history of science is connected with his famous work *De magnete, magneticisque corporibus, et de magno magnete tellure; physiologia nova, plurimis & argumentis, & experimentis demonstrata* (A new natural philosophy of the lodestone, magnetic bodies, and the great lodestone the earth, proved by many reasonings and experiments; London, 1600). Like Fludd, Gilbert "deplored the excessive authority accorded to Galen's texts, and emphasized the importance of experience".[33] Though Fludd in the first *tomus* of his *De utriusque cosmi historia* criticised Gilbert, together with Nicolaus Copernicus (1473-1543) and others, for his belief that the Earth revolves around its axis,[34] he later would focus the second *sectio* of the *De philosophia moysaica* precisely around Gilbert's *De magnete*. According to Fludd, in fact, Gilbert's work confirmed the truth of the 'magnetical' medicine. Another name that appears in Fludd's last work is that of the English physician Mark Ridley (1560-*c*. 1624) who wrote two books on magnetism, building upon the work of William Gilbert. A member of Gray's Inn as Thomas Fludd was, Ridley was very active in the College of Physicians of London, where amongst other things he served as Censor in 1607, 1609-13 and 1615-18.[35]

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[31] Westman, 'Nature, Art, and Psyche', p. 193.
[32] *De philosophia moysaica*, fols 132^{v} ff.
[33] Stephen Pumfrey, 'Gilbert, William (1544?-1603)', *Oxford Dictionary of National Biography*, Oxford, 2004; online edn, Jan 2008 [http://www.oxforddnb.com/view/article/10705, accessed 10 July 2014].
[34] See chapter III.
[35] G. Stone, 'Ridley, Mark (b. 1560, d. in or before 1624)', *Oxford Dictionary of National Biography*, Oxford, 2004; online edn, Jan 2008 [http://www.oxforddnb.com/view/article/23630, accessed 10 July 2014].

Other influences will be cited in the course of this dissertation; I have here outlined the most obvious ones in order to provide a sufficient introduction to the intellectual-philosophical framework in which Fludd operated.

II.ii Friends and associations

William Huffman has grouped Fludd's associations into three 'distinct learned' circles.[36] Though this approach can be useful for organising Fludd's acquaintances, the understanding of Fludd's complex figure we are beginning to acquire does not fit with ease into such clear-cut distinctions: often these circles overlap, and it is interesting to follow their thread. Yet, I shall use Huffman's investigation as a starting point for further developments and connections.

William Harvey is certainly one of the brightest names amongst the close acquaintances of Robert Fludd within the Royal College of Physicians of London. He is remembered mainly for his discovery of the circulation of the blood and his experimental method. Harvey was physician to James I, and his *De motu cordis*, published in 1628, is a milestone in the history of medical science. Fludd might have well influenced Harvey in his discovery, as Debus has already hypothesised. It might seem surprising to us that Fludd and Harvey were not only colleagues, but also friends. To the contemporary eye, Fludd is the occultist fond of ancient obscure teachings, while Harvey represents the emerging objective experimental science; but this distinction is somewhat far from the truth and the two actually shared a solid philosophical ground. Fludd mentioned William Harvey in his *Pulsus*:

> [t]his is perfectly confirmed by that teaching and opinion of the great William Harvey, the very skilled doctor of medicine, as proficient in anatomy as very gifted in the deep mysteries of philosophy, a dear fellow countryman and faithful colleague of mine, who has accurately and adequately knowingly instructed the world in a certain book of his, the title of which is: *An Anatomical Exercise on the Motion of the Heart and Blood in Living Beings*, and declare extraordinarily, both by means of considerations extracted from the thresaurus of the philosophy and with many ocular demonstrations, that the motion of the same blood is circular.[37]

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[36] Huffman, *Robert Fludd*, p. 32; and W. Huffman, *Robert Fludd: Essential Readings*, London, 1992, p. 20.

[37] "Hoc exacte illam viri gravissimi Gulielmi Harvei, Medicinæ Doctoris peritissimi, arte Anatomica quam clarissimi, nec non in profundis Philosophiæ mysteriis versatissimi, compatriota [sic] mihi charissimi, et collegæ fidelissimi, sententiam atque opinionem confirmare videtur; qua, idque, consulte et prudenter satis mundum in *libello quodam suo, cui titulus est: Exercitatio Anatomica, De cordis sanguinisque in animalibus motu*; instruit, insigniterque cum rationibus a Philosophiæ arca depromptis, tum multiformi demonstratione oculari declarat motum ipsius sanguinis esse circularem". *Pulsus*, p. 11.

These words were written in 1629 and published in 1631, thus making Fludd the first author to agree, in print, with Harvey's revolutionary idea. On the other hand, Harvey cites Fludd more than once in his works; Fludd witnessed dissections and analysis of the heart carried out by Harvey himself, and Debus, building upon Walter Pagel's important contribution, has sufficiently demonstrated how the two colleagues were reaching the same conclusions at the same time.[38] One can well suppose that Harvey and Fludd were discussing their ideas in the early 1620s, ideas that will see the light of the day, in print, a few years later.

In an earlier work Fludd mentions a 'Mr Dr Andrews'.[39] Huffman has identified him with Dr Richard Andrewes (1575-1634), who registered at St John's College of Oxford in 1591, just a year before Fludd entered the same college. Richard Andrewes covered the place of medical fellow there from 1605 to 1612, and became a Fellow of the Royal College of Physicians of London in 1610, a year after Fludd's admission. Moreover, both Richard Andrewes and Fludd were members of the Barber-Surgeons Company, the former entering in 1631 and the latter following him in 1634.[40] This information opens up to at least two other connections. The first is the one with Helkiah Crooke (1576-1648), who was doctor to the Royal Household and member himself of the Barber-Surgeons. His Neoplatonic ideas were rather similar to Fludd's ones, and his *Mikrokosmographia, a Description of the Body of Man* (London, 1615) encountered both success and criticism: in fact Crooke, like Fludd, was particularly keen to denigrate the teachings of Galen. He was admitted to the London College of Physicians in 1613, elected Fellow in 1620 and reader in anatomy in 1629. The other connection is the one with the famous British architect Inigo Jones (1573-1652), who incidentally designed the anatomy theatre of the Barber-Surgeons Company. I have found a mention which Jones makes of both Fludd and Harvey in one of his several medical notes at the end of his own copy of Palladio's *I quattro libri dell'architettura*:

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[38] See W. Pagel, 'Religious Motives', and Allen G. Debus, 'Robert Fludd and the Circulation of the Blood', *Journal of the History of Medicine and Allied Sciences*, xvi, 4, 1961, pp. 374-393. See also, from the same author, 'Harvey and Fludd: The Irrational Factor in the Rational Science of the Seventeenth Century', *Journal of the History of Biology*, 3, 1, 1970, pp. 81-105.

[39] "[...] my worthy freends Mr Dr Andrews, and that most learned Gentleman of the Inner Temple Mr Seldein [...]". *A Philosophicall Key*, fol. 15^{v}. Published in Fludd, *Robert Fludd and His Philosophicall* Key, ed. by A. G. Debus, p. 73.

[40] Barber-Surgeons, *Court Minutes, 1621-1651*, pp. 123 and 171. See also Huffman, *Robert Fludd*, p. 186, n. 31.

> Doc: Haruy tould mee that barbares beaten and as much of it putt in to ye glister as all ye other seeds will doe the effecte; Doc Flud discommendes glisters for weakning the guttes.[41]

This passage, curiously hitherto unknown to Fludd scholars, is particularly relevant, since it confirms that Fludd and Harvey were both part of the circle of Inigo Jones; moreover, it places Fludd in the circles of the early Stuart court's masques.[42] As I shall briefly show in the following chapters, Fludd was interested in devising spectacular machines, automata and self-playing musical instruments, and some of them were particularly suitable as theatrical devices. Moreover, in one *folio* Inigo refers that he met Dr Fludd at a 'Arr. House', i.e. Arundel's house. Now, Thomas Howard (1585-1646), 21st Earl of Arundel, was a politician and famous art collector. Amongst the members of his circle were William Harvey, Francis Bacon and the polymath John Selden (1584-1654). The Earl of Arundel and Francis Bacon were also part of the committee which granted Fludd the patent to produce steel.[43]

Returning to Fludd's 'Mr Dr Andrews', Ron Heisler suggests that Fludd was not referring to Dr Richard Andrewes, but instead to the theologian Lancelot Andrewes (1555-1626), who held high positions in the Church of England and was the most important among the compilers of the King James Version of the Bible. Lancelot Andrewes has been often associated with William Laud (1573-1645), archbishop of Canterbury and religious adviser to King James I.[44]

Together with Dr Andrew(e)s Fludd mentions another 'worthy friend' of his: it is "that most learned Gentleman of the Inner Temple Mr Seldein". The identification of this person is relatively unproblematic, as it is certainly John Selden whom Fludd is talking about. As Mordechai Feingold reminded us, Selden was one of the towering intellectuals of the seventeenth century.[45] John Milton calls him "the chief of learned

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[41] From the annotations of Inigo Jones on his copy of Palladio's *I quattro libri dell'architettura*, fol. 3^v^; in I. Jones, *Inigo Jones On Palladio: Being the Notes by Inigo Jones in the Copy of* I quattro libri dell'architettura di Andrea Palladio*, 1601, in the Library of Worcester College, Oxford*, ed. by Bruce Allsopp, 2 vols, i, Newcastle upon Tyne, 1970, p. 72. A deeper perusal of these medical notes could perhaps shed more light on the connection between architecture and medicine in the early seventeenth-century England.

[42] Jacob Hess was perhaps the first who hypothesised a connection between Jones and Fludd (J. Hess, 'Die Gemalde des Orazio Gentileschi für das 'Haus der Konigin' in Greenwich', *English Miscellany*, 3, 1952, pp. 159-187). Frances Yates furthered this idea in her *Theatre of the World*, pp. 80-91. Both Hess and Yates were apparently unaware of Inigo Jones' medical notes.

[43] J. V. Lyle (ed), *Acts of the Privy Council of England 1619-1621*, London, 1930, pp. 284.

[44] A connection between Laud and Fludd has already been hypothesised by Huffman. See Huffman, *Robert Fludd*, p. 26, and below.

[45] M. Feingold, 'John Selden and the Nature of Seventeenth-Century Science', in R. Bienvenu and M. Feingold (eds), *In the Presence of the Past: Essays in Honor of Frank Manuel*, Dordrecht, 1991, pp. 55-78 (55).

men reputed in this land",[46] and many others from Britain and the Continent alike joined him in praising this learned men until long after his death. He was well acquainted with the works of Pico della Mirandola and Francesco Zorzi, which in turn were great influences for Fludd. The affinity between Selden and Fludd is particularly evident in an unpublished manuscript dated *c*. 1600. It is titled *A Brief Treatise or hipothesis of one Booke called Speculum Universi or Universall Mirror* and has led Ron Heisler to hypothesise that it is by Fludd himself.[47] There are three existing copies of this manuscript: one is held by the Wellcome Library (MS. 147), one by the Bodleian Library (Ashmole 1392); and one by the William Andrews Clark Memorial Library (UCLA; MS.1963.007). This last copy has the inscription 'A manuscript of Seldens' on the first page: it is therefore sensible to think that it is indeed by John Selden and not by Fludd.

In 1614 Selden published his *Titles of Honor*, which features an introductory eulogy by his friend the English poet, dramatist and actor Ben Johnson (1572-1637). At the beginning of the work, Selden writes that it was thanks to Fludd's treatment that he was able to restore his lost health and thus complete his book:

> [...] being thence freed (as you know too, that were a continuall, most friendly, and carefull witnesse) by the Bounteous humanitie and aduise of that learned Phisician Doctor Robert Floyd (whom my Memorie alwaies honors) I was at length made able to perfit it.[48]

The personal library of John Selden featured a copy of Fludd's *De utriusque cosmi historia* with a hand-written dedication by Fludd himself.[49] One of the most celebrated works by Selden is *The Historie of Tithes* (1618). Following its publication, the King summoned the author more than once in order to discuss Selden's theories. It is noteworthy that this work is dedicated to the eminent scholar and antiquarian Sir Robert Bruce Cotton (1571-1631), and praises him and his inestimable library. Fludd also dedicates one of his later publications, i.e. *sectio* ii of *tractatus* ii of *Medicina catholica* I (1631), to the scholar, calling him "singular friend" and "very learned man in both historical and political *scientia*". Sir Robert Cotton's private library was unusually rich and wide-ranging, and was frequented by John Selden, Ben Jonson, Francis Bacon, John Dee, and the historian and herald William Camden (1551-1623).

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[46] J. Milton, *Areopagitica*, London, 1644, p. 11.
[47] R. Heisler, 'Robert Fludd'.
[48] J. Selden, *Titles of Honor*, London, 1614, fol. 3[r].
[49] Feingold, 'John Selden', p. 70.

A frequenter of Cotton's library was also the renowned physician Sir William Paddy (1554-1634), who received his BA in 1573 from St. John's College in Oxford, the same college from which Fludd graduated. In July 1603 he was knighted by King James I, and was appointed the king's personal physician. He had been admitted fellow of the College of Physicians of London in 1591 and was president of the College in 1609, 1610, 1611, and 1618.[50] A friend and colleague of Matthew Gwinne (see previous chapter), Paddy's high status is clear if one considers that he was the dedicatee of works like *Arcana arcanissima* (*c*. 1614) by Michael Maier and *Hymnus tabaci* (A poem in honour of tobacco, 1626) by the physician and poet Raphael Thorius (d. 1625). Robert Fludd dedicates to William Paddy the first *tractatus* of his *Medicina catholica*, published in 1629, which features a long praise for his "singular and most faithful friend knight and doctor of medicine".[51]

Another important acquaintance of Fludd's was John Thornborough (*c*. 1551-1641), bishop of Worcester. He was "in close agreement with Fludd's Hermetic-Christian metaphysics",[52] and interested in alchemical matters. Hartlebury Castle, the residence of Thornborough, was in fact a "flourishing centre for alchemical experimentation and research".[53] To him is dedicated the first *pars* of *Anatomiæ amphitheatrum* (1623), which deals with the alchemical experiment on wheat.[54] Fludd mentions a visit to the bishop's castle, happened presumably in 1625, in his *Mosaicall Philosophy* (1659); on that occasion he was in company of Sir Thomas Thornborough, brother of John.[55] Thornborough is the author of *Lithotheorikos, sive, nihil, aliquid, omnia, antiquorum sapientum vivis coloribus depicta* (Oxford, 1621), a tractate on the philosopher's stone, which agrees with the Fluddean philosophy and indeed cites Fludd's works. Fludd calls Thornborough

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[50] Lauren Kassell, 'Paddy, Sir William (1554–1634)', *Oxford Dictionary of National Biography*, Oxford, 2004; online edn, Jan 2008 [http://www.oxforddnb.com/view/article/21080, accessed 10 July 2014].
[51] *MC* I, i, fol. 2^{r}.
[52] Huffman, *Robert Fludd*, p. 32.
[53] L. Abraham (ed.), *Arthur Dee: Fasciculus chemicus, translated by Elias Ashmole*, New York, 1996, p. xlii.
[54] Fludd dedicates to the bishop only the first *pars* and not the whole publication, as stated erroneously by Huffman (*Robert Fludd*, p. 32) and others.
[55] "In the great sickness time, I came out of *Wales*, and remaining for a while with my noble friend, the *Lord Bishop of Worcester* at *Hatlebury*-Castle, there I was advertised of a strange mischance which happened by lightening and thunder, about five weeks before my comming thither, some three or four miles from the Castle. I would needs go see the place, and in the company of my worthy friends Mr. *Finch*, and Sr. *Thomas Thornborow*; I took a view of the place [...]". *Mosaicall Philosophy*, p. 118. Mr. Finch is hitherto unidentified, and I propose that he might be Francis Finch of Rushock, Worcester (*c*. 1602-1677), who married the bishop's daughter. Another alternative could be Thomas Finch, 2nd Earl of Winchilsea (1578-1639). Note that this story is not narrated in the Latin version of 1638.

> my singular friend, most studious in accurately inquiring into the mysteries of nature, in whom is the true light of the world, and the treasure of treasures.[56]

Other names with which Fludd was associated include George Abbot (1562-1633), archbishop of Canterbury (1611-33) and 4th Chancellor of Trinity College, Dublin (1612-33), to whom Fludd dedicates the first *sectio* of the second *tractatus* of *Medicina catholica* I. The archbishop of York and bishop of Lincoln, John Williams (1582-1650), is the dedicatee of Fludd's *Philosophia sacra* (*DUCH* II, ii, *sectio* i, *portio* iv). Huffman has speculated about the religious implications of the link between the two clergymen and Fludd, since both Abbot and Williams were archenemies of the Archbishop of Canterbury William Laud, who was an High Anglican and was very hostile towards puritanism.[57]

A short mention must be made of Sir Nicholas Gilbourne of Charing (Kent), who married Katherine Fludd, one of Robert's sisters.[58] There is evidence that Fludd and Gilbourne where in touch via letter, and one of their topics of conversation was the 'magnetical' medicine.[59] The Bodleian Library holds a manuscript dated mid-fifteenth century (MS. Digby 185), owned by Sir Gilbourne, which has the signature of the natural philosopher and courtier Sir Kenelm Digby (1603-1665) on one of its folios. This is of particular relevance, since Digby was one of the enthusiastic promoters of the weapon-salve, the 'magnetical' cure of which Fludd was also very fond. The 'triangle' Fludd-Gilbourne-Digby thus might prove to be an interesting one. As I shall show in chapter V, Fludd almost certainly knew a manuscript first owned by one of Fludd's teachers, the mathematician and antiquary Thomas Allen (*c*. 1540-1632), and successively by one of the latter's pupils, Digby himself.[60] In that manuscript

During my perusal of the digitalised copies of Fludd's works available on-line I have found that the frontispiece of a copy of *Philosophia sacra* held by the University

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[56] "Venerando atque reverendo viro, et in accurata Naturæ mysteriorum inquisitione studiosissimo, Ioanni Thornburgh, Episcopo Wigorniensi amico meo singulari, in eo ipso qui est vera mundi lux, et thesaurorum thesaurus, salutem". *AA*, p. 5. English translation in Huffman, *Robert Fludd*, p. 189, n. 45.

[57] Huffman, *Robert Fludd*, p. 28.

[58] "There is a Knight dwelling in Kent, a man iudicious, religious and learned, called Sr. Nicholas Gilbourne, one (I say) with whom I both am, and haue beene long familiar. For he married my Sister". *Doctor Fludds answer vnto M. Foster*, p. 131.

[59] "Sir Nicholas Gilbourn relateth in his letter vnto mee [...]". Ibid. p. 131. Gilbourne mentions to Fludd a story he heard directly from lady Raleigh (i.e. Elizabeth "Bess" Throckmorton (1565-*c*. 1647)) about her husband Walter Raleigh (*c*. 1552-1618) while he was at the house of the Countess of Winchilsea, in Eastwell, whom I have identified as Elizabeth Heneage, wife of Sir Moyle Finch (*c*. 1550-1614).

[60] As Fludd himself attests, "[...] from my master in this art [i.e. genethlialogy or, more generally, astrology], a man certainly very skilled in the astrologic and mathematic learning, the Oxonian Sir Thomas Allen [...]". ([...] a meo vero in hac arte Magistro, viro certe in scientia Astrologica et Mathematica præcellentissimo Domino Allen Oxoniense [...]). *DUCH* II, i, *sectio* ii, p. 73.

Library of Ghent (Belgium) presents an interesting handwritten note. In it, it is stated that the volume was a gift from the author himself, a close friend. The note is signed by 'Tho: Clayton', whom I have identified with Thomas Clayton (1575-1647), first Master of Pembroke College from 1624 and Regius Professor of Physic at Oxford from 1612.[61] Unfortunately not much is known about Clayton; yet this new information adds another name to the network of Fludd's acquaintances, and might perhaps disclose more details once pursued.

II.iii The *Declaratio brevis*: kingly support and other Continental supporters

Fludd enjoyed the favour of both King James I and his successor Charles I;[62] the connection with the former is better documented. In fact, when the first *tomus* of the *De utriusque cosmi historia*, which is dedicated to God and to King James, was published, the word reached the King that someone with Rosicrucian sympathies and spurious philosophy dedicated his work to him. Fludd was immediately summoned in front of the King in order to defend his philosophy from the accusers. The result was very positive for Fludd: not only did the King approve of Fludd's thought, but he also guaranteed him royal favour until his death. In fact, as Fludd himself recalls,

> King James of everlasting memorie for his Iustice, Pietie, and great Learning, was by some Envious persons moved against mee, [...] but when I came unto him, and hee in his great wisedome had examined the truth and circumstance of every point, touching this scandalous report, which irregularly and untruly was related of mee, hee found me so cleare in my answer, and I him so regally learned and gracious in himselfe, and so excellent and subtill in his inquisitive Objections, as well touching other points as this, that in stead of a checke (I thank my God) I had much grace and honor from him, and received from that time forward many gracious favors of him: And I found him my just and kingly Patron all the dayes of his life.[63]

As Huffman has already noted, the success of the royal interview shows that "Fludd's ideas were intimately a major part of the intellectual fabric of his day".[64] At the same time the episode was very important for another reason; in fact, apparently

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[61] A. Clark (ed.), *The Life and Times of Anthony Wood*, 5 vols, i, Oxford, 1891, p. 132; J. Foster, *Alumni Oxonienses: The Members of the University of Oxford, 1500-1714*, 4 vols, i, Oxford, 1891, p. 288; R. G. Frank Jr., 'Medicine', in Tyacke (ed.), *The History of the University of Oxford*, pp. 505-558 (517-518). See also M. A. Lund, *Melancholy, Medicine and Religion in Early Modern England: Reading The Anatomy of Melancholy*, Cambridge, 2010, p. 116.

[62] King James I, for example, granted Fludd a patent for producing steel (see chapter I). King Charles I in 1629 gave Fludd a grant concerning a manor in Suffolk. See Huffman, *Robert Fludd*, p. 48.

[63] *Doctor Fludds Answer unto M. Foster*, p. 21.

[64] W. H. Huffman and R. Seelinger, 'Robert Fludd's "Declaratio Brevis" To James I', *Ambix*, 25, 2, 1978, pp. 69-92 (1).

the King asked Fludd to write an account of their meeting, a sort of written apology of his first works. There is no doubt that Fludd hastened to the writing of the manuscript now known as the *Declaratio brevis*; its copy is now in the Royal Manuscripts collection at the British Library, and remained unpublished until 1978.[65]

The *Declaratio brevis* gives us interesting details about the first *tomus* of the *DUCH* and Fludd's place in the European intellectual world at the time. One of the accusations by the anonymous detractors was that it was impossible for a single writer to publish such a large number of pages in so little a time; he must have been helped by his 'Rosicrucian' brothers. But Fludd rejects the accusation, stating that he finished his *historia* of the macrocosm (i.e. *tomus* I of *DUCH*) four or five years before he had heard of the Rosicrucian manifestoes.[66] The first manifesto of the brotherhood was published in 1614: one might thus conclude that Fludd finished his *historia* of the macrocosm as early as 1610/1. Nevertheless, we do not know when exactly he heard of the publication of the manifestoes, so it might be slightly after that date.

In order to show to the King the validity of his writings, Fludd appended to his manuscript some quotations from letters he had received from the Continent after the publication of the first *tomus* of the *De utriusque cosmi historia.* Of course Fludd only mentions the positive answers he received, so we will never know who actually disagreed with the *historia macrocosmi*. Still, this fact shows a Fludd engaging in learned debates around Europe, and moreover shows that his ideas were generally well received and, where not, they were considered worthy of deep inspection and public criticism (e.g. by Kepler, Mersenne, Gassendi). The most important amongst the people Fludd mentions in support of his defence is Gregor Holst (1578-1636). Horst was a celebrated Professor of Medicine at Giessen University (Germany), personal physician to the Landgrave of Hesse-Darmstadt and municipal physician for Ulm.[67] He built an interesting system in which Paracelsian elements are incorporated into a Galenical framework. When Horst wrote to Fludd the 10 August 1618, he concluded his letter as follows:

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[65] British Library, MS. Royal, 12.c.II.

[66] "[...] my Macrocosmical history as well natural as artificial was composed by me some four or five years before the renoun and fame of the Fraternity of the Rosy Cross had pierced mine ears, as by the testimonies of my worthy friends Mr Dr Andrews, and that most learned gentleman of the Inner Temple, Mr Selden it will easily be justified". *A Philosophicall Key*, fol. 15v.

[67] Also, Horst was friend of Johannes Kepler, whom he hosted in Ulm in 1626 while Kepler was looking for a printer of his new work *Tabulæ rudolphinæ* (Ulm, 1627). See Huffman, *Robert Fludd*, pp. 61-62. John Webster describes Gregor Horst as "a physician of great experience and learning and of no less integrity". J. Webster, *The Displaying of Supposed Witchcraft*, London, 1677, p. 303.

> [a]ccording to Cicero, it is a virtue to love that which is invisible, even as now happens to you among all good men. For who does not commend your singular skill in the investigation of things, when you recall from Hell, as it were, the true principles of things, which Hippocrates of former days in some places treated unclearly, and Paracelsus of recent days dealt with superficially; furthermore, you use a restraint in refuting the opinions of others which is rare amongst us. Only continue, worthy sir, do not suppress the description of the Microcosm, whose title promises not vulgar things; complete the eternal monument to your name such that it may be accomplished with felicity; and I pray that you live for a very long time and with good fortune. Written hurriedly at the new University of Giessen in Hesse.[68]

The German physician was clearly positively struck by the *historia* of the macrocosm, and encouraged Fludd to write more in order to conclude his ambitious project. The role of Fludd, as Horst stresses, was that of bringing light to truths that until then remained concealed, and to better explain concepts that other men before him had expressed unclearly or superficially. As Fludd comments,

> [c]ertainly from the above letter from this most celebrated man it is sufficiently obvious that my opinions are not new, but rather are the most evident explications and most clear demonstrations of the secrets of nature which have been concealed or hidden by the ancient philosophers under the guise of allegorical riddles and enigmas.[69]

This is a very important passage: Fludd, who went down in history as the obscure and unintelligible Rosicrucian, self-elects himself as the first, after millennia, to disclose the deepest secrets of nature and make them available to anyone, in clear contrast to the "allegorical riddles and enigmas" which characterised the ancient philosophers.

Together with the above-cited letter, Fludd includes one by another German, i.e. Jean Balthasar Ursin Bayerius. Thanks to the research of Ron Heisler we now know that this is probably Johann Bayer, who was a lawyer and, more importantly, an uranographer.[70] In 1603 he published his *Uranometria, omnium asterismorum continens schemata, nova methodo delineata, aereis laminis expressa* (Uranometria, containing charts of all the constellations, drawn by a new method and engraved on copper plates); this is one of the most famous and influential star atlases ever published. On 3 February 1618, Bayer wrote to Fludd that his *historia* of the macrocosm "now casts its rays on our Germany, as its light does through all the places of the most learned of Europe".[71]

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[68] *Declaratio brevis*, fols 6^{r}-9^{v}.
[69] "Ex illa quidem viri huius celeberrimi epistola satis apparere videtur, quod opiniones meæ non sint nouæ, sed potius evidentissimæ arcanorum Naturæ, sub griphis allegorys, et ænigmatibus a Veteribus Philosophis tectorum seu absconditorum explicationes et demonstrationes clarissimæ". Ibid., fol. 9^{v}. Translation in Huffman and Seelinger, 'Robert Fludd's "Declaratio Brevis"', p. 91.
[70] Heisler, 'Robert Fludd'.
[71] *Declaratio brevis*, fol. 8^{r}.

Other names and enthusiastic letters Fludd mentions in his support are those of another German, a Justus Helt, who is not identified more precisely, who in a letter dated 20 April 1617 described some feedbacks the publisher, i.e. De Bry, gathered from "many men of letters, both papists Lutherans as well as Calvinists" prior to publishing it.[72] All the responses he received were positive, with the exception of the Jesuits' disapproval of the section on Geomancy. A laudatory letter from Charles de Lorraine's secretary Pierre de Bourdaloue, whom we have already encountered in chapter I, is also mentioned in the *Declaratio brevis*. Finally, Fludd translates an extract of a letter he received from Matthias Engelhart, the German philosopher and physician in Aschersleben, who observed that Fludd's works "lead to the very centre of things" and are very much approved of.[73]

We now know where Robert Fludd intellectually came from: as I have shown, amongst his major influences one can count Hermetic teachings, Florentine Neoplatonism (with Marsilio Ficino and Pico della Mirandola *in primis*), Francesco Zorzi, Johannes Reuchlin and Nicholas of Cusa, Paracelsus and the Rosicrucian manifestoes, William Gilbert and Mark Ridley. I have also added a few elements that help to place Fludd in the society of his time, with a survey of his networks, intellectual circles and acquaintances, the most notable of which are William Harvey, John Selden, John Thornborough and Inigo Jones. Finally, there is evidence that Fludd received royal favour from both James I and Charles I. We know that his father, the knight Thomas Fludd, was well connected at the court of Elizabeth I, and Robert surely learned courtly manners from him.

One of Fludd's greatest merits is his pulling together of a number of different traditions and building an impressive philosophical system. In it, heterogeneous elements such as Biblical exegesis, Neoplatonism, Cabalism, Paracelsianism, Rosicrucianism, magnetism, 'mystical' and practical medicine and many others are all harmonised with a single aspiration: that of reaching a deep understanding of the real mysteries of the two cosmoses and, more importantly, of illustrating this intelligibly through his works. True: "Fludd was extravagant not in his originality but in his heterodoxy".[74] In this, he differs from his colleagues of the past. Though it cannot certainly be claimed that he was an original thinker in the strictest meaning of the word, he nevertheless gave birth to an original blend, which if analysed in detail

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[72] Ibid., fol. 6^{r}.
[73] Ibid., fol. 7^{r}.
[74] A. Ayers and D. Garber (eds), *The Cambridge History of Seventeenth-Century Philosophy*, Cambridge, 1998, p. 464.

reveals unexpected implications. The employment of contemporary reflections on magnetism or the newly-discovered weather-glass as a demonstration of the Divine truths are only two of the most striking examples. Moreover, as Bayon stressed,

> [...] it can be said that Fludd was the first practising physician who tried to explain pathology in terms of demonstrative experiments, the descriptions of which are scattered through the pages of his voluminous writings.[75]

In all this, Fludd's reflection on music gives an interesting speculative background; the Boethian and Ficinian *musica humana*, and more in general the connection between music and medicine, is re-shaped and enlarged by Fludd. From the traditional concept of *musica* beautifully illustrated by the monochords of the first works, the Fluddean system will move towards surprising areas, which will ultimately lead to the application of musical patterns to the weather-glass, and in a way that would hitherto have been unforeseen. After examining Fludd's life, influences and acquaintances in the first two chapters, the next chapter will enter into Fludd's world through his own works. I shall survey the philosopher's two large projects, i.e. the *De utriusque cosmi historia* and *Medicina catholica*.

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[75] H. P. Bayon, 'William Gilbert (1544-1603), Robert Fludd (1574-1637), and William Harvey (1578-1657), as Medical Exponents of Baconian Doctrines', *Proceedings of the Royal Society of Medicine*, 32, 1938, pp. 31-42 (5).

III. The *De utriusque cosmi historia*: a lifelong project

This chapter focuses on the two main projects Fludd had set out to write: the *De utriusque cosmi, maioris scilicet et minoris, metaphysica, physica, atque technica historia* (1617-26) and the *Medicina catholica* (1629-31). A close analysis of these two works has, in fact, not yet been attempted with the methodology I am proposing here; my aim has been that of following Fludd's philosophical path from the first to the last page of his two main works as their taxonomy progresses.[1] In this chapter I am able to present a precise table of contents of the two plans.[2] With a look at the two plots from a more distant point of view, so to speak, a development of the Fluddean philosophy emerges, showing an original picture that has gone hitherto unnoticed. Following Robert Fludd's complex taxonomy and categorisation of knowledge has been a demanding task, which has helped to make clear the direction of Fludd's path.

A whole Ph.D. dissertation would not be enough for an in-depth analysis of Fludd's works. This chapter's aim, though, is different: I have given priority to breadth of vision for a better understanding of 'what is where, and when'. The interest of my enquiry lies on the printed page of Fludd's works. Very little is known about the relationship between Fludd and the publisher, and it is not yet clear who brought the manuscripts from England to Germany (Oppenheim and Frankfurt), where they were typeset and printed. This issue touches upon the questions about who drew the numerous plates. Again, this is open to debate and there are very few elements for evaluating it.

The controversy between Yates, Shapiro and Berry about Fludd's theatre of memory and its allegedly representing the Globe Theatre has suggested that, at least as far as the plates of the treatise on the art of memory are concerned, the drawings were made in Germany with little control by Fludd.[3] On the other hand, Godwin has drawn the attention to a sketch to be found in MS. Sloane 870 in the British Library. This sketch is basically identical to a plate representing a water pump in the *DUCH* I, ii (p. 461), and the manuscript contains part of the treatise of the *DUCH* text in which

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[1] Other scholars have preferred an analysis through the pictures (e.g. Godwin, *Robert Fludd*). Though this approach is surely proper for a writer such as Robert Fludd, this has been sometimes abused and spoiled, whilst what is needed now is a deep study of the concepts expressed through his words.

[2] Godwin and Huffman have presented the general plans of the two works, though the ones I am proposing here integrate them and attempt to go in greater detail as far as the structure of the works is concerned.

[3] See introduction.

that water pump appears. If the manuscript is in Fludd's hand, Godwin suggests, this "gives a good idea of the state in which his designs reached the engraver".[4] What we know is that Fludd had (or wanted to have) a good control over the publication project. In the manuscript of *A Philosophicall Key*, Fludd left precise white spaces for signalling to the printer where to place the images.[5] For unknown reasons, *A Philosophicall Key* was never published in Fludd's time. The Latin translation of a large part of that manuscript was later to appear in the *Anatomiæ amphitheatrum*; this had allowed Debus to add the missing diagrams to his 1979 edition of the manuscript.[6] I think that a sensible solution to the enigma of who produced Fludd's plates might take a middle position: some of the images might have been sent by Fludd himself together with the text, and others could have been left to the engraver to be realised. Nevertheless, this is pure speculation.

As far as the 'circle' of writing-printing is concerned, I have assumed that the majority of Fludd's works, especially from the beginning of the *De utriusque cosmi historia*,[7] were written and published in the same order. For instance, the *DUCH* II, i would have been written before the first *sectio* of the following *tractatus*, and so on. In a few instances there is evidence for this assumption: for example, at the end of the *Monochordum mundi symphoniacum* Fludd writes the completion date, i.e. 9 December 1621, and the book would be published in 1622; at the end of the second *tractatus* of *MC* I Fludd puts the date 19 October 1629, and the book would be published in 1631, while in 1629 would be published the first *tractatus* of the same work (thus supposedly completed before the second *tractatus*).

The first of the two *tomi* of the *De utriusque cosmi historia* is dedicated to the macrocosm. It begins with an account of its origin, it surveys its musical structure,[8] its inhabitants, and the *artes* and *scientiæ* through which man imitates the cosmic patterns. In this first *tomus*, published between 1617 and 1618, one finds both a treatise on the cosmic music (*musica mundana*) and one on practical music (*musica instrumentalis*). The second *tomus*, which aims to survey the microcosm, is much

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[4] Godwin, *Robert Fludd*, p. 86.
[5] Robert Fludd, *Robert Fludd and His Philosophicall Key: Being a Transcription of the Manuscript at Trinity College, Cambridge*, ed. and tr. by A. G. Debus, New York, 1979, p. 20.
[6] See Fludd, *Robert Fludd and His Philosophicall Key*, ed. and tr. by Debus.
[7] In fact, *Apologia compendiaria fraternitatem de Rosea Cruce suspicionis et infamiæ maculis aspersam* (1616) and *Tractatus apologeticus integritatem societatis de Rosea Cruce defendens* (1617) seem to have been written and published in a rush while Fludd had already started the writing of the first *tomus* of the *De utriusque cosmi historia*.
[8] The *liber* on the *musica mundana* will be analysed in deeper detail in the next chapter of this dissertation.

bigger than the first, and the publication of its several parts spans a longer period of time (1619-26). Its first *tractatus* is entirely dedicated to the harmony of the human body-soul-spirit system (*musica humana*); the following publications go in deeper detail into Cabalistic and astrologic themes. But more importantly, as Fludd himself stresses in the plan for the second *tomus*, the microcosmic survey is centred on medical subjects, as it would be natural to expect, Fludd being a physician by profession.

The initial plan of the *De utriusque cosmi historia* published in the first volumes is generally followed by Fludd. What I shall show, though, is that as the volumes of the *DUCH* project get published, and thus Fludd proceeds with his plan, they are often enlarged, sometimes almost becoming standalone volumes. This tendency will be definitely self-evident when, in 1629, the first *tomus* of a brand new *opera magna* (*Medicina catholica*) is published before the completion of *DUCH* II, thus leaving the Fluddean microcosmic investigation unfinished. But my careful following of the Fluddean path has revealed that the new project might actually be an enlarged subsection of the last portion of the second *tomus* of the *DUCH*: in other words, it can be considered the continuation of the survey of the microcosm. I therefore disagree with Pierre Béhal, who maintains that

> [t]he events of the Thirty Years' War, which were later to destroy De Bry's printing house at Oppenheim and ruin his princely patron, led Fludd to give up all thoughts of publishing the whole *opus magnum*, of which only the part devoted to the macrocosm was ever finally published in its entirety.[9]

Medicina catholica is, as the title itself explains, entirely dedicated to a survey of Fludd's theory and practice of medicine, though the reader finds only a few practical elements within it, which were expected to occupy the unpublished second *tomus*. Only the first *tomus* of the *MC* will see the light of the day; its very last treatise, *Pulsus seu nova et arcana pulsuum historia* (1631), gravitates around the heartbeat. In it, Fludd follows a long tradition started in the third century B.C. but also provides an original contribution to the topic thanks to the use of his weather-glass. This is, to the best of my knowledge, the first treatise on the subject ever written by an Englishman, and actually one of the very few to have been written. The *Pulsus* features an important moment in Fludd's philosophical development: the monochord, which began to fade after the year 1622, shortly reappears, flanked this time by the

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[9] P. Béhar, 'The Holy Roman Empire on the Eve of the Thirty Years' War: A New World in the Making', in J. R. Mulryne et al. (eds), *Europa Triumphans: Court and Civic Festivals in Early Modern Europe*, 2 vols, i, London, 2004, pp. 4-14 (9).

weather-glass, i.e. Fludd's new metaphorical instrument. The *Pulsus* draws remarkable metaphorical parallels between the human pulse and music: it has not been studied in detail hitherto, nor it has been put into the wider context of the whole Fluddean production; it will therefore be the object of a thorough survey in chapter V of my dissertation.

From the origin of the cosmos (the first pages of *DUCH* I), then, to the human heartbeat (the last published section of *MC* I), Fludd traces a journey in which music plays an important role, even though this is transparently clear only in the very first treatises of *DUCH*. After the first *tractatus* of the second *tomus* was published in 1619, thus completing the survey of the three Boethian *musicæ*, Fludd turned towards specifically medical subjects, leaving the speculation on music 'behind the scenes'.[10] The Fluddean thought, then, can be divided into two main sections, the second of which mainly gravitates around the medical field.

Very few scholars hinted at any sort of development in Fludd's thought. Amongst them there is certainly Walter Pagel,[11] who observed:

> [a]lthough in education and early life he [Fludd] has much in common with Helmont, unlike the latter, in his more mature work he appears to be interested not so much in laboratory experiments as in the practice of medicine.[12]

This is, however, only partially true: as I shall show, the English doctor will continue to rely upon laboratory experiments in order to prove the truth of his philosophy and, later on, of his 'Catholic medicine'. But I shall build upon, and move from, this statement by the German scholar to demonstrate that there has actually been a development within Fluddean philosophy, although its fundamental tenets have remained consistent.

I shall compare the author's stated plans (the scheme that the reader is presented with when looking at the frontispiece of each section of the work) with the actual schemes (those which emerge from a close survey of the *DUCH* and the *MC*). There are some inconsistencies between the stated plan and its realisation, and I shall draw attention to a characteristic habit of Fludd's: he keeps adding previously unplanned subsections, sections and, sometimes, entire volumes to his writings.

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[10] With an exception: on the occasion of his controversy with Johannes Kepler, Fludd publishes a revised *monochordum mundi* (1622), though this was not planned in the *DUCH*. See next chapter.

[11] Joscelyn Godwyn seems to point at a change in Fludd's philosophy when he writes "[i]n later works Fludd speaks less of Nature and more of the World Soul". But then he adds "[t]his is the same thing: the creative forces of light, will, intellect, and so on, which sustain any cosmic entity" (*Robert* Fludd, p. 16).

[12] Pagel, 'Religious Motives', p. 268. Also, Allen Debus noticed that "the importance of the life spirit is evident in Fludd's later writings". See A. Debus, 'Key to Two Worlds: Robert Fludd's Weather-glass', *Annali dell'Istituto e Museo di storia della scienza di Firenze*, 7, 2, 109-144 (113).

These are often added on towards the end of a section rather than at its beginning. The Greek perfect, balanced and harmonic ἐγκύκλιος παιδεία (*enkuklios paideia*, circle of learning) was inexorably growing into what would be, a few decades after Fludd's death, an infinite shapeless universe: what happened to Robert Fludd himself is symptomatic of this change. Both his medical speculation and practice, together with his tireless theosophical studies, led him to expand his early plans to an extent that perhaps even he did not conceive of reaching. It might seem that Fludd's knowledge or self-awareness of a particular subject gradually expanded continually throughout the process of writing. This forced him to add unplanned sections and change the plan of his work; could this be the reason why he abandoned his first big project (*De utriusque cosmi historia*) to embark in a brand new one (*Medicina catholica*)? Later in this chapter I shall not only argue for an affirmative answer to this question, but I shall as well suggest that *MC* is but the virtual continuation of the *DUCH*. Assuming this is true, this means that a large portion of Fludd's *opera omnia* (*DUCH*+*MC*) is actually part of the very same project: namely, his survey of the two cosmoses, which started at the beginning of his publishing career and unfortunately remained incomplete.

I shall proceed chronologically, reconstructing as accurately as possible the timeline of the publication in order to present all the characteristics of Fludd's projects. To be sure, Fludd was writing at a time when there was still no clear distinction between natural and human sciences. Fludd never uses the term 'encyclopaedia' in his writings, and rather opts for 'historia'. Far from being what we nowadays would translate as 'history', i.e. the record of the human past, the Fluddean *historia* is to be understood as research and enquiry, an epistemic tool:[13] a *modus cognoscendi* rather than a mere literary genre. As Brian W. Ogilvie has argued, Conrad Gessner's *Historia plantarum et vires* (1541) and Leonhart Fuchs's *De historia stirpium commentarii insignes* (1542) can be considered the two major works thanks to which *historiæ* of nature entered European consciousness more generally.[14] What

[13] The first use of the word *ἱστορία* in this sense is to be found in Herodotus. Plato employs the term more specifically as an equivalent of natural science (ἡ περὶ Φύσεως ἱστορία). See J. F. Healy, *Pliny the Elder on Science and Technology*, Oxford, 1999, p. 38. The vast majority of Fludd scholars have translated *historia* with 'history'; this is a choice which, for the above-explained reasons, I have not adopted, preferring to keep the Latin term or 'survey', 'enquiry', and similar.

[14] See B. W. Ogilvie, 'Natural History, Ethics, and Physico-Theology', in G. Pomata and N. G. Siraisi (eds), *Historia: Empiricism and Erudition in Early Modern Europe*, Cambridge (Massachusetts), 2005, pp. 75-104 (80). The name of Robert Fludd does not appear in this book dedicated to the *historia* in Early Modern Europe, testifying perhaps the challenges that the Fluddean *historia* poses to the scholar. This chapter aims to somewhat integrate the important contribution of the above-cited book.

differentiates Fludd's *historia* from, say, Pliny's *De naturalis historia* or the above-cited works by Gessner and Fuchs, is that Fludd hugely expands the boundaries of his enquiry.[15] Whereas other *historiæ* deal with plants or animals, Fludd's survey of the macrocosm and the microcosm spans from the boundaries of the cosmoses above to the very core of the human body.

The Fluddean survey is rather unbalanced, and focuses by far more on the microcosm, i.e. the human body-soul system, than on the macrocosm, i.e. the heavens. Moreover, while Jean Bodin classified the *historia* into three kinds – human, natural, and divine,[16] to which Francis Bacon added a fourth one, the *historia literaria*, Robert Fludd apparently divided it into six main kinds. Though Fludd never wrote explicitly about his classification of *historia*, I have inferred from the plans of his volumes that he divided it into *physica*, *methaphysica*, *technica*, *naturalis*, *supernaturalis*, *præternaturalis*,[17] thus going well beyond the 'common' *historia naturalis*.

The Fluddean publications follow an encyclopaedic model that is rather different from the modern alphabetical encyclopaedia; at the same time, Fludd expanded the spectrum of enquiry in a way that very few of his contemporaries, if any, attempted.[18] To quote D. Graham Burnett, Fludd's *historia* "is arguably the most encyclopaedic text in pre-*Encyclopedie* Europe".[19] The present chapter of my dissertation will illustrate in detail how Robert Fludd organises his volumes. The chronological order I am adopting will especially favour a deep understanding of the development of Fludd's plans over time; as one would expect, the order of publication of the parts follows the order stated in the original plan. As I shall argue, it is possible to infer that the increasing knowledge and skills in medical matters that Fludd gained

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[15] Pliny's best-known work was first reassembled into a coherent whole by Humanist scholars, and its *editio princeps* was published with the title *Libri naturalis historiæ* (Venice, 1469), one of the earliest Latin texts ever printed.

[16] The political philosopher Jean Bodin (1529/30-1596) tried to penetrate the secrets of nature with his last work *Universæ naturæ theatrum* (1597), a project for some aspects similar to Fludd's.

[17] Fludd applies all of the six *historiæ* to the microcosm (*DUCH* II), while applying only the first three to the macrocosm (*DUCH* I).

[18] The great and hugely influential *Encyclopædia septem tomis distincta* (Herborn, 1630) by Johann Heinrich Alsted still presents a classification of the knowledge for several aspects close to Fludd's. Noteworthy is the fact that Alsted mentions, together with other previous encyclopaedist by whom he is inspired, Robert Fludd (*Encyclopædia*, fol. 3^{v}). Alsted's *Encyclopædia* would be the model for the work of the Czech educational reformer John Amos Comenius (1592-1673), a student of Alsted in Herborn and an enthusiast of Fludd's philosophy. On Alsted, see H. Hotson, *Johann Heinrich Alsted, 1588-1638: Between Renaissance, Reformation and Universal Reform*, Oxford, 2000. For a punctual account on encyclopaedism in Fludd's time, see N. Kenny, *The Palace of Secrets: Béroalde de Verville and Renaissance Conceptions of Knowledge*, Oxford, 1991. See also S. Kusukawa and Ian Maclean (eds), *Transmitting Knowledge: Words, Images, and Instruments in Early Modern Europe*, Oxford, 2006.

[19] D. G. Burnett, 'The Cosmogonic Experiments of Robert Fludd: A Translation with Introduction and Commentary', *Ambix*, 46, 3, 1999, pp. 113-130 (113).

with his daily practice as a physician, and his activity within the Royal College of Physicians, led him partly to re-organise his ambitious original plan.

Choosing these two works has a precise aim: that of testing the consistency and main tenets of Fludd's philosophy, since *DUCH* and *MC* put together cover a large part of the entire Fluddean output; they can surely be considered the most representative for him.[20] The close investigation of their actual structure will reveal important details and a more complete picture that otherwise, either with a more superficial look at them or by only focusing on a particular section, would prove difficult to grasp.

III.i The first *tomus* of the *De utriusque cosmi historia*

De macrocosmi historia

The first Fluddean project on which I shall focus is the ambitious *De utriusque cosmi, maioris scilicet et minoris, metaphysica, physica, atque technica historia*. It is aimed, as the title says, to survey both the macrocosm (the heavens) and the microcosm (man), and it was published between 1617 and 1626 in several parts. The table of contents of the *De utriusque cosmi historia* has – following a common Renaissance pattern – a very detailed and intricate subdivision.[21] Robert Fludd's shaping of knowledge is articulated in great detail,[22] and it is worth looking at it carefully in this context in order to understand fully how Fludd's Renaissance mind and his experiences and studies influenced the organisation of his writings.

The work is divided into two *tomi*, the first corresponding to the survey of the macrocosm and the second to the survey of the microcosm; the first of the two *tomi* is considerably smaller than the second one. Moreover, whilst *tomus primus* presents far fewer subdivisions and has actually been completed, *tomus secundus* seems to grow bigger and bigger. The original plan for this *tomus* would indeed suggest

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[20] This is true for the scholar who wants to delve into Fludd's world in order to exactly understand his philosophical world. From the point of view of the mere history of ideas, his published polemics with Kepler, Mersenne and Gassendi are more relevant.

[21] Among others late-Renaissance works which are rather similar to Fludd's effort are Gregor Reisch (*c*. 1457-1525): *Margarita philosophica* (Freiburg-im-Breisgau, 1503), the above-cited Bodin's *Universæ naturæ theatrum* (Frankfurt, 1596), Bernardus de Lavinheta (1475-*c*. 1530): *Opera omnia*, edited by J. H. Alsted (Cologne, 1612), Johann Heinrich Alsted (1588-1638): *Encyclopædia septem tomis distincta* (Herborn, 1630), Gaspar Schott (1608-1666): *Magia universalis naturæ et artis*, 4 vols (Würtzburg, 1657-1659).

[22] *Tomus, tractatus, pars, liber, capitulum, membrum, particula* are the main subdivisions one encounters when dealing with Robert Fludd's books.

something bigger than the first, and the more Fludd proceeds with its project the more he enlarges it by adding (always in sequence) more subdivisions, and sometimes even entire parts.



Figure 2: frontispiece to the first *tomus* of *DUCH*

The first *tomus*, published in 1617, deals with the macrocosm, and it is in fact entitled *De physica, metaphysica atque technica macrocosmi historia*. The beautifully engraved frontispiece enforces the idea, already conveyed by the title, that this is intended to be an exceptional project. Surrounded by clouds, one can see the microcosm and the macrocosm. Their mutual connection and sympathy is a consistent *topos* in Robert Fludd's philosophy, and the fact that it is presented in the very frontispiece of the beginning of his ambitious project is by no means a matter of chance. Actually, this plate seems to be not very accurate: one see the microcosm *and* the macrocosm, one inside the other. We would expect them to be one juxtaposed to the other, like two different layers of the same picture, since each part is supposed to correspond, even graphically, to its 'counterpart'. But, as one can see, the man is inscribed into a smaller circle, the microcosm, which sees the Earth at its centre. The Earth, which is the densest among the elements, is associated with *melancholia*, which is black bile, one of the four humours of the Hippocratic medicine.[23] One sees then three other circles corresponding respectively to *pituita*, which signifies phlegm and water; *sanguis*, related to blood and air; and *cholera*, which denotes yellow bile and is connected with fire. The seven planets follow: the Moon, Mercury, Venus, the Sun, Mars, Jupiter and Saturn. The twelve zodiac signs complete the microcosm's inner circle: each one of them rules the corresponding member in the human body, as one can see from the linking lines: this links with the Fluddean astrology.

The outer circle depicts the macrocosm: here the Ptolemaic universe is clearly recognisable. Beginning from the inner ring, we see four unmarked circles, which are very likely to signify the four elements, corresponding with the four Hippocratic humours. Then there are again the seven planets, and the sphere of the fixed stars. A rope is wrapped around the periphery of the outer sphere. That rope is the means through which Time makes the two cosmoses spin – just as it would happen with a spinning top – in his classical portrayal with wings and hoofs, bearing an hour-glass over his head.

It is possible to infer that the whole diagram aims to illustrate the microcosm and the macrocosm, one *inside* the other. In other plates one can find the two cosmoses superimposed, so to speak, with a clearer correspondence between the

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[23] Hippocrates (460-370 B.C.) identified the four humours present in the human body, namely *black bile*, *phlegm*, *blood* and *yellow bile*. Galen associated those four bodily humours with respectively the qualities of cold and dry, cold and moist, hot and moist, hot and dry. Even though Fludd is rather critical of Galenic methods, he adopts this theory and uses it as a demonstration of the connections between the two cosmoses.

two. This specific plate, in any case, could have a more introductory and almost pedagogic function, serving as a first approach to the microcosm-macrocosm analogy, which will be developed and explained in the course of the work. In fact, as I shall show, in other plates the correspondences are correctly drawn, with the Sun corresponding to the heart and not, as this frontispiece shows, to the head. As I have shown in the previous chapters, this microcosm-macrocosm analogy is a fundamental element in Hermes Trismegistus' writings, Agrippa, Nicholas of Cusa, Marsilio Ficino, Paracelsus, and the Rosicrucian manifestoes. The visual synthesis of these and other sources that Fludd manages to create is in many ways certainly unique.

At the beginning of the seventeenth century ideas like the man-cosmos correspondences and the geocentric theory, both of which Fludd strenuously defended, were being seriously challenged. In this respect the Fluddean philosophy might seem out-of-date, but one needs to bear in mind that other aspects of Fludd's thought were more contemporary, e.g. the description of a rudimental barometer. His syncretistic view and representation of the cosmoses is then particularly remarkable and worthy of attention, since it gives a perfect 'snapshot' of the turmoil and ambiguity of that time.[24]

Just below the title, the plan of the first *tomus* is given, which report here transcribed:

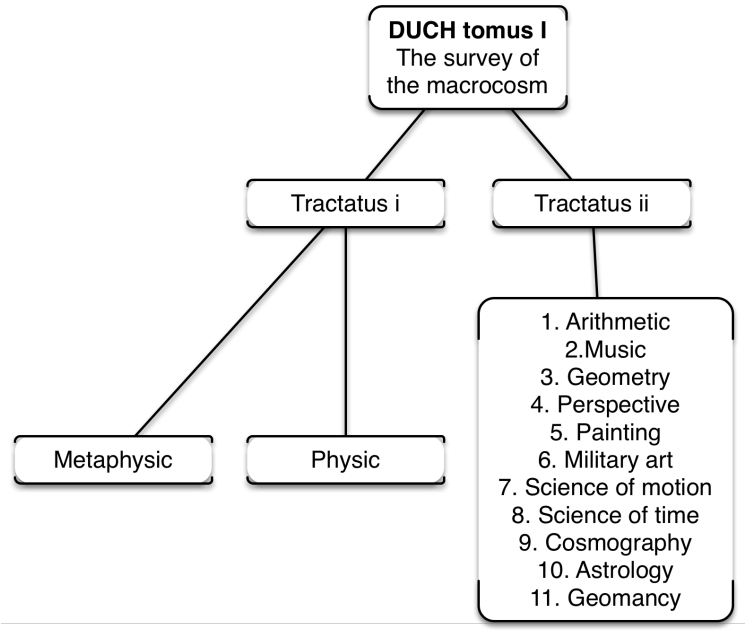

Figure 3: general plan of the first *tomus* of *DUCH*

[24] In retrospective, the coexistence of Cabalistic-alchemic-Christian motives with experimentation with machines and natural philosophy might seem definitely ambiguous. One always has to remind to ourselves that men like Fludd and other philosophers, scientists, and astronomers, were not aware of what was about to happen – the splitting of science and religion and the inexorable fragmentation of the knowledge into smaller and smaller compartments.

The subdivision into two *tractatus* is clear. The first is virtually subdivided into two parts, i.e. *De metaphysico macrocosmi et creaturarum illius ortu* (On the metaphysical origins of the macrocosm and its creatures) and *De physico macrocosmi in generatione et corruptione progressu* (On the physical continuation of the macrocosm in generation and corruption), even though there is no clear subdivision, and the *capitula* follow one to the other without interruptions. The second *tractatus* bears the title *De arte naturæ simia in macrocosmo producta et in eo nutrita et multiplicata cuius filias praecipuas hic anatomia viva recensuimus* (On the art, the ape of Nature, produced in the macrocosm and in it nurtured and multiplied, whose main daughters we here surveyed as in live anatomy).[25] The 'daughters of Art' are arithmetic, music, geometry, perspective, visual art, military art, the *scientiæ* of motion and of time, cosmography, astrology and geomancy.

III.i.a *DUCH* I, i

De macrocosmi structuræ, eiusque creaturarum originis historia

Epistola lectori (p. 11)
Proœmium (p. 13)
Liber I: De macrocosmi principiis (p. 16)
Liber II: De macrocosmi fabrica (p. 44)
Liber III: De musica mundana (p. 78)
Liber IV: De creaturis cœli Empyrei (p. 187)
Liber V: De creaturis cœli Etherei (p. 124)
Liber VI: De creaturis cœli Elementaris (p. 168)
Liber VII: De corporibus imperfecte mixtis (p. 182)
Index rerum præcipuarum (p. 207)

[25] For a study on the relation of Nature and Art in Renaissance literature, see E. W. Tayler, *Nature and art in Renaissance literature*, New York, 1964. "The terms [Nature and Art] exercised a particularly seductive fascination on the writers of the Renaissance, for the renewed emphasis on the order of nature invited a return to many of the classical methods of dealing with experience. Fludd's "mirror of Nature and image of Art" offers a convenient way of visualizing the result: a universe governed ultimately by God but ordered most immediately by the two efficient causes of *Natura* and her ape *Ars*". Ibid., p. 174. The idea of art as *imitatio naturæ* dates back to Aristotle, and in Fludd's time was still strong. J. Peter Zetterberg argues that not even Francis Bacon rejected it, as Paolo Rossi maintained in his *Francesco Bacone*. See Zetterberg, 'Echoes of Nature', p. 180. In his *Magia naturalis* Giovanni Battista dalla Porta, citing Vitruvius, states that Art is, as it were, Nature's ape, and that man is a mimic. See Ibid.

The structure of this *tractatus* is clear and it is relatively compact: it consists of about two hundred pages, copiously illustrated with many beautifully engraved plates, describing the origin and structure of the macrocosm with its inhabitants. On pages 1 and 2 are the two dedications: the work is dedicated both to God and King James I.[26] After the letter to the reader and a *proœmium*, Fludd unveils his alchemical view of the book of Genesis: an approach which can be found, among others, in the writings of Hermes, Paracelsus and the Rosicrucian manifestoes. God perpetuated the process of creation of the macrocosm through a series of alchemical separations. Before God's *fiat lux*, the cosmos was full of the *hyle*, the dark prime matter without form, *ad infinitum*.



Figure 4 (*DUCH* I, i, p. 26)

[26] It looks like the man who carried the manuscript from England to Germany, where it was printed, wanted the dedicatee to be the Landgrave of Hesse. The publisher, in turn, wanted to dedicate it to the Count Palatine. Robert Fludd, then, firmly confirmed his will to dedicate it to God and to King James I. See chapter I of this dissertation.

From the very beginning of the text one is presented with the complex net of sources from which Robert Fludd draws: Democritus, Plato, Thales, the Pythagoreans, and many others. All those and many others are termed 'pagan philosophers', or *ethnici*, since they lived before the advent of Jesus Christ. But still, the ones named by Fludd at the beginning of *liber* i are worthy and do not stray too far from the true "knowledge of the divine mind".[27] A special place occupies, in Fludd's opinion, Hermes Trismegistus, the thrice-ancient sage.

The way in which Fludd managed to blend so many different traditions is remarkable. In the course of this first *liber*, and indeed in all of Fludd's writings, the reader notes that the teachings of the Holy Bible constantly parallel the Hermetic tradition, with numerous citations from Plato, St. Augustine, Boethius, Artefius, Trithemius, Agrippa, Francesco Zorzi Veneto, Pico della Mirandola, Paracelsus, and many others. It must be remembered here that the most ancient sources, like Plato and Pythagoras, are filtered through the most recent ones; in other words, when Fludd refers to the teaching of Plato or Pythagoras he is mainly referring to what he has gathered from second-hand sources. In all this, there is no doubt that the Christian God stands at the head of Fludd's macrocosm, as he himself reminds the reader on almost every page, beginning from the very first of the *De utriusque cosmi historia*, where the dedication *Deo optimo maximo* needs no further explanation.[28]

In the account of the *hyle* Fludd gives in *liber* i one finds a Fludd in disagreement with Paracelsus' philosophy; regarding the primeval chaotic matter, he groups Paracelsian philosophy together with that of the Peripatetics, with whom he also disagrees. The world, according to the Peripatetics, is eternal, and the prime matter is coeternal with the world; Fludd, in this respect, sees no great difference between the Aristotelian and the Paracelsian doctrine.[29] This is remarkable, since the English philosopher owes so much to Paracelsus, and he is definitely against traditional scholastic knowledge and Aristotelian teachings.

The process of Creation began when God created the divine light and made it shine, giving shape to the *fumus nigerrimus* (blackest smoke, the primordial chaos, or

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[27] *DUCH* I, i, p. 18.

[28] Fludd has always been a proud believer in the reformed Church of England: "Judg therefore and witnes in the first place yea heavens and that everliving power whose tabernacle ye ar [i.e., mankind], if I ever knew or contracted my wishes unto any Religion, saving this reformed one, so happely celebrated heare in England". *A Philosophicall Key*, fol. 7v.

[29] "This Paracelsian opinion does not seem to differ from the Peripatetics' one, by which the world is eternal and, even more, the prime matter is co-eternal to the world". (Atque hæc Paracelsistica opinio non videtur discrepare ab illa Peripateticorum, qua mundum esse æternum existimantes, materiam quoque primam ipsi Mundo coæternam esse statuerunt). *DUCH* I, i, p. 24.

hyle), separating the four elements and creating the three regions of the heavens: Empyreum, Æthereum and Elementare. The first is pure light and spirit, and it is the highest one. The second corresponds to the middle region, where the planets are: a less pure spirit than that of the Empyreum inhabits this. The *cœlum elementare* represents the location of Earth, and this is the lowest region, where the light is most dense and the spirit of the less pure kind.

One of the most notable tracts of Robert Fludd's writings is the presence of a large number of *experimenta*. As N. E. Emerton has observed, the depiction of the Creation in terms of alchemical transmutation "was favoured by many Paracelsian chemists, but few if any took it as far as Fludd did".[30] D. Graham Burnett has observed that these experiments

> [...] stand as an interesting transitional moment in the history of the experimental philosophy. [...] They are [...] set off from the text and given the title of *experimentum* [...]. Fludd clearly conceived of his experiments as discreet, specific events, events that he planned and orchestrated, and that required specialized experimental settings and apparatuses. In this sense, then, Fludd's experiments appear to mark a significant step away from the older form of "experiential" evidence that often went by the same name.[31]

Already in this first book one can count three of these experiments; Fludd uses them to demonstrate the truth of his alchemical view of the Biblical Creation. This is one of the first experiments one encounters in *liber* i, and as I shall show would prove to be a fundamental one. In fact, it would lead, several years later, to the development of the weather-glass.

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[30] See N. E. Emerton, 'Creation in the Thought of J. B. van Helmont and Robert Fludd', in Rattansi and Clericuzio (eds), *Alchemy and Chemistry*, p. 91.
[31] Burnett, 'The Cosmogonic Experiments of Robert Fludd', p. 123.

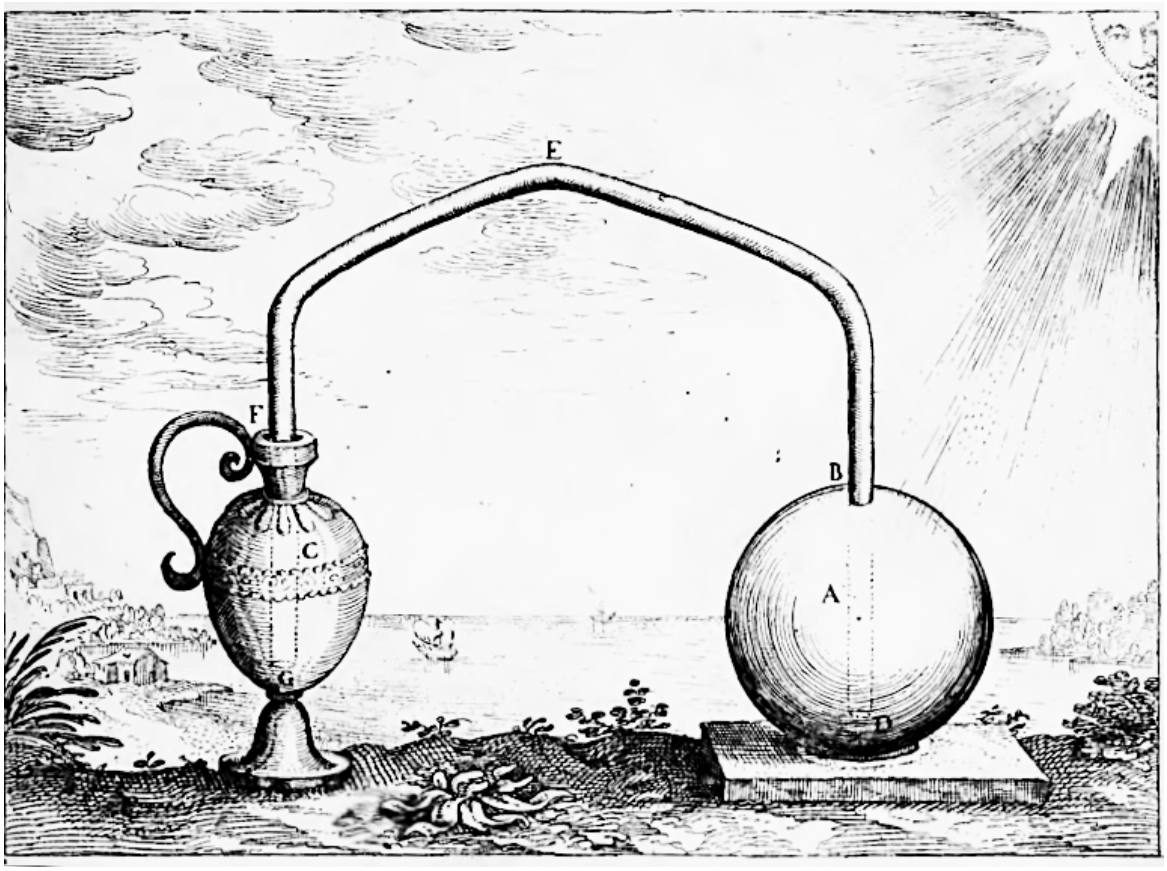

Figure 5 (*DUCH* I, i, p. 32)

The flask on the right-hand side is full of air, whilst the one on the left is full of water. The two containers are connected by a tube, and the whole system is sealed in order to avoid any air from the outside to enter it. When the air in the first flask is heated up by the Sun, it expands, and is forced to pass through the pipe and enter into the other flask. The beholder can see then that the air, being forced into the water, will create bubbles. When, on the contrary, the external temperature drops for whatever reason (i.e. at night), the air will get colder and will consequently compress, thus forcing onto the pipe as much water as is needed to fill the space vacated by the air. This demonstrates that in the absence of the action of the divine fire, to which the Sun is compared, everything reverts back to its original state (*pristinus status*). It is thanks to the divine light and fire – the one which is in the *cœlum Empiyreum* – that the cosmos can live and continue its consonant music.

In *liber* i one finds a close description of the three regions of the heavens. A lengthy explanation of the four Aristotelian elements is given. It should be noted that to water, fire, air and earth, Robert Fludd adds a fifth one, the *quinta essentia*. To demonstrate this fifth element, an experiment with wine is presented to the reader.

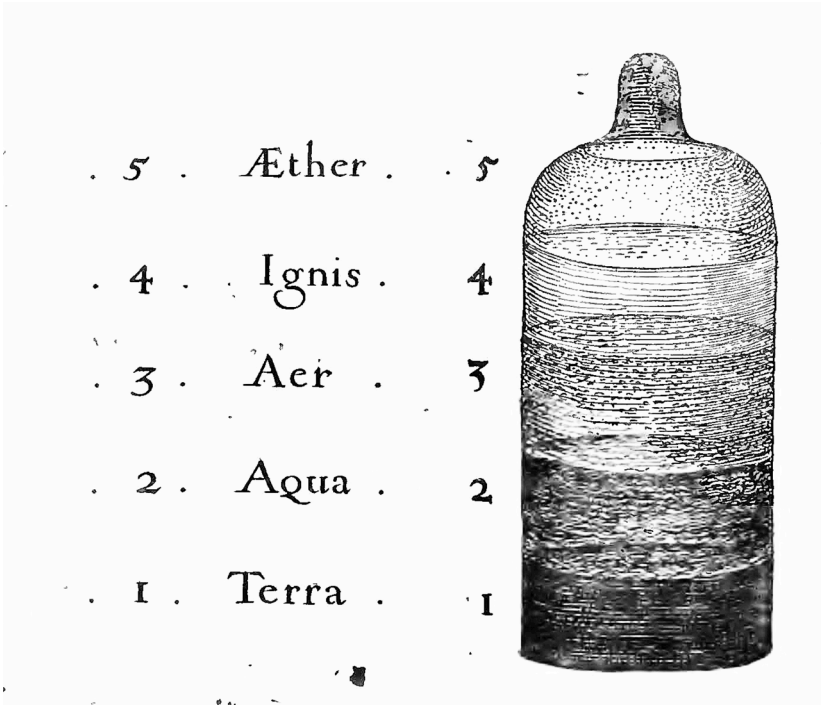

Figure 6 (*DUCH* I, i, p. 72)

The *æther* is obtained by a series of extractions and sublimations of wine. The idea of a *quinta essentia* extracted from wine is part of a specific alchemical tradition, which probably stems from Johannes de Rupescissa's *De consideratione quintæ essentiæ omnium rerum*.[32]

After a series of experiments, *liber* ii comes to an end, leading to the third *liber*, titled *De musica mundana*. In it, the metaphor of music as order and fundamental quality for the perpetuation of the cosmos is magnificently illustrated. For Fludd, the monochord is the instrument which, better than any other, can show both to the eye and to the ear how, and with which ratios, God put proportion into the cosmos. This is clear from the following plate:

[32] In this seminal work on medical alchemy written around 1350 and published in Basle by Conrad Waldkirch in 1597, the Franciscan monk Johannes de Rupescissa maintains that the *aqua vitæ*, or *quinta essentia*, was originally in the four elements. The pseudo-Lullian *Liber angelorum de conservatione vitæ humanæ et de quinta essentia* follows this tradition too; here, the *quintessentia vini* is referred to as *medicina incorruptibilis.*

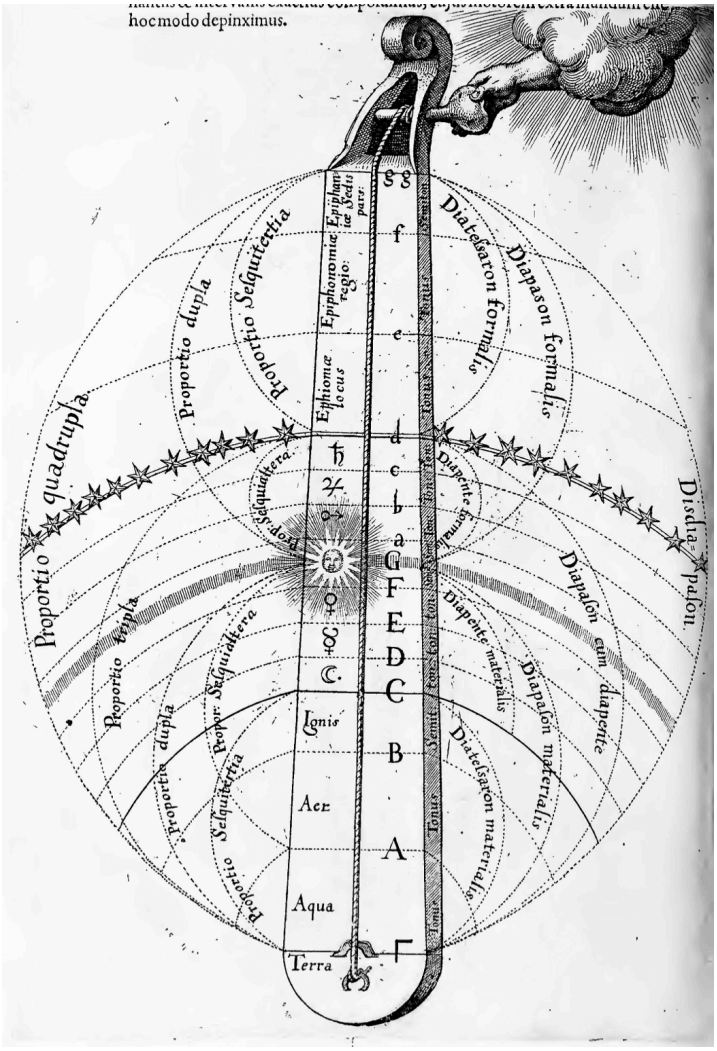

Figure 7 (*DUCH* I, i, p. 90)

By extending the string of a monochord from the Earth up to the highest heavens, where God resides, Fludd creates an image with striking visual impact; the eye can in this way contemplate the divine proportions in a more intuitive way, since the divine music is, by definition, not for us humans to hear. I shall investigate *liber* iii in much more detail in the next chapter, but a quick overview of it follows here.

The *liber*, divided into nine *capitula*, aims to deal with both the consonances and the dissonances of the harmonic composition of the world. It is worth noting that in the second *capitulum* one finds an accurate description of the Fluddean pyramidal *scientia*. According to Fludd, the figures of two pyramids can visually and philosophically represent how the macrocosm works. The first of them has its base on the divine trinity and points downwards towards the Earth; it is termed the *pyramis formalis* (formal pyramid) and it is made up of the lightest spiritual substance. The second one has its base on the Earth and points towards God; it is termed *pyramis materialis* (material pyramid) and is made up of the darkest material substance. The vertex of the formal pyramid's cone touches the Earth, while that of

the material pyramid touches God. The conjunction of the two is where light and darkness are most balanced; this point marks the *sphæra æqualitatis* and, as *liber* v better illustrates, this is where the Sun resides. In musical terms, this middle point 'plays' an octave with the Earth. In fact, if the Earth is assigned the low *g* note (*Γ*), the Sun plays the upper *g*, thus being in *proportio dupla* (1:2) with the Earth. God is assigned the highest octave, *gg*, playing thus a double octave (*proportio quadrupla*, 1:4) with the Earth. In between are the elements and the planets; each of them has its own proportion and interval assigned.

Libri iv, v and vi analyse the creatures of the three celestial regions. In *liber* iv, Fludd writes about the inhabitants of the Empyrean: the *dæmones*, which are divided into good and evil angels. The good ones are nine and subdivided into three hierarchies: *Epiphania*, *Epiphonomia* and *Ephionia*. A *capitulum* is dedicated to Lucifer and his expulsion from the *Empyreum.* The bad *dæmones* are divided into another nine classes; these demons inhabit specific parts of our world; some hunt in caverns, others are in violent tempests, others live in the coldest and darkest places of the Earth (this is why, for instance, ice never melts in the Hyperborean lands). Fludd writes also that people in Madagascar and China offer sacrifices to evil spirits, as some merchants attest.[33]

The ninth *capitulum* of *liber* iv is devoted to the soul of the microcosm, and the problem of the soul's definition is addressed. It can be described in a five-fold sense: as divine light, spiritual substance, rational intellect, intellectual spirit and divine mind.[34] It has nine properties: it is an active principle of knowledge; its light is the reduction of God's uncreated light; it has the facility to communicate with heavenly intelligences; it is immortal and indissoluble; it retains in itself the similitudes of all things; it is reason's companion; it is divine life; it is a partaker of beatitude; and it is always in motion.

In *capitulum* 10, Fludd deals with the *anima mundi*. The world does not just have soul and spirit, but it also participates in the divine mind (*mens divina*). On the fourth day of Creation, after the soul of the world congregated in the Sun, which is in the middle of the Ethereal realm, it then circularly extended itself everywhere[35]. The Sun is both king of the Ethereal world and emperor of the corporeal world, and

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[33] *DUCH* I, i, p. 118.
[34] Ibid., p. 119.
[35] Note the stress on the circularity: this concept, as I shall show in chapter V, would bring Fludd to important conclusions about the circulation of the blood at a later stage of his dissertation on the microcosm.

breathes life, intelligence, motion and vivification into the inferior realms thanks to its rays.[36] Being in the exact middle of Fludd's cosmos, it is the perfect mediator between God and the Earth, and it represents the most perfect proportion and consonance, the octave (or *diapason*), since it resounds both towards God and towards the Earth with a perfect octave, thanks to its being in the middle, the *sphaera æqualitatis*.

Fludd concludes *liber* iv remarking that the soul is the most apt element to govern the bodies of all lower species and of human beings; that it is immortal, and that it lives after the corruption of the body. It has a natural inclination for happiness (*beatitudo*) and is the substance of the spiritual light.[37]

Liber v is dedicated to the inhabitants of the Ethereal realm. Beginning with the analysis of the substance, nature and disposition of the heavenly bodies,[38] it proceeds with the description of the fixed stars and that of the planets, before dedicating a long account to the Sun. This is no surprise, given the remarkable importance the Sun has in Fludd's philosophy. Being in the exact middle of the macrocosm, between Earth and God, the Sun is the clearest sign of God's presence. In fact, it is the fountain of life. God, as the Bible attest, has placed His tabernacle in the Sun and, according to Fludd, in the *sphæra æqualitatis*,[39] where there is perfect balance between matter and spirit, light and darkness.[40]

After the description of the planets, their origin, substance, collocation, and influence, a *capitulum* is dedicated to the fixed stars. While the Peripatetics maintained that the fixed stars were moved by the sphere's movement to the *primum mobile*, Fludd claims that they have in themselves the possibility to move and shine.[41]

One of the most interesting *capitula* of this fifth *liber* is number fifteen, where Fludd addresses what for him are the errors of the Peripatetics, Ecphantus, Heraclides Ponticus, Nicetas Syracusanus and Aristarchus Samius, but especially of Nicolaus Copernicus and William Gilbert. According to them, the Earth revolves

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[36] Due to its leaning towards a pagan cult of the Sun, this concept would be for Marin Mersenne one of the proofs for accusing Fludd of paganism.
[37] Ibid., p. 123.
[38] Which are of two kinds, i.e. fixed stars and planets, and not four (spirit, light, fixed stars and planets) as stated by Craven (*Doctor Robert Fludd*, p. 75). Craven apparently mixes *compositio* with *differentia*; spirit and light are the 'elements' the fixed stars and planets are made of.
[39] "Their line is gone out through all the earth, and their words to the end of the world. In them has he set a tabernacle for the Sun". Psalms, 19:4.
[40] John Donne (1571-1631) uses a similar concept of 'equal music' in one of his sermons (J. Donne, *The Works of John Donne*, ed. by H. Alford, 6 vols, v, London, 1839, p. 623). I am indebted to Charles Burnett for this information.
[41] *DUCH* I, i, p. 151.

around itself in a constant 24-hours revolution; but the piously religious Robert Fludd, who believed the Bible to be the major source of truth, could by no means accept this theory. Man was placed by God on the Earth, at the very centre of the cosmos; it is the role of the Sun, the source of life, to revolve around the immobile Earth. If this were not true, Fludd argues, the Earth would be subject to the strongest winds, and in general to all sort of calamities derived from the revolution around its axis. Furthermore, one should see the pole star changing its elevation throughout the year, but this does not happen.[42] Fludd again gives two practical experiments in order to prove this theory, the second of which runs as follows:

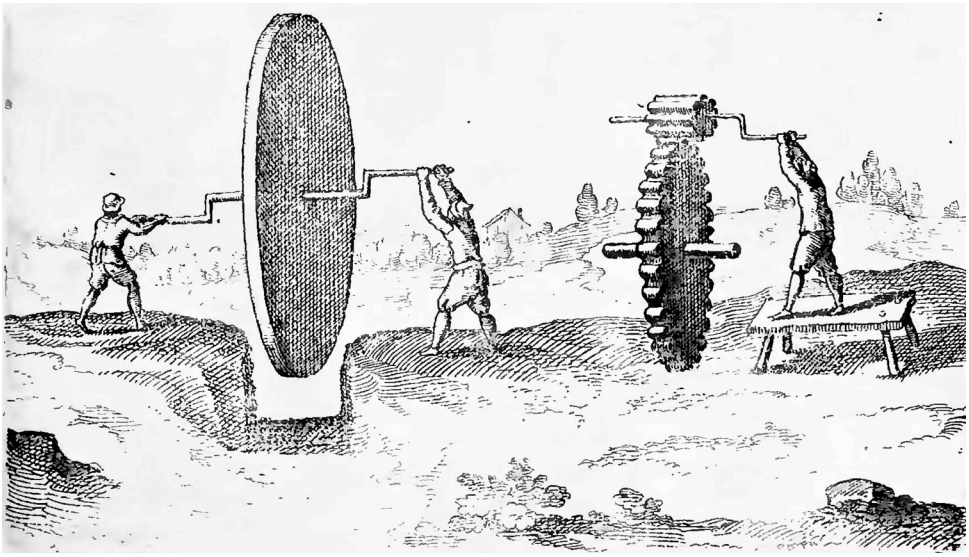

Figure 8 (*DUCH* I, i, p. 155)

It is much more difficult to turn a wheel from its centre than from its circumference, as is clearly seen from the picture, argues Fludd. This demonstrates that the macrocosm is moved from its circumference, where it is closest to God. Since the substance of the Earth is the heaviest, it is only natural that it stands still at the centre of the cosmos; the heavens, on the contrary, being much lighter, are more suitable for motion.[43]

Liber v continues with other considerations concerning the nature and motion of the planets, and it gives, in *capitulum* 17, a demonstration that the Sun is situated in the middle heaven (i.e. the Ethereal realm). Plato, in his *Timæus*, stated that the

[42] These arguments against the movement of the Earth were not new and they are not Fludd's own; they were already put forward by ancient Greek philosophers. Curiously, Fludd does not give one of the most popular arguments against the Copernican theory. This is the miracle narrated in the Second Book of Kings, where the prophet Isaiah brought back the shadow of the sun by ten degrees. This was widely known as *horologium Ahas*.

[43] This is an argument that derives from Aristotelian philosophy. See Ibid., p. 157.

soul is made up of seven numbers (1, 2, 3, 4, 8, 9, 27); in this, he did not stray much from what Pythagoras had affirmed before him. Robert Fludd summed up the concept of this 'harmonic number' in the following diagram.

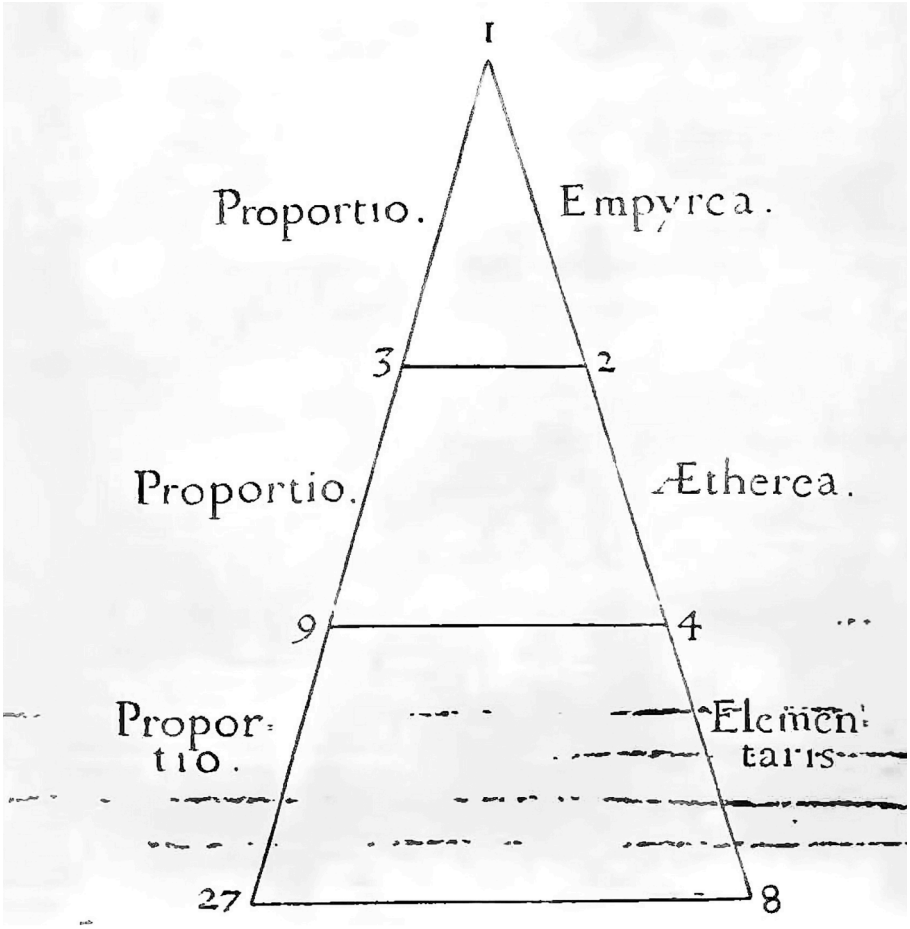

Figure 9 (*DUCH* I, i, p. 164)

The form of the pyramid perfectly demonstrates the Platonic concept of *numerus harmonicus*. The triangle on top, the one between the numbers 1, 2, and 3, is the highest and closest to God, and it is termed *proportio empyrea*; the middle section (2, 4, 9, 3) is the *proportio ætherea*, and the lowest one (4, 8, 27, 9) is the *proportio elementaris*. Now, Fludd can apply this visual representative model of the divine numbers to the macrocosm.

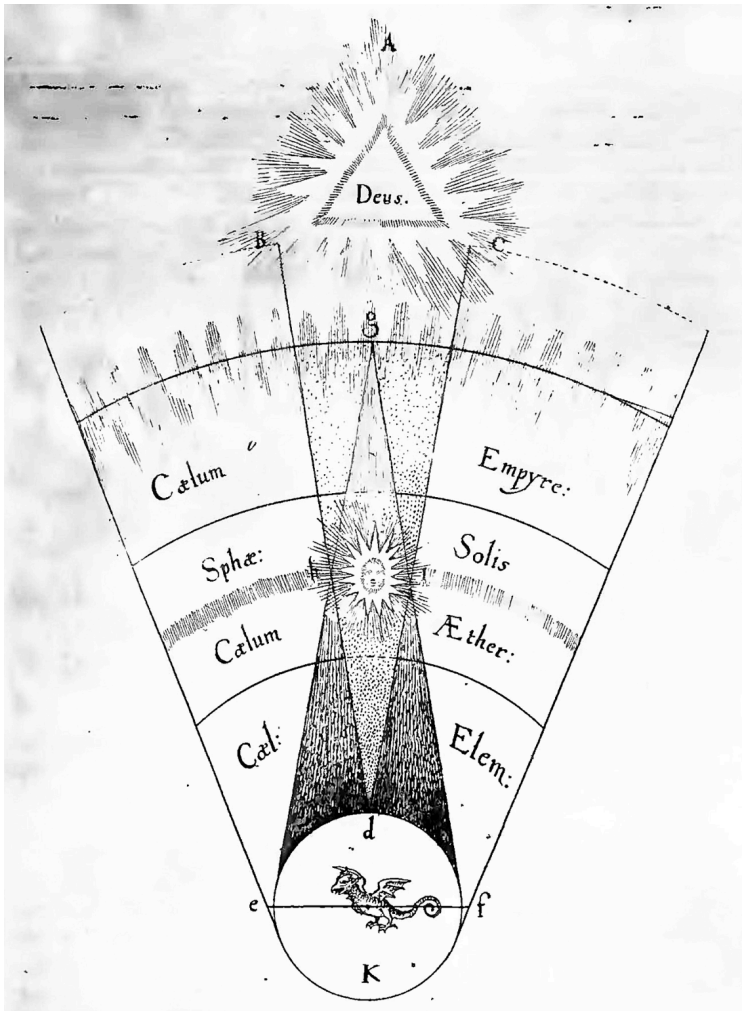

Figure 10 (*DUCH* I, i, *liber* v, p. 165)

In the above plate, as in many others, the concept of the intersecting pyramids is clearly illustrated. The pattern e-f-g denotes the material pyramid, which is made of the darkest and grossest substance and extends itself from the lowest part of the macrocosm (where the Earth is) towards God (g).[44] B-C-d, on the other hand, represents the formal pyramid, which is made of the lightest and spiritual substance and points towards the Earth (d). The farther up the first goes, the more rarefied and spiritual it becomes; the lower the second one goes, the more it increases its materiality. The middle point, then, is the perfect balance between the two principles (light and darkness, spirit and matter). Here it is the *sphæra æqualitatis*, the perfect place for the Sun.

Liber v is rather lengthy, and with good reason. Dealing with the region of the heavens where the planets are, it addresses (even if superficially) the issue of their influence on the lowest region. This is very important because in later works, as I

[44] It might be just a coincidence, but the letter 'g' here denotes the point that comes in contact with the most spiritual region. In musical terms, *g* is the note from which the gamut starts, and in fact God's place is in double proportion (double octave of the lower *g*) with the Earth.

shall show, Fludd would write more extensively about astrology, and one can consider this book as the first one to deal with what was an important topic for the English physician. One finds again the theory of the intersecting pyramids, a key concept in Fludd's philosophy. Finally, *liber* v contains important information about the place of the Sun in Robert Fludd's philosophy and refutes ancient and contemporary heliocentric theories in contradiction with the teachings of the Holy Bible.

In *liber* vi the inhabitants of the lowest region (*cœlum elementare*) are surveyed. They are divided into two categories, the *inanimata* (metals, minerals and *meteora*) and *animata corpora* (plants and animals). The main sources used for this book are Morienus Romanus,[45] Mehunnius and his *De lamentationibus naturæ*,[46] Augurello's *Chrysopoeia*,[47] Pliny, Ptolemy and Calcidius. Of particular interest to Fludd are the nature and the medicinal properties of minerals: the reader is told here that an accurate description of them will be given in the next treatise of the *De utriusque cosmi historia*, and precisely in its *liber* iv. The origin and characteristics of metal, minerals, plants and animals are addressed in this book, while the description of the *meteora* is left for the following (and last) *liber* of *tractatus* i.

The last *liber*, the seventh, of the first *tractatus* of the *De utriusque cosmi historia* focuses on the *meteora* and their causes, which can be both natural and supernatural. The natural ones are: comets in the highest region; clouds and thunderbolts in the middle region; winds and *fontes* (the sources of rain) in the lowest region. The supernatural ones are dealt with in *capitulum* 7. This is the very first account of *meteora morbosa* (illnesses) in Robert Fludd's writing, a topic that would be expanded and deepened in great detail in the English physician's later works. In the twenty-four pages of this *liber* one finds sixteen *experimenta*, which Fludd employed as supporting evidence for his philosophy. Many of them deal with the expansion and contraction of the air, others with condensation of vapour, and others with nitrate, sulphur and quicklime. One particular experiment requires attention in this context: it is the one I have already described and which is present in the first *liber* of this *tractatus* (figure 5), here used as the final demonstration of the origin of the rains.

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[45] Also called Hermit of Jerusalem and author of *De transfiguratione metallorum*, Paris, 1559.
[46] Fludd, here, erroneously quotes this book with the title of *Lamentione naturæ*; elsewhere, though, he mentions the correct title (e.g. *DUCH* I, i, p. 140).
[47] On *Chrysopoeia*, see Z. von Martels, 'Augurello's "Chrysopoeia" (1515): A Turning Point in the Literary Tradition of Alchemical Texts', *Early Science and Medicine*, 5, 2000, pp. 178-195.

III.i.b *DUCH* I, ii

De naturæ simia



Figure 11: frontispiece to the second *tractatus* of *DUCH* I

The second and last *tractatus* of the *tomus* dedicated to the macrocosm, entitled *De naturæ simia*, was published in 1618.[48] This is the *technica historia* of the macrocosm, as differentiated from the previous *tractatus* which dealt with the *metaphysica et physica historia*. It looks like quite an abrupt change of direction, but if one considers

[48] Though it has been handed to the printer together with the first *tractatus* published in 1617, as Robert Fludd himself writes in his *Veritatis proscenium* , p. 4.

the title given in the frontispiece, *De physico macrocosmi in generatione et corruptione progressu* (On the physical continuation of the macrocosm in generation and corruption), it all makes perfect sense. After surveying the metaphysical and physical origin of the cosmos, Fludd now zooms in on the action of man within it. By imitating or, more precisely, aping Nature, mankind can perpetuate and complement God's work on Earth by learning to master the arts and *scientiæ*.

In the frontispiece, an ape (representing man) is sitting in the centre of a circle, divided into eleven segments, each of which represents one *pars*. The treatise is subdivided as follows:

Lectori benevolo (p. 3)
Pars i: De arithmetica universali (p. 5)
Pars ii: De templo musicæ (p. 159)
Pars iii: De geometria seu arte metrica, tam theorica, quam practica (p. 261)
Pars iv: De optica scientia (p. 293)
Pars v: De arte pictoria (p. 317)
Pars vi: De arte militari (p. 343)
Pars vii: De motu (p. 433)
Pars viii: De tempore (p. 502)
Pars ix: De cosmographia (p. 529)
Pars x: De astrologia (p. 558)
Pars xi: De geomantia (p. 715)

In the two introductory pages, the *Lectori benevolo*, Fludd exposes the reason why he wrote this treatise and gives other information about his life. It is thanks to this short letter to the reader that we learn that he travelled six years through France, Spain, Italy and Germany shortly after having received his degree in MA. The eleven *partes* on the liberal arts were composed mainly because some princes and other noble friends of his asked to be instructed in those subjects.

Pars i is on arithmetic and it is dedicated to Charles of Lorraine, 4th Duke of Guise. *Pars* ii is a treatise on practical music. The *De templo musicæ* is, as many other pages of the *De naturæ simia*, a mere collection from other sources put together by Fludd with the aim of teaching students in the *artes* and *scientiæ*. In it, Fludd shows few specific skills in the art of practical music. There are though at least two interesting and original traits here. To begin with: the temple of music itself is a mnemonic imaginary device that allows the student to easily memorise the basics of the *musica instrumentalis*. Fludd was particularly fond of the art of memory and here

one can see a practical application of it, since each part of the temple refers to a particular subject the student of music is encouraged to learn. Another interesting feature of this *pars* is the seventh book, where the Fludd describes a mechanical device he claims to have invented, which is able to play wonderful music by itself, without external intervention. Finally, the *De templo musicæ* is one of the very few accounts of practical music in England given by an amateur at that time. For these and other reasons which I shall illustrate more closely in the next chapter of this dissertation Fludd's treatise on *musica practica* is far from being, as Haar argued,

> a formless assemblage of erudition suiting no style or period of musical development interspersed with lunatic illustrations of musical concepts.[49]

Pars iii, which focuses on theoretical and practical geometry, makes an extensive use of the *baculo Jacobi*, the surveying instrument first described by the medieval Jewish scientist, philosopher, and theologian Levi Ben Gerson (1288-1344), who in turn ascribed his invention to the Hebrew patriarch Jacob. A staff similar to Jacob's, devised by Fludd himself, is described at the end of the treatise.

Pars iv deals with optics and features experiments with convex and concave mirrors. *Pars* v surveys the art of painting and owes much to Albrecht Dürer and his *Vier Bücher von Menschlicher Proportion*.[50] *De arte militari*, which is *pars* vi of *sectio* ii of the first *tomus* of the *De utriusque cosmi historia*, is one of the most technically proficient treatises of this section. Robert Fludd was always proud, throughout his life, of being an *armiger*, a title he inherited from his father; he always put such title in his portraits and books. The tract on the military art shows a particular interest and skill in this topic, with an accurate description of several military machines and devices, and a survey of the main European armies with their characteristics. Fludd also refers to some important historical facts, as the siege of the Vredenburg castle in Utrecht (end of 1576),[51] the siege of Haarlem (1572-73),[52] the Siege of Middelburg (1573) and many others, illustrating them and giving details of the military techniques used in those events.

Pars vii is on the *scientia* of motion. After surveying the *romana*, the weighting scale common in "Gallia, Italia et Hispania", Fludd focuses on lever systems and a

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[49] Haar, 'Musica mundana', pp. 494-495.
[50] See Westman, 'Nature, Art, and Psyche', pp. 177-230.
[51] Robert Fludd shows a map of the castle during the battle (*DUCH* I, ii, p. 402); I have found many resemblances between Fludd's map and Franz Hogenberg's *Schloß Vredenburch 1576*.
[52] *DUCH* I, ii, p. 402. Also in this case the map Fludd shows is almost certainly taken from Frans Hogenberg's work.

large number of water pumps is presented. It is in this *pars* in which mention is made of the Swiss Master in mathematics, art of motion and 'magnetical' cures Gruter, who taught the Englishman a great deal.[53] Fludd also describes a water pump Gruter built for 'Cardinale di San Giorgio'. The third *liber* of this *pars* is dedicated to the motion generated from the four elements: water, fire, air and wind. The first book describes a 'spiritual machine', apt in showing the actions of the planets.

The eighth *pars* concerns the *scientia* of time and describes its genres (year, month, week, day, hour, and minute); the sundials, how to build and use them, their different kinds; and a clock devised by Fludd himself, which is set in movement by water. *Pars* ix, the one on cosmography, gives a short introduction on the matter and instructions on how to build and use a globe; it is dedicated to the memory of Robert's father, Thomas Fludd.

Pars x, is dedicated to astrology; it clearly deals with one of the most important topics for Robert Fludd. The main source here is Hermes Trismegistus' *Asclepius*. There are two species of astrology: *naturalis* and *non naturalis*. The first concerns the public and private fortune (e.g. genethlialogy); the latter, the characters, symbols and talismans (e.g. necromancy). It is noteworthy that Fludd dismisses the second kind of astrology as diabolic and superstitious, not different from idolatry. As I shall show, this is not the only passage in which the English doctor makes a clear distinction between two kinds of astrology, rejecting the 'diabolical' and embracing the 'white' variety. Moreover, he announces that the accounts on astrology pertaining to the microcosm (e.g. the cure of various illnesses) would be published in the second *tomus* of the *De utriusque cosmi historia*.[54] Fludd shortly addresses the detractors of astrology: if many astrologers fail and commit errors, the fault is to be imputed to some of the teachers, not to the *scientia* itself. The twelve zodiac signs are described, and so are the dispositions and qualities of the seven planets with their effects on the microcosm. Also, Fludd surveys the methods for forecasting the weather through the observation of the geographical position and the disposition of the planets and stars at a given time of the year.

Of particular interest is a section on how to use astrology to find a thief and a stolen object. Fludd here states that this kind of astrology is true because he successfully practised it at least twice: he writes about two episodes that happened while he was at St. John's College, Oxford. The first one gives important information

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[53] On the issue of the identification of this Master Gruter-Rutherus see chapter I.
[54] *DUCH* I, ii, p. 562.

for a better understanding of how occult matters were regarded in St. John's College, where Fludd got both his BA and MA. As I have already mentioned in chapter I, Fludd himself writes that his own tutor, John Perrin, asked him to use astrology to recuperate his bed linen, which a washerwoman had lost. Fludd successfully accomplished the goal.[55] Since this happened shortly after he got his BA (1596), this reveals both that Fludd's skills in astrology were already highly-regarded but especially that a Doctor of Divinity did not find the use of this occult discipline incompatible with the Christian doctrine and the teachings of the Oxonian college. The tenth *pars* ends with a short account on the election, i.e. the observation of the day and hour in which the sky is arranged in a certain favourable way in order to accomplish a task. Interestingly, Robert Fludd distinguishes between superstitious (*superstitiosa*) and physical (*physica*) elections. The first kind refers to a corrupted doctrine concerning necromantic incantations, apparitions of ghosts and other things beyond the natural limits.[56] That Fludd was for the 'good' side of astrology, as opposed to the 'evil' one, has already been encountered at the beginning of this tractate on astrology and is discussed above. The last *pars* of the second *tractatus* treats the art of geomancy,[57] and here one finds the personal experiences Fludd had in Avignon during the winter 1601-02, which I described in chapter I.

Fludd concludes the first *tomus* by anticipating the table of contents of the second *tomus*. This table of contents presents some differences from its actual realisation and sheds some light about the following Fluddean publications. The second *tomus* is announced as divided into four *tractatus*; *tractatus* i will deal with "things according to human nature", and will be divided into two *partes*, one dealing with the origin and composition of man, and the other with the "arts of the salubrious human nature". This follows the main aim of the title of the whole work (*De utriusque cosmi maioris scilicet minoris metaphisica, physica atque technica historia*), *pars* i dealing with the *historia metaphysica* and *physica*, and *pars* ii with the *historia technica*, and it is specular to what had been published in the *tomus* I. Indeed, the whole work would be (and in a sense it is) complete and finished with those two *partes*, according to the first plan. But this is not what this table of contents shows, since *tomus* II is announced to consist of three more *tractatus*.

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[55] Ibid., p. 701.
[56] Ibid., p. 709.
[57] This part was later reprinted in a collection of writings on geomancy (*Fasciculus geomanticus: in quo varia variorum opera geomantica continentur*, Verona, 1702).

Tractatus ii, the scheme announces, will deal with the "accidental things against human nature, such as *meteora* or diseases"; *tractatus* iii with the preservation of the microcosm from the ill-bringing *meteora*, and the fourth with the "things against nature". It all looks neat and logically directed. The first *tomus* began with the genesis of the macrocosm, continued with a survey of its creatures and ended with an investigation into the *artes* and *scientiæ* by which man imitates Nature's work on Earth. The first *tractatus* of the second *tomus*, on the other hand, will begin with the origin of man, continue with his composition,[58] and end with the "arts that indicate and help the healthy human nature". This could be (and perhaps should have been) the end of the project – but something different happens: three other *tractatus* are added to the project. They are apparently not part of the original plan, inasmuch as the metaphysical, physical and technical survey of the microcosm will be accomplished with the first *tractatus* of the second *tomus*. Moreover, concepts as *morbus* and *meteorum*, hitherto used rarely,[59] will become the fulcrum of the next programmed publications.

[58] This section on the composition of man is not a book on practical anatomy, but concerns more mystical issues. Fludd, though, published a book on anatomy in the modern sense of the word four years later (*De anatomia triplici*, 1623).
[59] But introduced in *liber* vii of *tomus* I; see above.

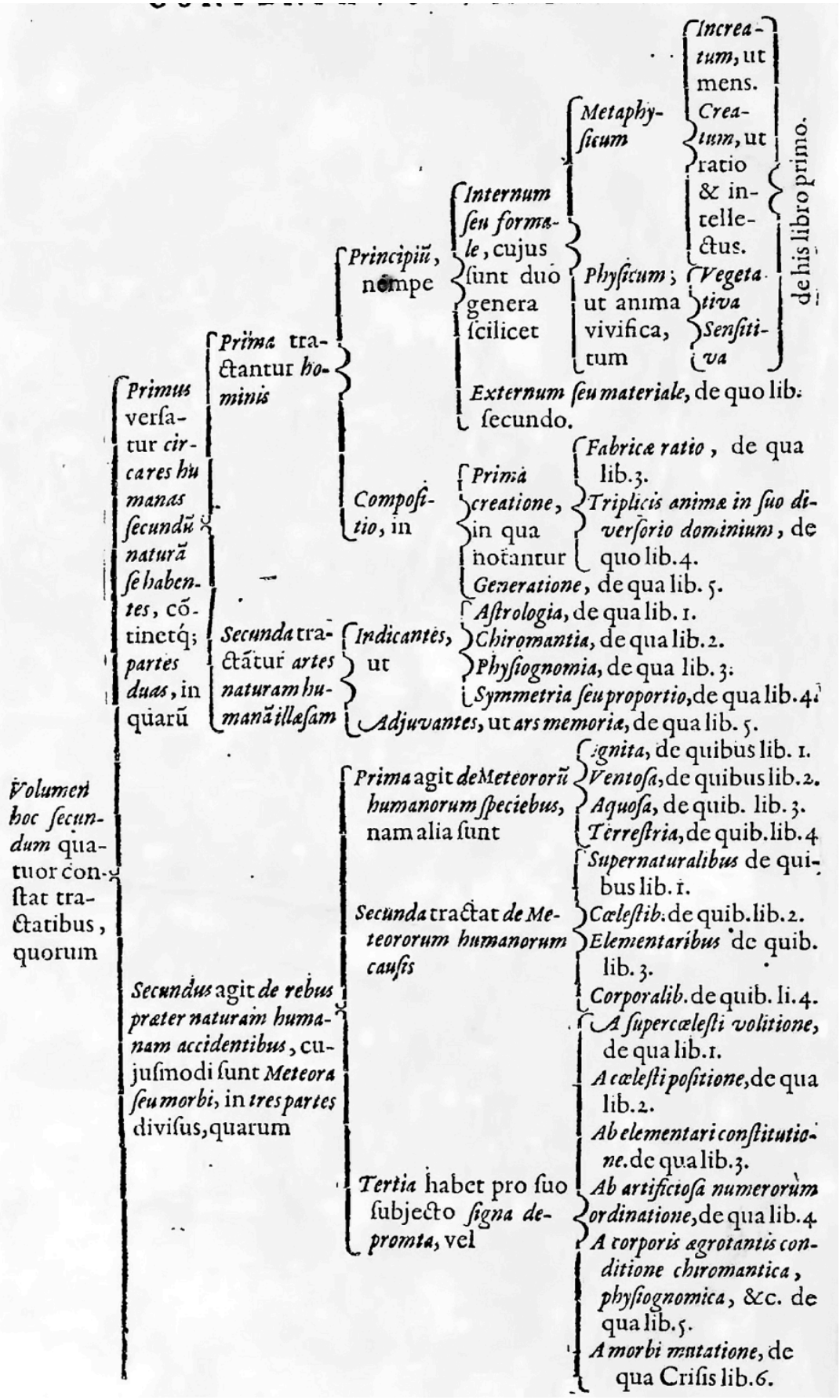

Figure 12a: 1618-plan(1)

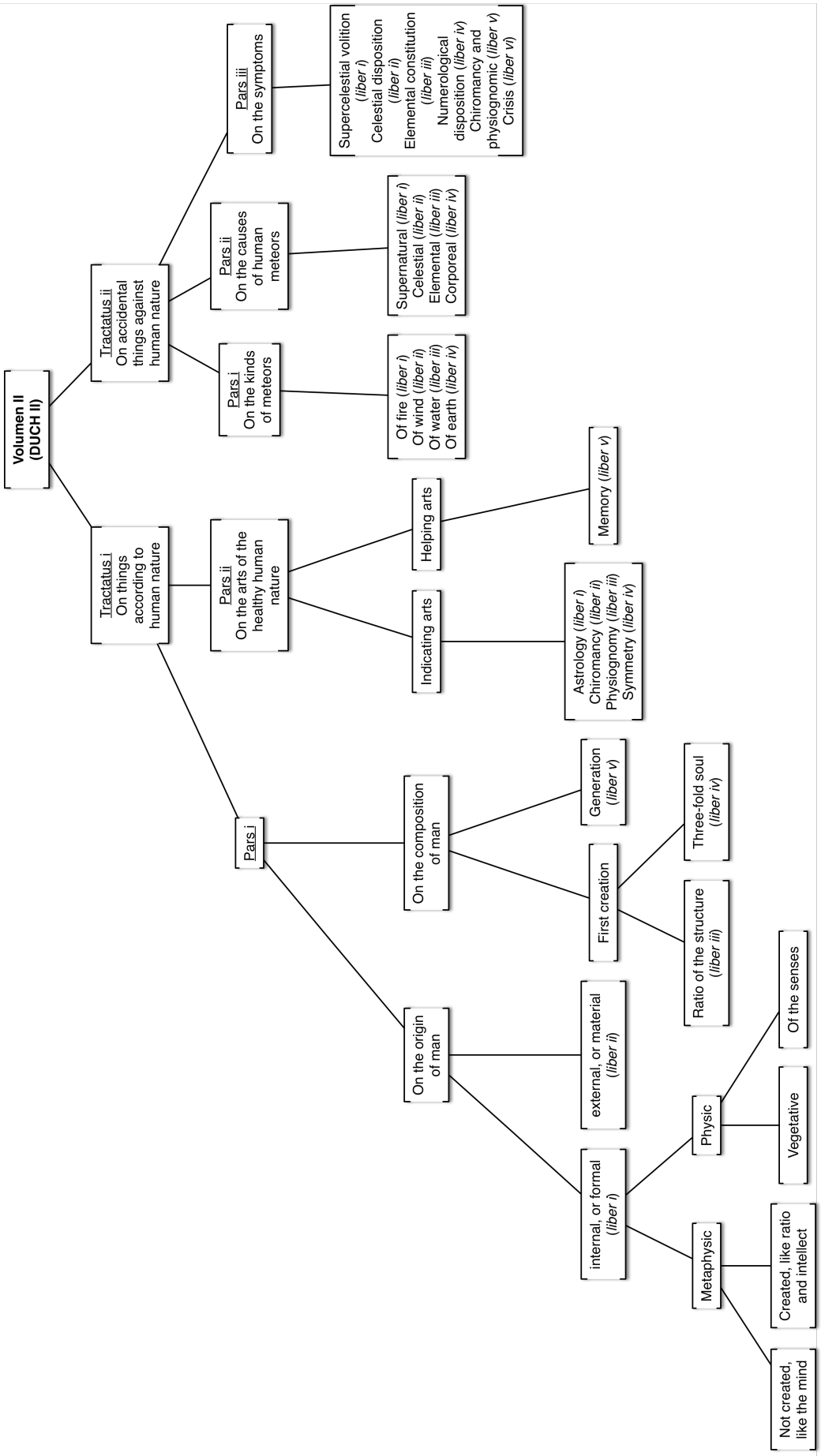

Figure 12b: 1618-plan(1)

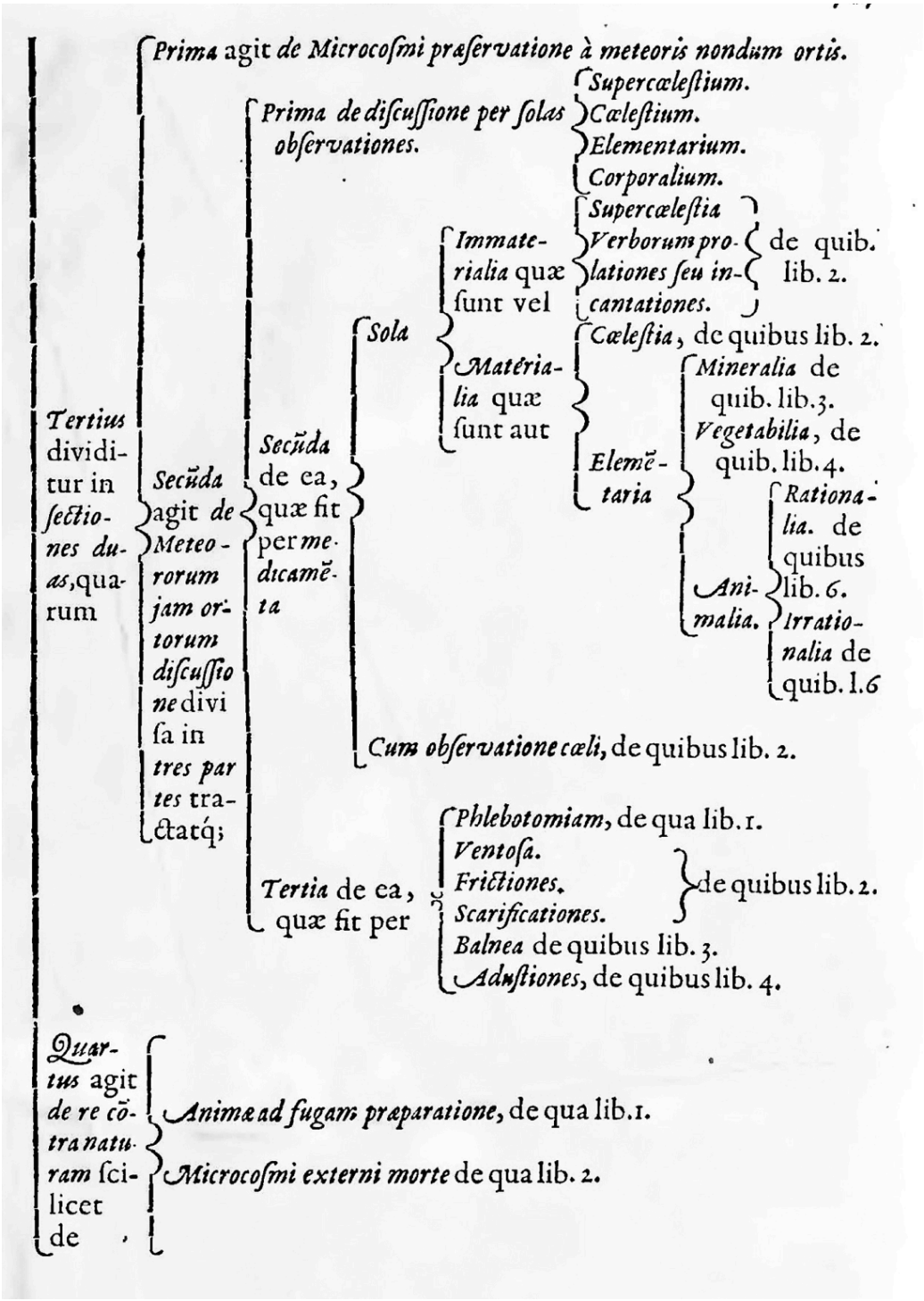

Figure 13a: 1618-plan(2)

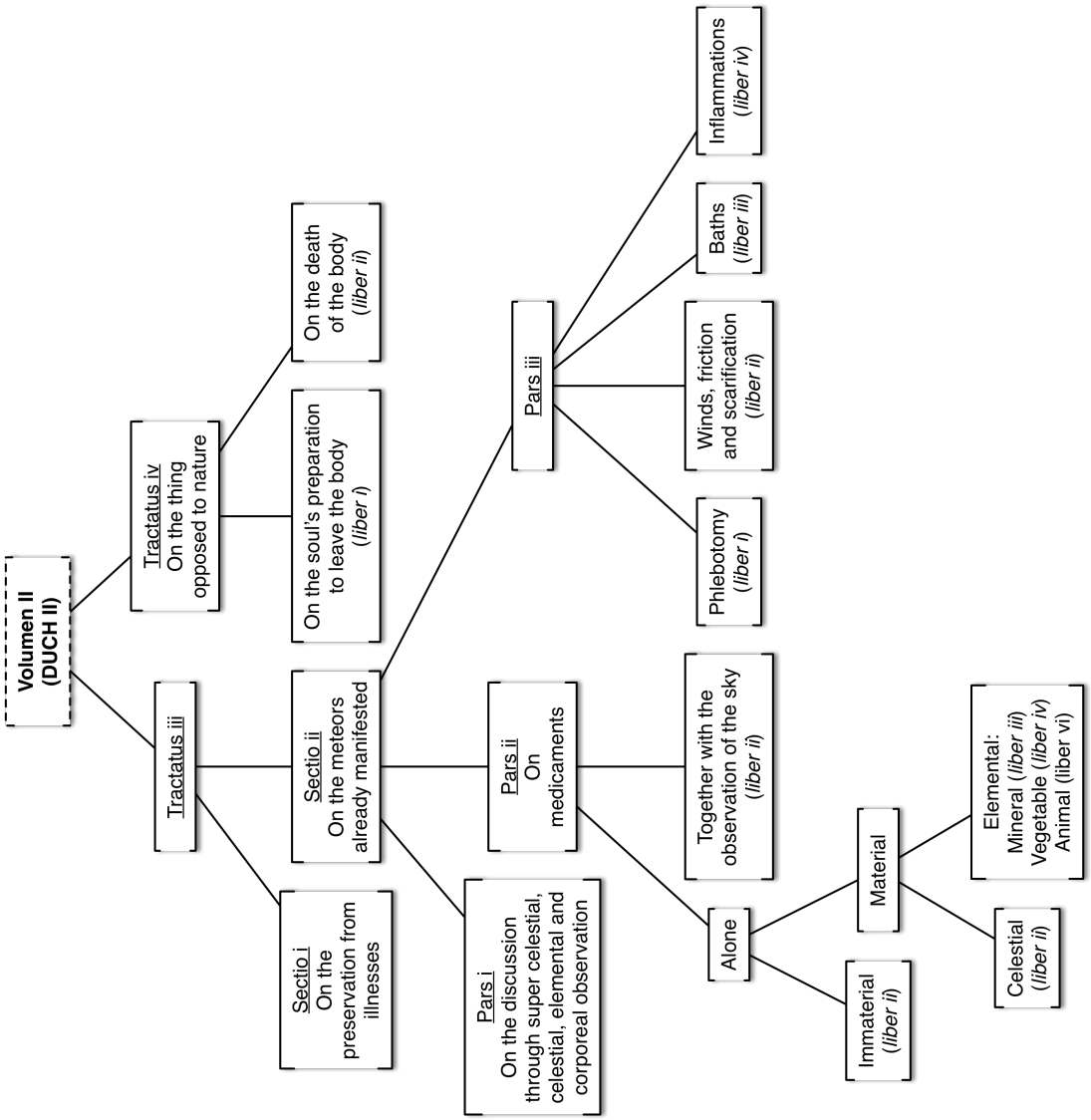

Figure 13b: 1618-plan(2)

III.ii The second *tomus* of the *De utriusque cosmi historia*

De supernaturali, naturali, præternaturali et contranaturali microcosmi historia



Figure 14: frontispiece to the second *tomus* of *DUCH*

The first publication of the Fluddean microcosmical survey saw the light of the day one year after the publication of the final *tractatus* of the first *tomus*. The full title one can read from the frontispiece is: *De supernaturali, naturali, præternaturali et contranaturali microcosmi historia, in tractatus tres distributa*. The first thing that strikes the attention is the number of *tractatus*: one of them has clearly been cut out of the plan we found at the end of the *tomus primus*. There is no table of contents for the whole *tomus secundus*; it makes sense to argue that the missing *tractatus* is the fourth, the one which was supposed to deal with the end of the microcosm.

The title page offers a plate that is very similar to the one already seen at the beginning of the first *tomus*. To be sure, the microcosm, the 'internal circle' representing the man with the four humours and his astrological connections, is exactly the same as the one the publisher used for the frontispiece to *tomus* I. Outside the microcosmic circle is, now, no longer the macrocosm, but a series of circles representing the human mind, which is divided into three parts: *ratio*, *intellectus*, *mens*. The underlying concept remains the same: man, the microcosm, perfectly resembles the macrocosm above him, in a series of harmonious and balanced correspondences; "as above, so below", the Hermetic saying, is like a drone in all of Fludd's writing. God, the triangle of light, stands above it all, setting music and proportion to the two cosmoses.

The first *tractatus* of the second *tomus* of *DUCH* is entitled *De integra microcosmi harmonia* and is divided into two *sectiones*. The first *sectio* deals with the metaphysical and physical survey of the microcosm, and the second with the technical survey, following in this respect the categorisation we have already seen in *tractatus* i of *tomus* I. It is titled *De integra microcosmi harmonia* and its plan, which I term '1619-plan' for convenience, is given at its beginning. There is little difference in the overall scheme between the plan for the first *tractatus* given in 1618 and the 1619-plan. In the last one, though, Fludd takes care of including the terms 'metaphysica', 'physica' and 'technica' (*historia*), which are not present in the 1618-plan. Moreover, in the later diagram the arts (*technica historia*) are not anymore divided into 'indicantes' and 'adiuvantes' as happened a year before. They are all grouped together and one can note the addition of prophecy, geometry and pyramidal *scientia*. This said, the *tractatus* respects the bipartite pattern of the first *tomus*: metaphysic and physic survey on one side, technic survey on the other.

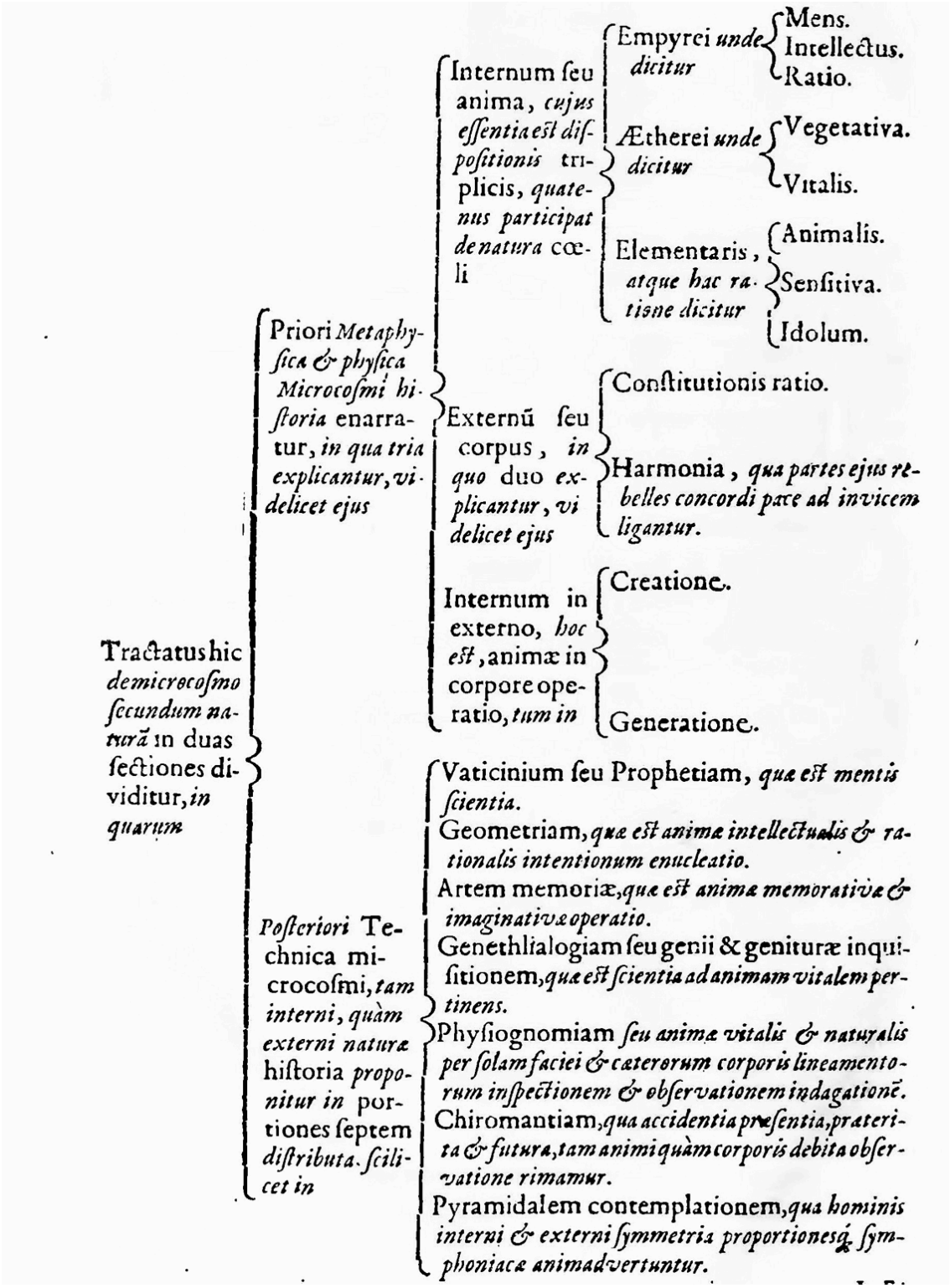

Figure 15a: 1619-plan

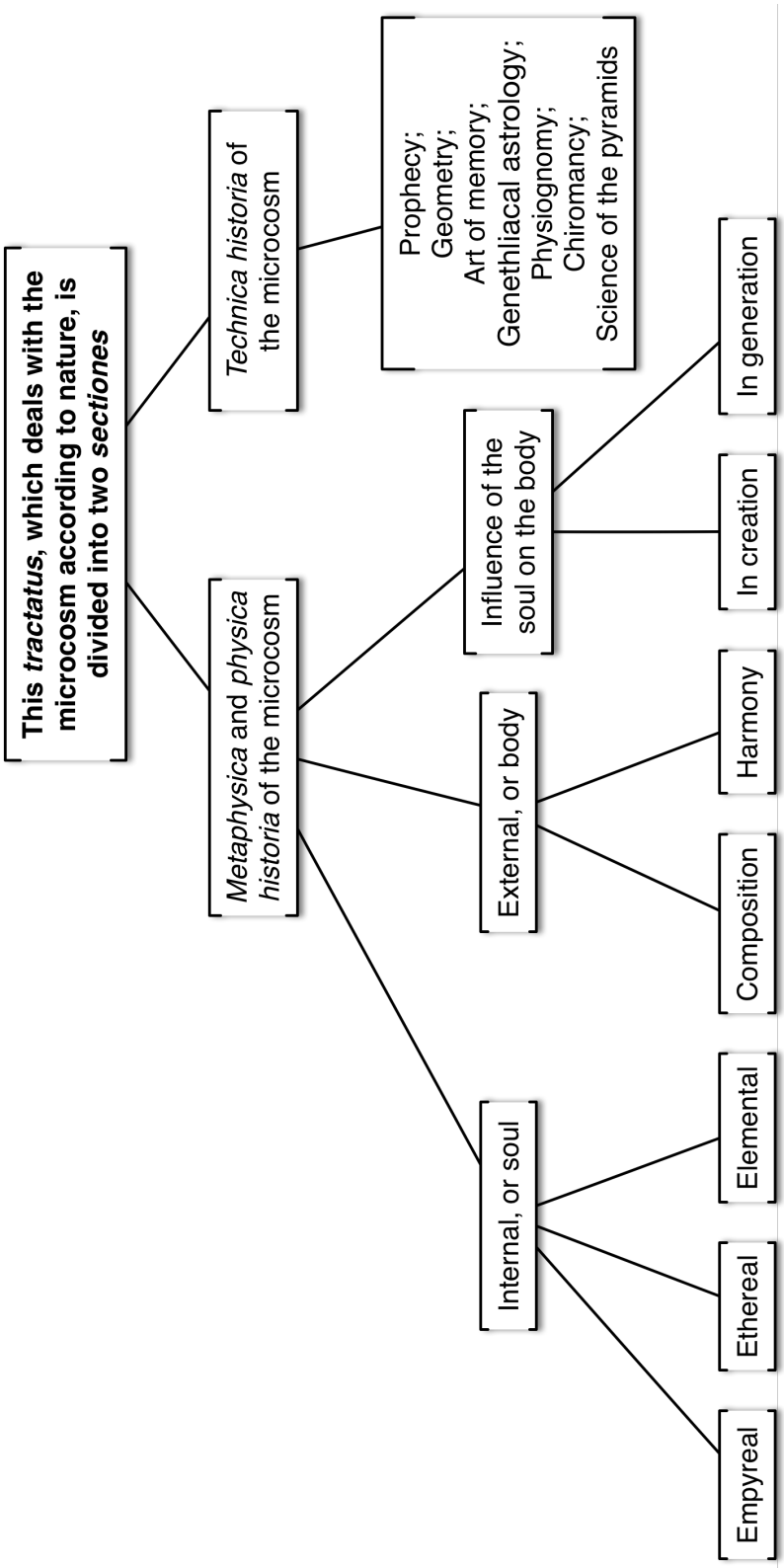

Figure 15b: 1619-plan

III.ii.a *DUCH* II, i, *sectio* i

The first *sectio* consists of thirteen *libri*:

Oratio gratulabunda (p. 5)
Liber i: De numeris divinis (p. 19)
Liber ii: De harmonia divina (p. 58)
Liber iii: De microcosmo interno (p. 64)
Liber iv: De hominis interni numeris et harmonia (p. 84)
Liber v: De microcosmo externo (p. 97)
Liber vi: De microcosmi externi harmonia (p. 109)
Liber vii: De microcosmi interno in externo seu de mentis actu in corpore (p. 122)
Liber viii: De microcosmicæ animæ mediæ actu in corpore (p. 154)
Liber ix: De animæ sensitivæ actu in corpore (p. 182)
Liber x: De triplici animæ in corpore visione (p. 204)
Liber xi: De spermate et generatione (p. 222)
Liber xii: De hominis interni et externi harmonia (p. 239)
Liber xiii: De musicæ animæ compositæ praxi (p. 264)

The whole *sectio*, as can be inferred from the titles of its *libri* and its title itself, is devoted to the ideals of harmony, measure and concord derived from the divine will. At the end of the first *liber* an interesting plate is given. In it, one encounters once again Fludd's pyramids. The pyramid on the left (A-B) is the material pyramid, representing the generation beginning from the simplest numbers (the most divine) and proceeding towards the biggest numbers (the most material). The pyramid on the right (C-D) is, on the other hand, the formal pyramid, representing the soul's ascension from the material world toward the spiritual one. In fact, according to what Fludd describes in this *liber*, the first nine simple numbers (1, 2, 3, 4, 5, 6, 7, 8, 9) are divine and represent the essence of the trinity; from these nine numbers derive both human and celestial music.[60]

[60] "From the simple harmony of the numbers of the Holy Trinity are generated both the *musicæ humana* and the *mundana*". (Ex simplici igitur numerorum divinæ Trinitatis harmonia, Musica tam mundana quam humana exorta est). *DUCH* II, i, *sectio* i, pp. 41-42.

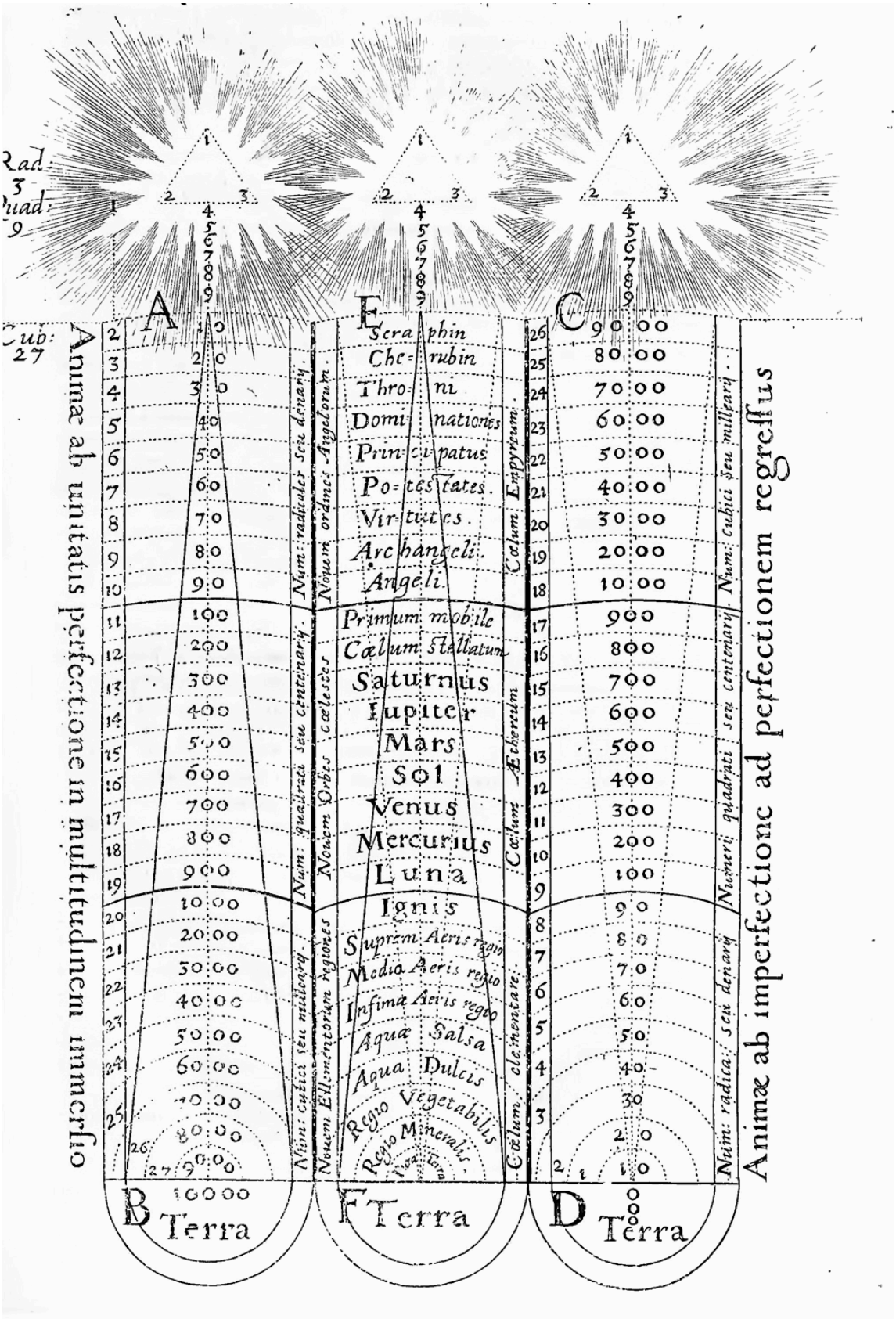

Figure 16 (*DUCH* II, i, *sectio* i, p. 45)

Numbers having two figures are of the Empyreal region; three, of the Ethereal; four, of the Elemental. In the middle pyramid (E-F) one sees the union of the two pyramids: the proportion of the cosmos (*mundi proportio*).

The second *liber* deals with the divine harmony. It gives an image representing the mystery of the divine unity and trinity.

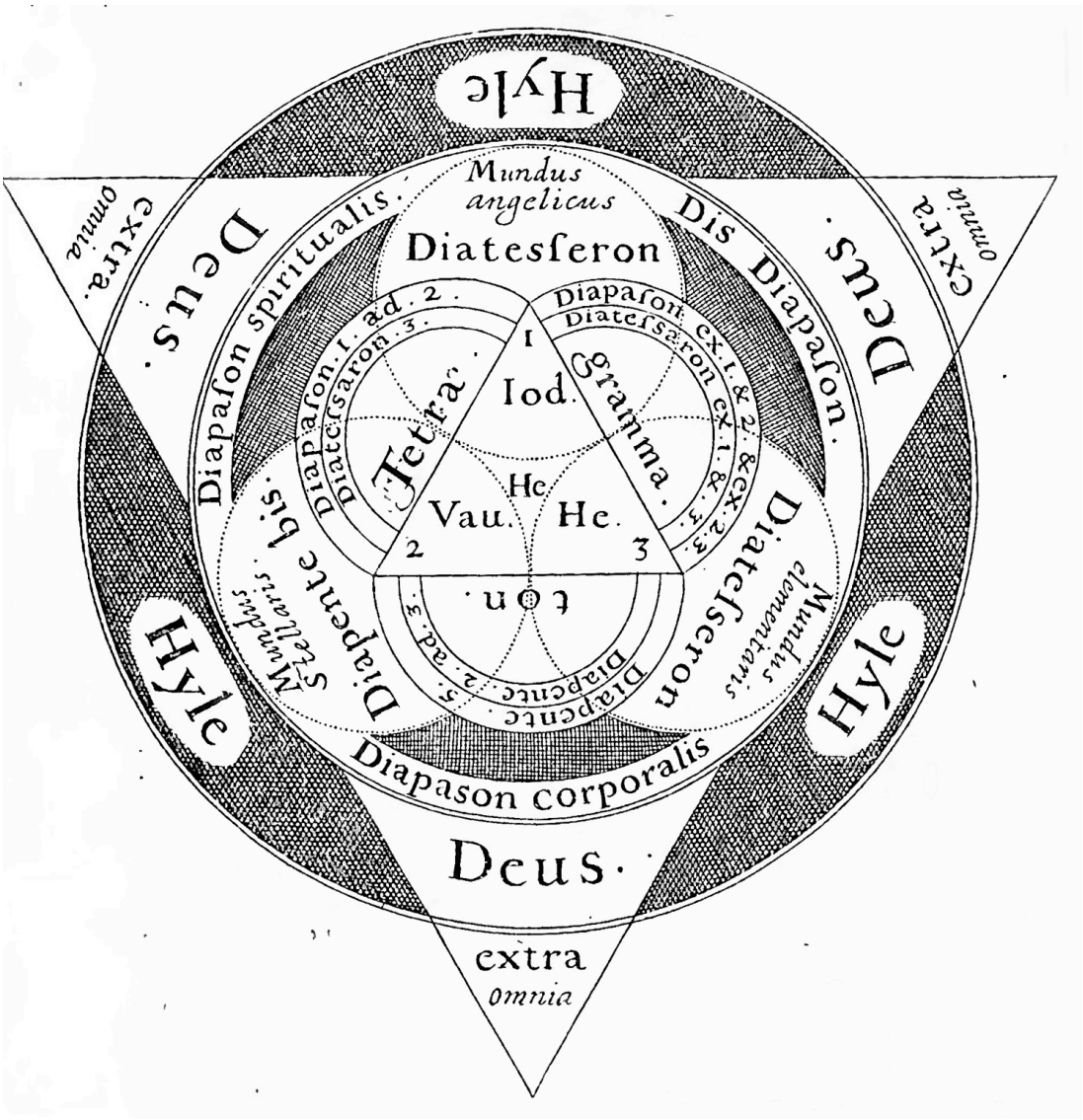

Figure 17 (*DUCH* II, i, *sectio* i, p. 62)

God is one but three-fold at the same time. Between the Elemental region and the Ethereal one is an octave (*diapason corporalis*); between the Empyrean and the Ethereal is another octave (*diapason spiritualis*). Lastly, between the Elemental and the Empyreal regions is a double octave (*dis diapason*). God is unity (the octave), notwithstanding His divine three-fold nature.

The third *liber* focuses on the internal microcosm and it is a long account on the human soul, its creation, and man as a divine image of God.

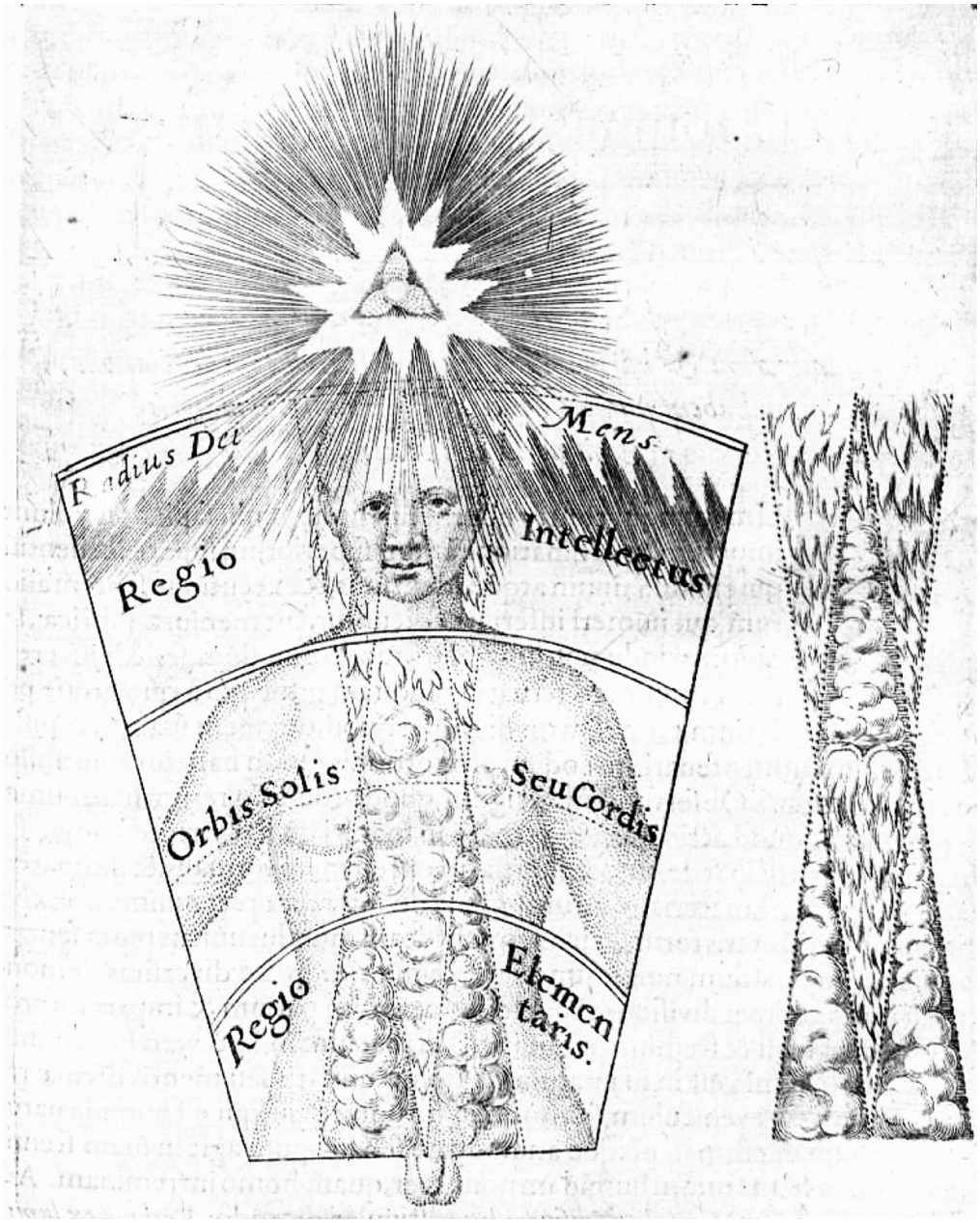

Figure 18 (*DUCH* II, i, *sectio* i, p. 83)

The *liber* concludes with a beautiful plate showing the harmony of the microcosm with the macrocosm. The elementary region is connected with the lower parts of the human body, the Ethereal region with its central part (note the correspondence of the heart with the sun in the *orbis solis seu cordis*) and the Empyreal with the head, or *regio intellectus*. Once again one encounters Fludd's ever-present intersecting pyramids. The one ascending (material pyramid) is made of dark matter, and the more it goes up the less is its quantity of matter. The descending one is the formal pyramid; its base is in God, and the more it descends the more it diminishes its spiritual light. After having defined and described the soul (the internal microcosm), Fludd deals with its numbers and harmony in *liber* iv.

The fifth *liber* is about the external microcosm; this is the material body itself, the *corpus humanum*, as differentiated from the soul (the inner microcosm). Having dealt with the origin and quality of matter in the first *tomus*,[61] now Fludd surveys the origin, weight and mass of the minerals; the origin and qualities of vegetables and plants; and the animals. Plants are superior to minerals, since they are lighter and reach upwards, while minerals are heavier and tend towards the earth. Certain animals, Fludd continues, have a little spark of reason (*rationis scintilla*); man is, though, the master of all creatures and an almost-divine creature. The all-informing Fluddean philosophy of correspondences is applied once more: to the minerals is associated the Elemental region; to the vegetable realm the middle; to man, the Empyrean region. At the end of this *liber*, less than two pages are dedicated to the anatomy of each 'microcosmical region'; Fludd declares that this *capitulum* deals with the *levis anatomia* (light anatomy), stating that he could fill up a whole volume on this subject, but that for now he prefers to go ahead with other subjects.[62] A few years later, he would indeed dedicate a publication on the *anatomia vulgaris*, the 'common anatomy', as opposed to the spiritual anatomy. This is something that perhaps at that stage was not yet planned.

Liber vi explains the geometry of the external microcosm and its harmony with the macrocosm, by which it is influenced. Several plates illustrate how certain parts of the body can be inscribed into geometrical figures:[63] the head both in triangle, circle and square; the feet in the rectangle; and so on.

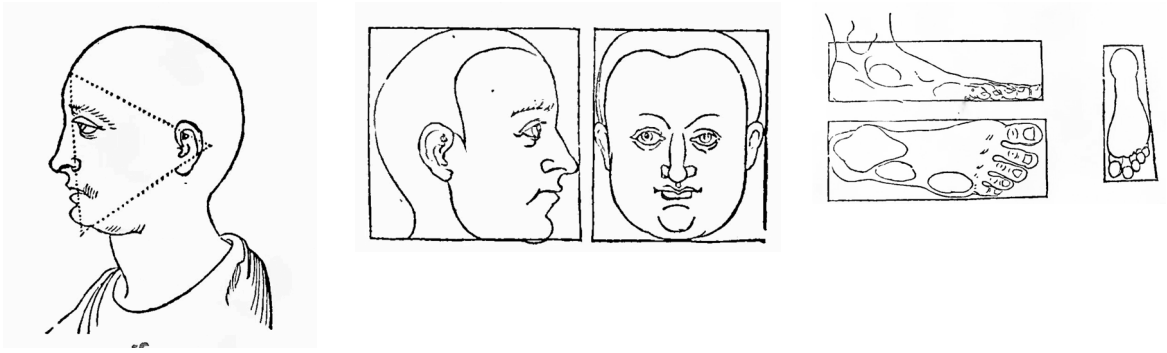

Figure 19 (*DUCH* II, i, *sectio* i, p. 116)

[61] Matter here refers to the *materia* which constitutes the body. See Ibid., p. 97.
[62] Ibid., p. 108.
[63] Fludd here reminds the reader that a lengthy discussion on this topic is to be found in his treatise on the art of painting (*DUCH* I, ii, *pars* v).

The influence of the planets on the body is a topic of particular interest to Fludd. In fact, if a discord and antipathy happened between an organ and its corresponding planet, the body would not be in musical harmony anymore, and a disease will arise. This *liber*, and in general this whole *sectio* of the *DUCH*, can be considered the foundation of Fludd's following medical writings.

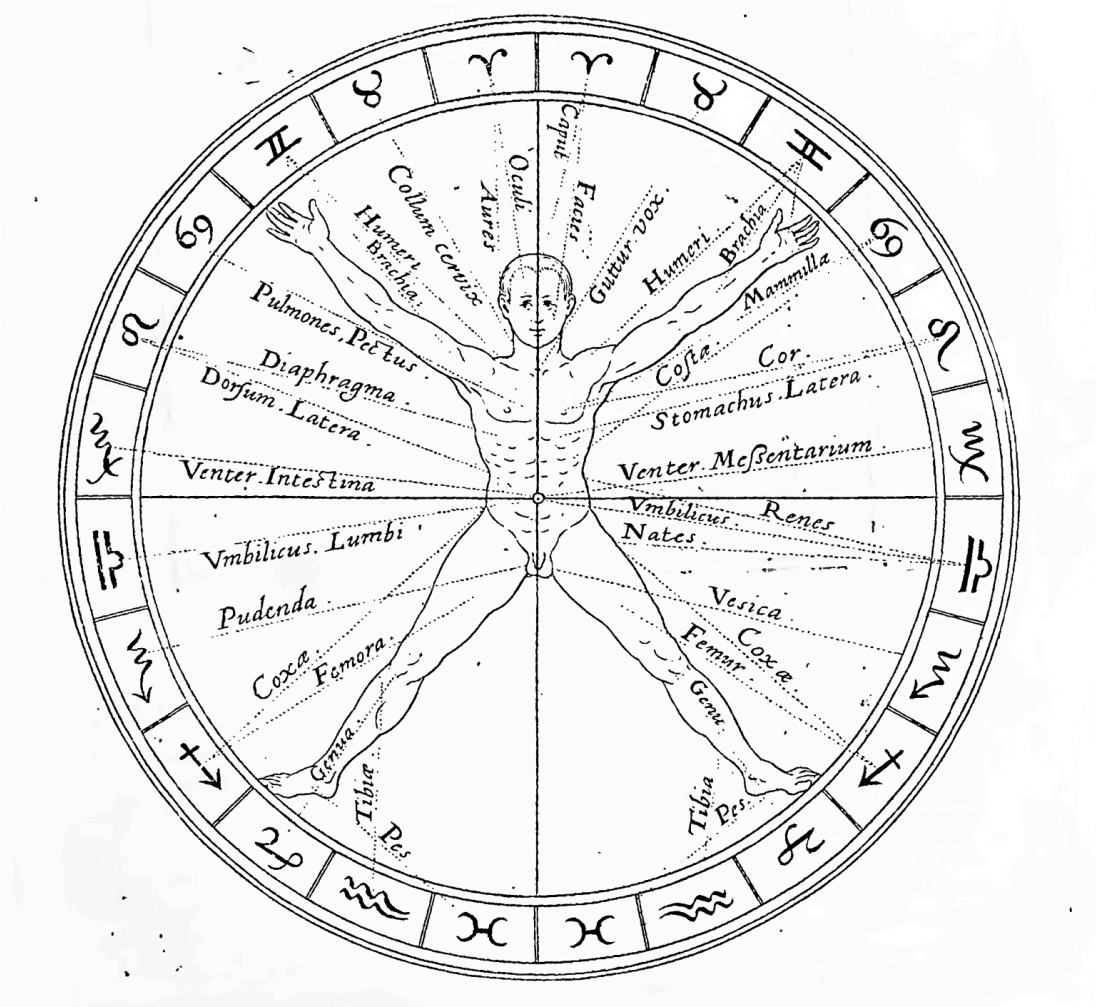

Figure 20 (*DUCH* II, i, *sectio* i, p. 113)[64]

Libri vii, viii and ix deal with the connection of respectively *mens* (mind), *anima media* (middle soul), and *anima sensitiva* (sensitive soul) with the external microcosm, i.e. the body.[65] Here, as it happens in many of the Fluddean writings, one finds several *experimenta*; two of the most fascinating are *machinæ* Fludd takes from Hero of Alexandria's work.

[64] A series of plates closely resembling this plate is to be found in Agrippa, *De occulta philosophia*, pp. 265-273.

[65] In *liber* vii one finds a short account on prophecy, a *scientia* with which Fludd will deal in greater detail in the *sectio secunda*; worthy of attention is the reference to Olaus Magnus' *Historia de gentibus septentrionalibus* (Rome, 1555).

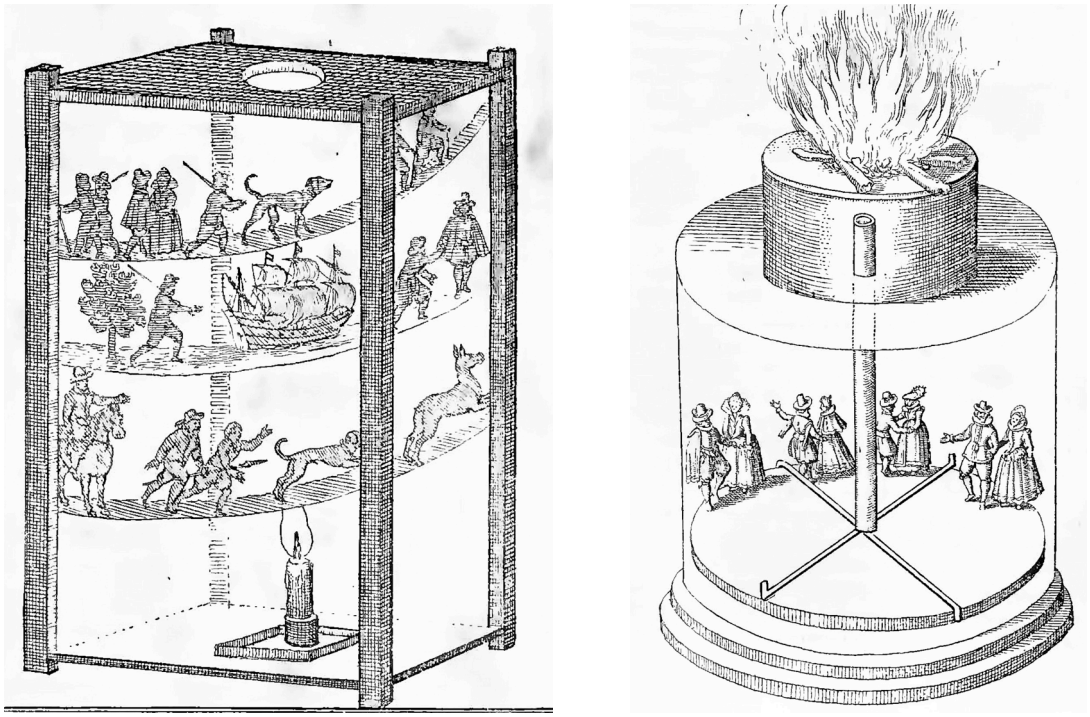

Figure 21 (*DUCH* II, i, *sectio* i, p. 179)

Thanks to the heat produced by the flames,[66] transmitted by the air, the characters, which are made of paper, will move in a circular dance. In the same way God, the divine flame, thanks to the action of the divine spirit, gives heat and life to the human body. With these two experiments the correspondence between the inferior fire and the celestial one is proved.

In *liber* x the visions of the soul are contemplated. These are of three kinds: corporal, spiritual and intellectual. A fascinating plate is given to summarise them. The brain is divided into three main cells, following the ventricular theory of Galen and Avicenna. The five senses, the seat of which is in the front cell, are linked to the sensible world (*mundus sensibilis*), and connected with their correspondent element (touch with earth, taste with water, smell with gross air, sight with subtle air and hearing with fire). This sensible world is mirrored by the imagined one (*mundus imaginabilis*). Mind, intellect and reason are faculties inhabiting the high-central part of the brain, and they communicate with the *mundus intellectualis* and, ultimately, God. This central ventricle of the brain is the most important for Fludd, and plays a central role in his geomancy.[67] The *vermis* (literally worm) acts as a valve between

[66] Here Fludd tells the readers to refer to the *capitulum* 7 of the first *tractatus* of the first *tomus*, since that *capitulum* deals with the *ignis artificialis* as opposed to the divine fire in the heavens.

[67] In the third book of the *De occulta philosophia* by Agrippa (e.g. chapters xliii and li) one finds similar concepts about the powerful faculties of the middle ventricle of the brain. Certainly Agrippa was influenced by Ficino in this respect.

the first and the second cell. In the back of the brain one finds the cell responsible for controlling the faculties of motion and memory.[68]

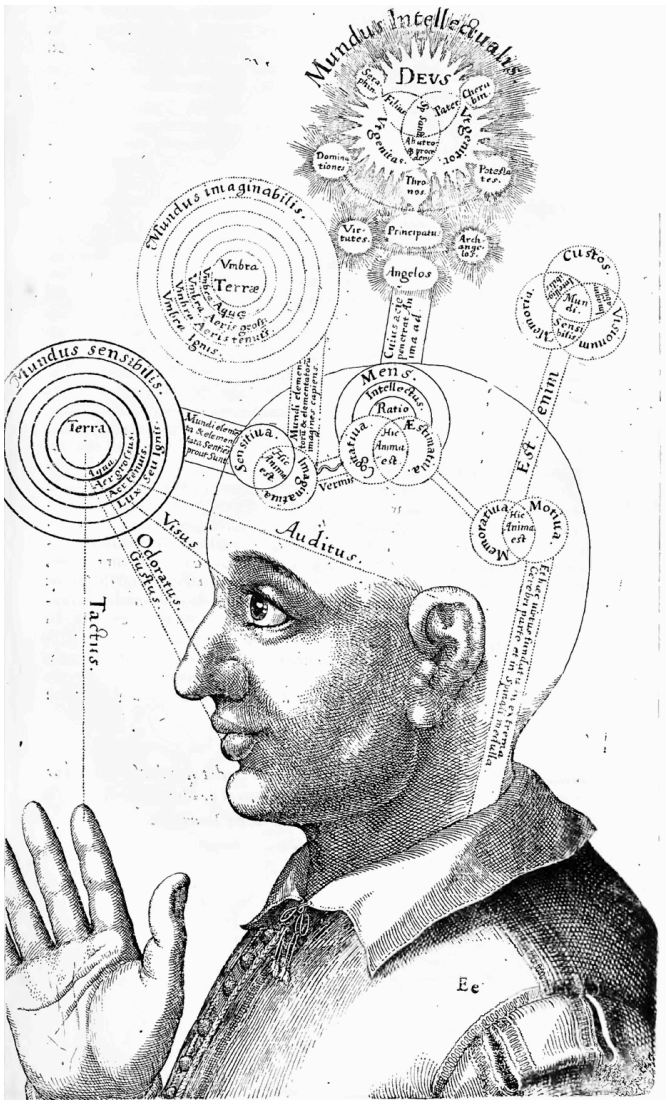

Figure 22 (*DUCH* II, i, *sectio* i, p. 217)

Liber xi focuses on the generation of man and on Nature's secret operations in his formation. The last two *libri*, xii and xiii, deal specifically with a topic which for the physician in Robert Fludd was essential: the *musica humana*. The perfect musical harmony between body, soul and spirit is, in fact, a *condicio sine qua non* for the health of the person, and the real physician should take care of all aspects, both material and spiritual, which allow a good and sound health. I shall describe them in more detail in the course of the next chapter.

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[68] The most popular plate on the brain functions, which Fludd is likely to have been inspired from, were the one printed in 1503 in Gregor Reisch's *Margarita philosophica*. The idea of a division of the brain into three cells dates back to the fourth century and, to be sure, to Nemesius Emesenus' *De natura hominis* and St. Augustine's *Genesi ad litteram*. See E. Clarke et al., *An Illustrated History of Brain Function: Imaging the Brain from Antiquity to the Present*, S. Francisco, 1996; see also D. R. Kelley et al. (eds), *The Shapes of Knowledge from the Renaissance to Enlightenment*, Dordrecht, 1991, pp. 67-68.

III.ii.b *DUCH* II, i, *sectio* ii

As previously pointed out, the *sectio secunda* is notionally the publication that completes *De utriusque cosmi historia*'s original purpose. In fact, the second *sectio* concerns the *historia technica* of the microcosm, while the first focused on the *historiæ metaphysicæ* and *physicæ*. The frontispiece depicted at the beginning of this *sectio secunda* resembles the one we have met with at the beginning of the *historia technica* of the macrocosm and, more vaguely, to the frontispiece to its first *tractatus*.

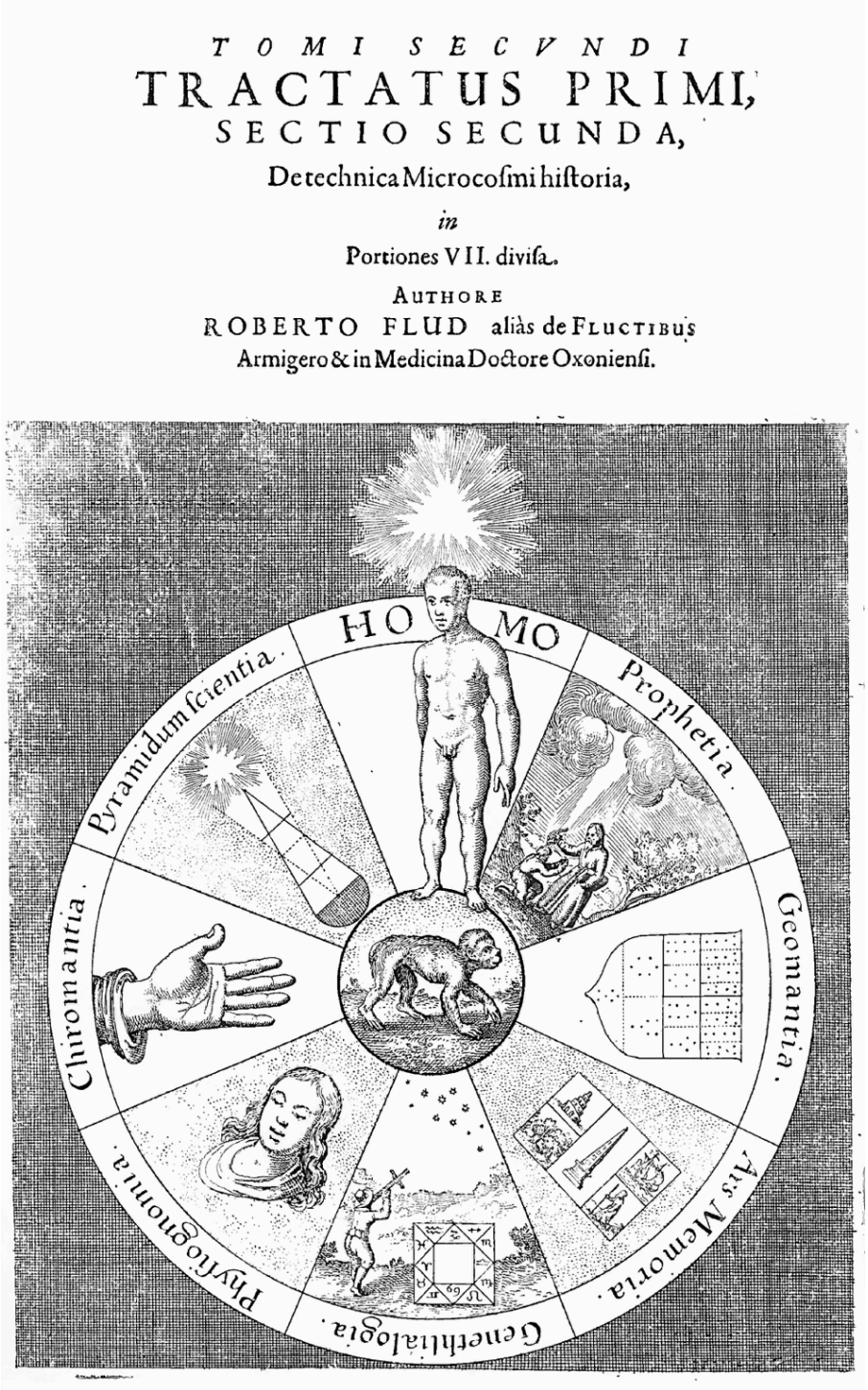

Figure 23: frontispiece to the *sectio secunda* of *DUCH* II, ii

To be sure, this plate is slightly less pompous, and features the ape of Nature in the centre of a wheel subdivided into eight segments. Above the ape one finds the man, who occupies one section; above the head of the man stands God, the triangle of light. Each of the remaining seven segments represents the seven *portiones* of this *sectio*. As the *tractatus secundus* of the *tomus primus* deals, as I have shown, with the practical arts and *scientiæ* by means of which mankind operates in the world, imitating and perpetuating God's action in it, the *sectio* I am now analysing deals with the arts and *scientiæ* man devised for his self-understanding and self-awareness. These are: prophecy, geomancy, art of memory, genethlialogy, physiognomic, chiromancy and the Fluddean *scientia* of the pyramids. The complete table of contents runs as follows.

> Proœmium (p. 4)
> Portio i: De mentis humanæ scientia, hoc est, de vaticinio, et prophetis seu hominibus spiritu divino afflatis (p. 6)[69]
> Portio ii: De intellectus scientia seu geomantia (p. 37)
> Portio iii: De animæ memorativæ scientia, quæ vulgo ars memoriæ vocatur (p. 48)
> Portio iv: De genethlialogia (p. 72)
> Portio v: De animæ vitalis cum animali scientia seu astrologia physiognomica seu physiognomia (p. 121)
> Portio vi: De scientia animæ naturalis cum vitali,
> seu astrologia chiromantica seu chiromantia (p. 141)
> Portio vii: De speculativa pyramidum metaphysicæ et physicæ scientia (p. 179)

All of them (except the second one which consists of a single *liber*) are, in turn, divided into *libri*; moreover, the second *liber* of the *portio* on physiognomic consists of two *partes*; the second of these two *partes* is divided into seven *capitula*, each of them divided again into several *partes*. This is only the beginning of Fludd's intricate subdivisions: in the following publications he will emphasise this 'over-taxonomic' attitude, and it is not a matter of chance that this burgeoning division starts happening in his writings on the microcosm.

The first *portio*, focused on prophecy, is divided into three *libri*. While Fludd already gave a short account on prophecy in *sectio i* (*liber* vii, *capitula* 9, 10 and 11), here the reader finds a more in-depth description of this subject. Fludd relies upon the opinions of Hermes Trismegistus, Jamblicus, Porphyrius, the Platonic

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[69] The frontispiece to this *liber* is at p. 3, before the *Proœmium*.

philosophers and many others. The prophet has the gift of being in touch, directly or indirectly, with God, thus speaking on his behalf.

Portio secunda deals with geomancy. This topic has already been described in *pars* xi of *tractatus* ii of *tomus* I. Here Fludd, however, focuses on its essence and on demonstrating that it is a true *scientia* of the human soul (*veram animæ humanæ scientiam*). Several kinds of divination are listed at the end of this *portio*: hydromancy, aeromancy, pyromancy and many others.

The third *portio* has enjoyed popularity thanks to the studies of Frances Yates. There are two kinds of memory: natural and artificial. The second one, which is the main topic of Fludd's exposition, is to be divided into two main branches, *ars rotunda* and *ars quadrata*. The first uses ideas and visions not pertaining to the corporeal world (i.e. angels and daemons), while the latter relies upon images of the corporal realm. *Ars rotunda* is superior to the *ars quadrata* and assists the natural memory of the microcosm, but requires an understanding of astral magic not possessed by many; for this reason, *ars quadrata* is more common and preferred to the *rotunda*.[70]

The topic of subsequent *portio*, which consists of three *libri*, is genethlialogy; this is a branch of astrology that makes it possible to know the characteristics, the future and other things of a person from the position that the celestial bodies had at the moment of his/her birth. At the beginning of *liber* i Fludd briefly enlists the different kinds of astrology, stating – as he already did in *DUCH* I, ii, *pars* x – that there are good and bad 'astrologies': he clearly rejects the diabolic ones. It is Fludd's opinion that amongst the most well-versed astrologers are Johannes Schöner (1477-1547),[71] Julius Firmicus Maternus (*c*. 334 A.D.) and Pietro d'Abano (*c*. 1257-1316),[72] other than his own magister Thomas Allen (1540-1632).[73]

Portio v is divided into three *libri* and is dedicated to physiognomic. The Aristotelian subdivision of *signa* that need to be observed for a correct analysis of one's character are of two kinds: *communia* (colour, walk and form of the body) and *propria* (head, hair, ears etc.). To their survey is dedicated the whole *portio*.

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[70] *DUCH* II, i, *sectio* ii, p. 51.
[71] J. Schöner's works on genethlialogy are *Tractatus astrologicum judiciariæ de nativitatibus* (Nürnberg, 1540), *De iudiciis nativitatum libri tres* (Nürnberg, 1545) and *De judiciis nativitatum liber unus antehac noneditus* (Nürnberg, 1546).
[72] The philosophy of Pietro d'Abano is the base of Johannes Trithemius'. Also, Pietro's *Heptameron* is printed as an appendix to H. C. Agrippa's *De occulta philosophia*. The works of both Agrippa and Trithemius were well known to Fludd, who quotes them extensively in the course of his writings. Moreover, Pietro d'Abano played an important role in the tradition of the music of the pulse, as I shall show in chapter V.
[73] See *DUCH* II, i, *sectio* ii, p. 73.

The sixth *portio*, divided into three books, is dedicated to chiromancy, the divination of past, present, and future through the careful inspection of the characteristics of the hand. The last *portio* of this *sectio ii* is very important for a correct understanding of Robert Fludd's philosophy. To be sure, as Fludd himself explains,

> [...] the highest clarity of our philosophy, both macrocosmic and microcosmic, consists in the explanation of the two pyramids, i.e. the material and the formal one.[74]

The reader is by now well acquainted with the concept of the intersecting pyramids. Curiously, Fludd has been using it since the very beginning of his *historia*, but he nevertheless chooses to illustrate it in detail only at the end of the first *tractatus* of *tomus* II. Several plates are given: the one which best summarises Fludd's concept is certainly the following:

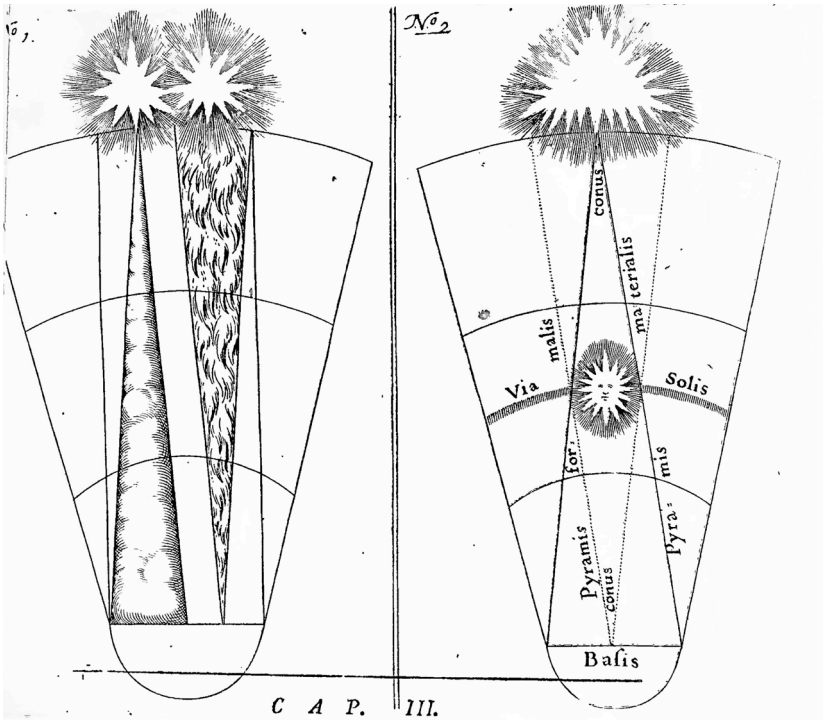

Figure 24 (*DUCH* II, i, *sectio* ii, p. 187)

On the left-hand side, the two pyramids are depicted one beside the other. The *materialis* one (made up of matter) has its base, or highest influence, on Earth, and the more it reaches towards the highest heavens its influx diminishes. The *formalis* one (made up of spiritual fire), on the contrary, has its base and highest influence in God; its influx diminishes the more it reaches downwards. On the right, the interconnection of the two creates a zone, in the middle, in which the two influxes and

[74] "[...] maxima Philosophiæ nostræ, tam Macrocosmicæ, quam Microcosmicæ perspicuitas in duplicis pyramidis, formalis nimirum et materialis, explicatione consistit". Ibid., p. 180.

forces are perfectly balanced and harmonised. This is the *via solis* or, as Fludd more often calls it, the *sphæra æqualitatis*. In the macrocosm this is where the Sun resides; in the microcosm, where the heart is.

At the end of this last *portio*, Fludd's words leave us in no doubt about the significance this pyramidal *scientia* has in his doctrine:

> [t]his is the reason why, kind reader, we have made a certain mention of the formal and material pyramids: [...] because this is the main key or door of our doctrine, through which one can enter into it.[75]

As I have already noted, *sectio ii* virtually concludes the original aim of the *De utriusque cosmi historia*; but the plan the reader finds at the end of *tomus* I and which I termed 1618-plan announced three more kinds of *historia* of the microcosm: *præternaturalis*, *supernaturalis* and *contranaturalis*, to be dealt with in the second, third and fourth *tractatus* respectively. Beginning with the second *tractatus*, the scenario will get more and more complex and problematic.

[75] "Hic ergo est nostræ intentionis scopus, Lector benigne, cum pyramidis formalis aut materialis aliquam facimus mentionem; [...] quoniam est præcipua doctrinæ nostræ clavis sive porta per quam in huius patet". Ibid., p. 191.

III.iii *DUCH* II, ii

De præternaturali utriusque mundi historia

Tomi Secundi

TRACTATUS SECUNDUS;

De

PRÆTERNATURALI UTRIUSQUE MUNDI HISTORIA:

In Sectiones tres divisa;

In Quarum
- Prima, de Meteororum tam Macro, quam Microcosmicorum causis, earumque effectibus in genere agitur.
- Secunda, de particularibus Meteororum, tam ad prosperam, quam adversam valetudinem; impressionibus: deque indicijs ea præterita, præsentia, & futura præsagientibus tractatur.
- Tertia; pessimos & malesanos Meteororum eventus futuros avertendi; præsentes ipsorum insultus debellandi, & sanitatis denique pristinæ jam amissæ restituendæ ratio ad amussim explicatur.

Authore

ROBERTO FLVDD, alias de Fluctibus, Armigero, & in Medicina Doct. Oxonienſi.



FRANCOFURTI

Typis ERASMI KEMPFFERI,

Sumptibus JOAN. THEODORI DE BRY.

ANNO M. DC. XXI.

Figure 25: frontispiece to *DUCH* II, ii

The plan of *tractatus* i of *tomus* II which can be found at its beginning (1619-plan) is generally faithful to the 1618-plan, with no substantial changes. The same cannot be said for the plan shown at the beginning of *tractatus* ii.[76] In the 1618-plan(1) the second *tractatus* is said to deal with

> [...] de rebus præter naturam humanam accidentibus, cuiusmodi sunt Meteora seu morbi, in tres partes divisus [...]

In the 1621-plan, however, one reads the following:

> [t]ractatus microcosmi qui in medicina arte versatur, secundus in *sectiones* 3. dividitur [...]

Tractatus ii is now announced to be a tractate on the art of medicine, and while the subdivision in three sections is maintained, I shall show how its realisation differs from its plan.

The frontispiece of *tractatus secundus* (figure 25) announces that this new section of the *De utriusque cosmi historia* concerns the preternatural survey of the two cosmoses. This is a little ambiguous, since *tomus* II is supposed to deal exclusively with the microcosm, as opposed to *tomus* I which is focused on the macrocosm. Only two years before, the frontispiece of *tomus* II announced *Tomus secundus de [...] præternaturali [...] microcosmi historia*; by 1621, it looks like Fludd have expanded the *microcosmi historia* to the other cosmos too. Apparently, the English philosopher is now filling the gap he left behind; in the volumes published in 1617 and 1618 he, in fact, covered only the *metaphysica*, *physica* and *technica historiæ* of the macrocosm without mentioning the *supernaturalis*, *præternaturalis* and *contranaturalis* ones. The latter are mentioned only in the 1618-plan and the 1619 frontispiece together with a 'naturalis historia'.

It is my opinion that the explanation of Robert Fludd's apparently misleading categorisation might be found in the frontispiece of *tomus* II. Here, in fact, one finds four kinds of *historiæ*: *naturalis, supernaturalis*, *præternaturalis* and *contranaturalis*:[77] indeed, four volumes were planned in the 1618-plan(1)- and (2). But in the first *tractatus* of the second *tomus*, as I have shown, one finds the *metaphysica*, *physica* (*pars* i) and *technica* (*pars* ii) *historiæ* of the microcosm; if one adds these three kinds to the others already listed above one obtains seven *historiæ*: there should thus be

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[76] *DUCH* II, ii, folios marked as A2^{r}, A2^{v}, and A3^{r}. For convenience, I shall refer to this plan as '1621-plan' (fol. A2^{r}), '1621-plan-A' (fol. A2^{v}) and '1621-plan-B' (fol. A3^{r}).

[77] Note that the *metaphysica*, *physica* and *technica historiæ* which were mentioned in the title of *tomus* I are here missing, perhaps grouped into the term *naturalis historia*.

ideally seven planned volumes, one for each *historia*. This is not the case. Fludd, then, is probably grouping the three 'original' *historiæ* (i.e. the ones declared in the frontispiece to *tomus* I) into one single *historia naturalis*.

This is supported by at least two pieces of evidence. To begin with, in both 1618- and 1619- plans *tractatus primus* is described as an investigation of the microcosm "secundum naturam".[78] The second evidence is that in the 1618 frontispiece the *metaphysica*, *physica* and *technica historiæ* are not mentioned, even though they are covered in detail throughout the course of the first *tractatus*. The first *tractatus* might be considered the Fluddean *microcosmi historia naturalis*, as opposed to the *supernaturalis*, *præternaturalis* and *contranaturalis historiæ* planned for publication in the course of the following years.

Another piece of evidence might be the fact that instead of having seven subdivisions for *tomus* II, one for each *historia*,[79] in the 1618-plan one finds just four of them. Moreover, in the same plan, the second *tractatus* is described as "[...] de rebus præter naturam humanam [...]", and the fourth as "[...] de re contra naturam [...]". The third *tractatus* is the only one which does not bear any indication of which kind of *natura* it will survey, and it would be sensible to infer that this is the one which deals with the supernatural *historia*, thus closing the circle. Actually, as I shall briefly show, the picture is even more complex, and the third *tractatus* mentioned in the 1618-plan(2) would be incorporated into the second *tractatus* – the 'preternatural' one. Fludd thus apparently never reached the stage of publishing the *supernaturalis* and *contranaturalis historiæ*.

III.iii.a *DUCH* II, ii, *sectio* i, *portio* i

De theosophico, cabalistico et physiologico utriusque mundi discursu

The frontispiece above (figure 25) declares that preternatural *historia* is divided into three *sectiones*, the first concerning the causes of the micro- and macrocosmic meteors and their effects; the second dealing with the particular symptoms (*signa*) of both favourable and adverse meteors, and of the evidence thanks to which past, present and future meteors can be foreseen; and the third with the forecast of the worst and malevolent meteors, the cure of their present effects, and finally with the

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[78] "[...] circa res humanas [...]" in 1618-plan; "[...] de microcosmo [...]" in 1619-plan.
[79] *Metaphysica*, *physica*, *technica*, *naturalis*, *supernaturalis*, *præternaturalis* and *contranaturalis*.

method (*ratio*) for the restitution of the lost health. In the pages following the frontispiece Fludd gives a more articulated plan of *tractatus secundus* and its subsections.

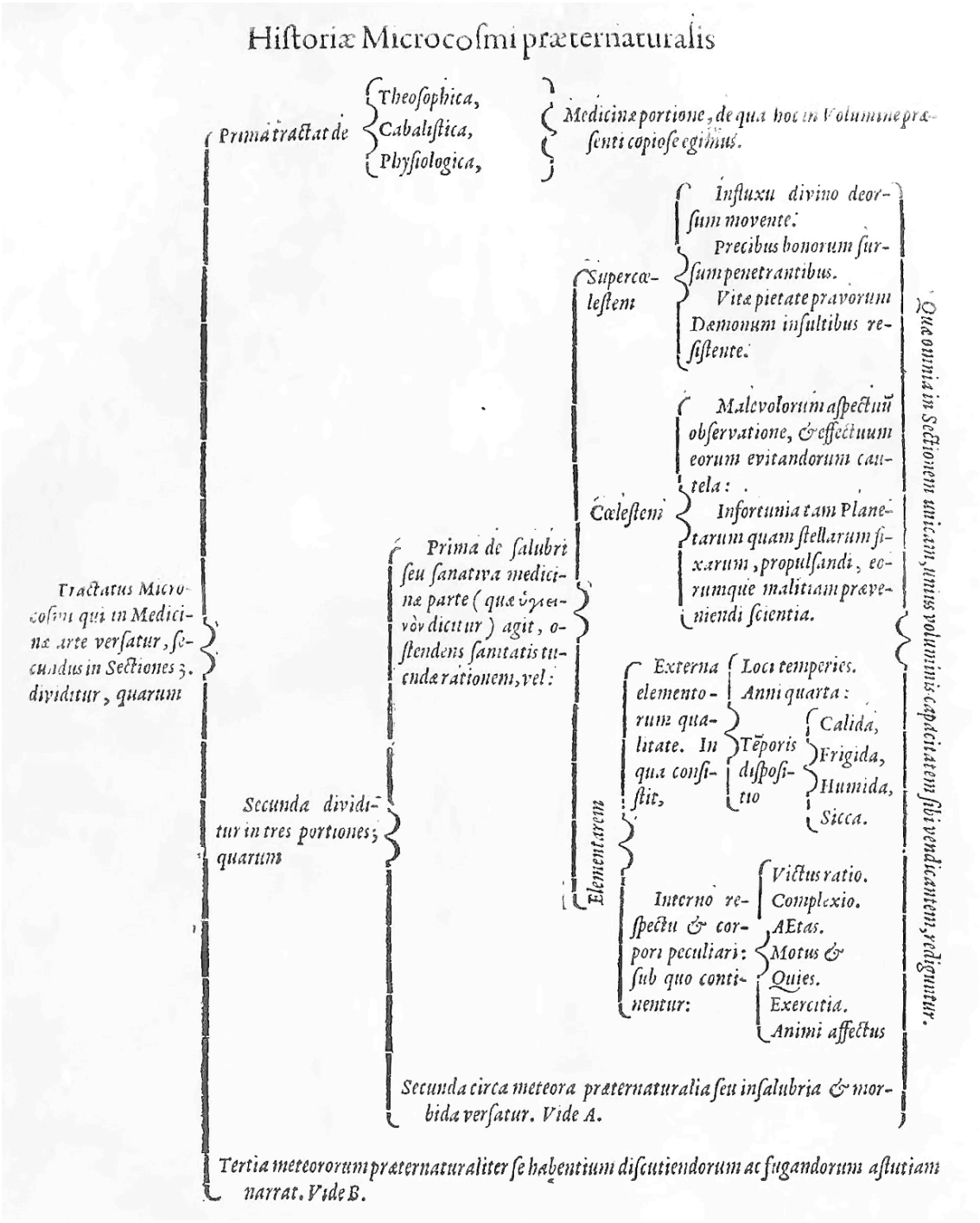

Figure 26a: 1621-plan

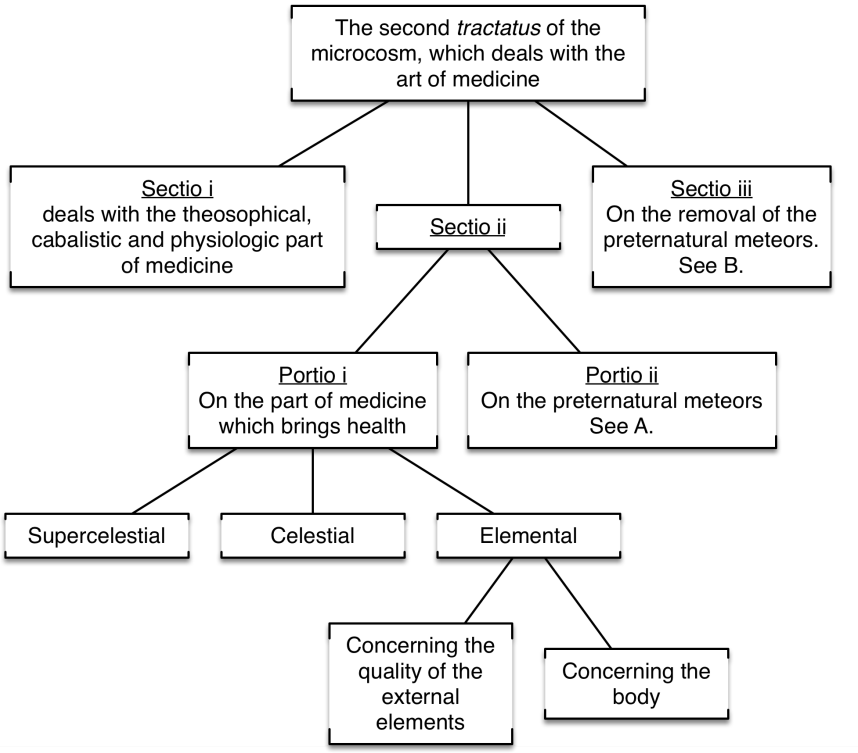

Figure 26b: 1621-plan

In this organogram, the first *sectio* is announced to be in the publication in which this plan has been published, and to be focused on the theosophical, Cabalistic and physiologic portion of medicine. Though it is declared that this first *sectio* will be entirely covered in the present volume ("hoc in volumine præsenti"), I shall argue that the physiological medicine would be published two years later in a separate volume.

Sectio ii is declared to consist of three *portiones*,[80] even though there are actually only two: the first, dealing with the salubrious medicine and the *supercœlestis*, *cœlestis* and *elementaris* methods of preserving health; the second, discussing preternatural, i.e. unhealthy and noxious, meteors. This last *portio* has its own scheme: in fact, it refers the reader to the plan 'A' in the following page:

[80] "Secunda dividitur in tres portiones [...]".

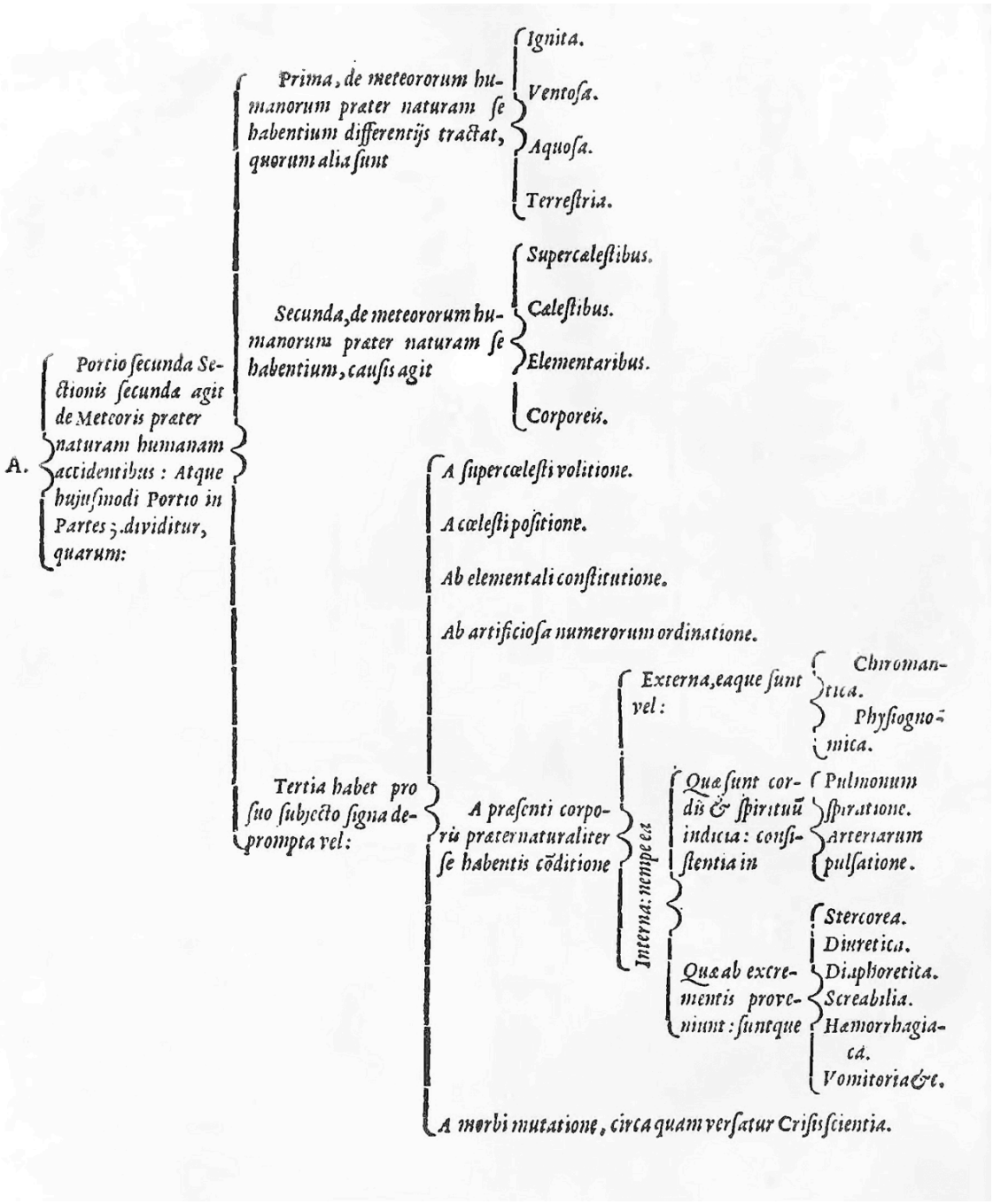

Figure 27a: 1621-plan-A

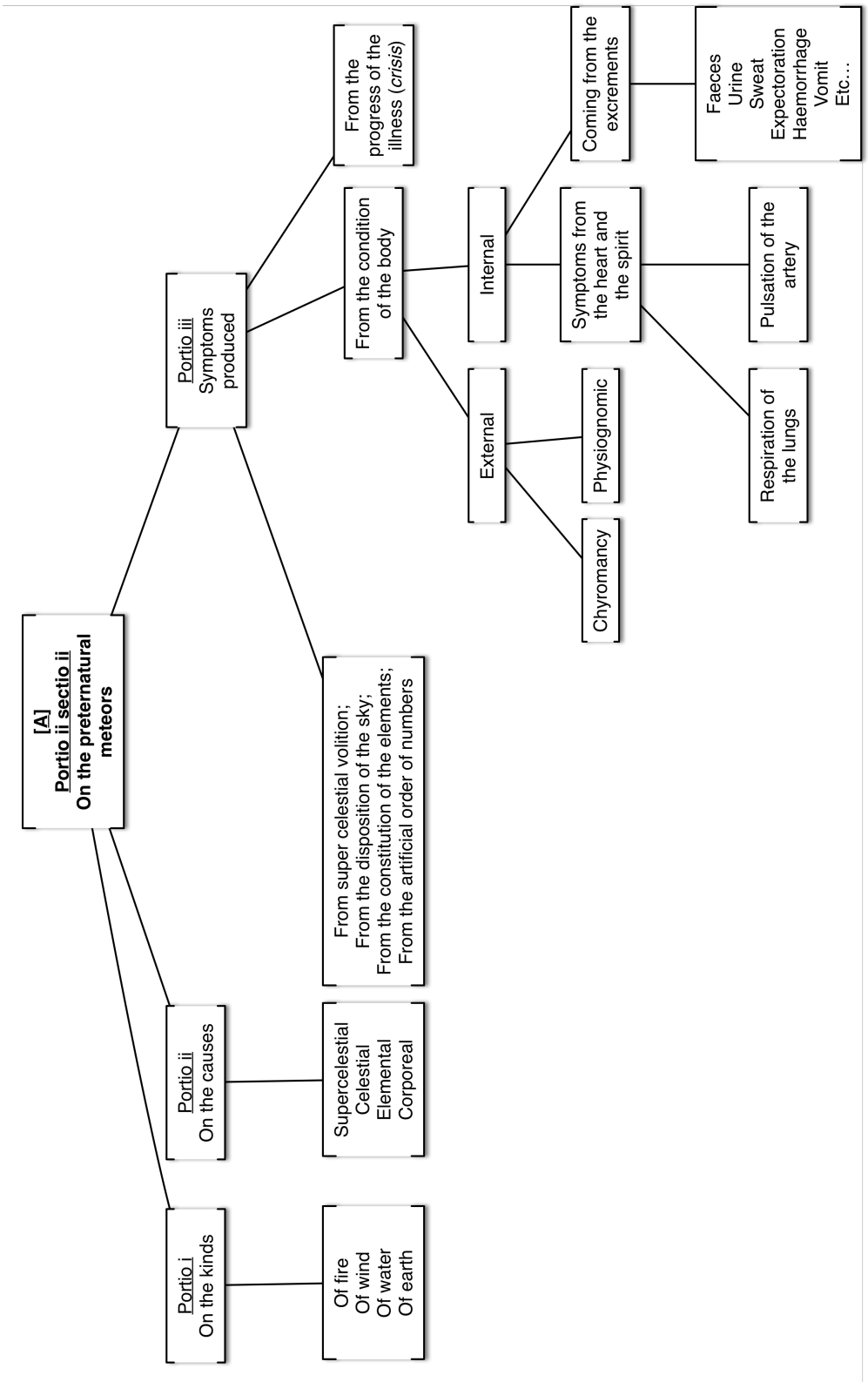

Figure 27b: 1621-plan-A

The above organogram is substantially the very same that one has already encountered in the 1618-plan. It should be noted, though, that the scheme one sees in the 1621-plan-A is now referring to *portio* ii of *sectio* ii, whilst in 1618-plan this was supposed to constitute the whole of *sectio ii*.

The third and last *sectio* of *tractatus secundus* is supposed to deal with the skills necessary to chase away the preternatural meteors. A "Vide B" refers the reader to a scheme which can be found in the folio marked A3[r].

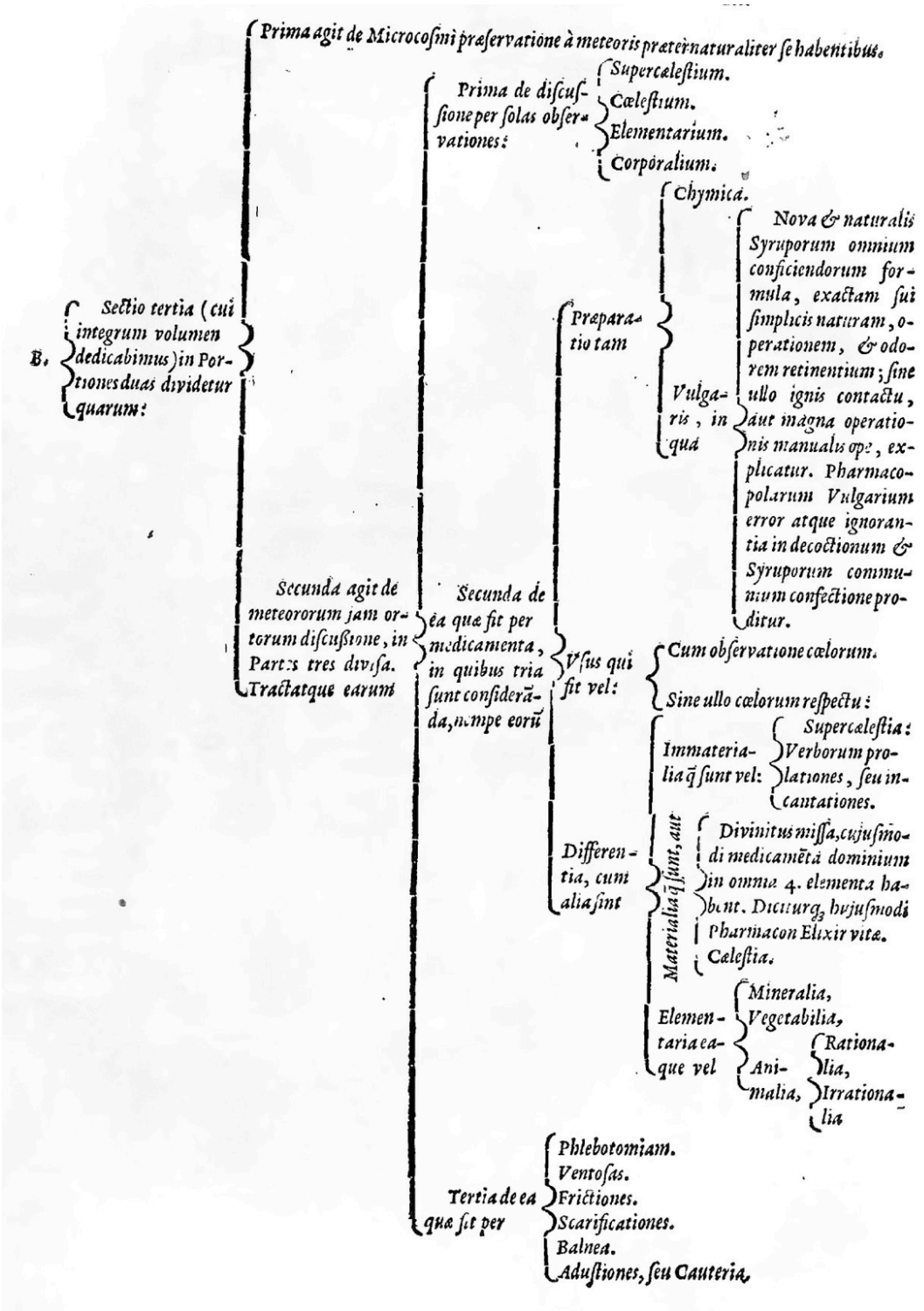

Figure 28a: 1621-plan-B

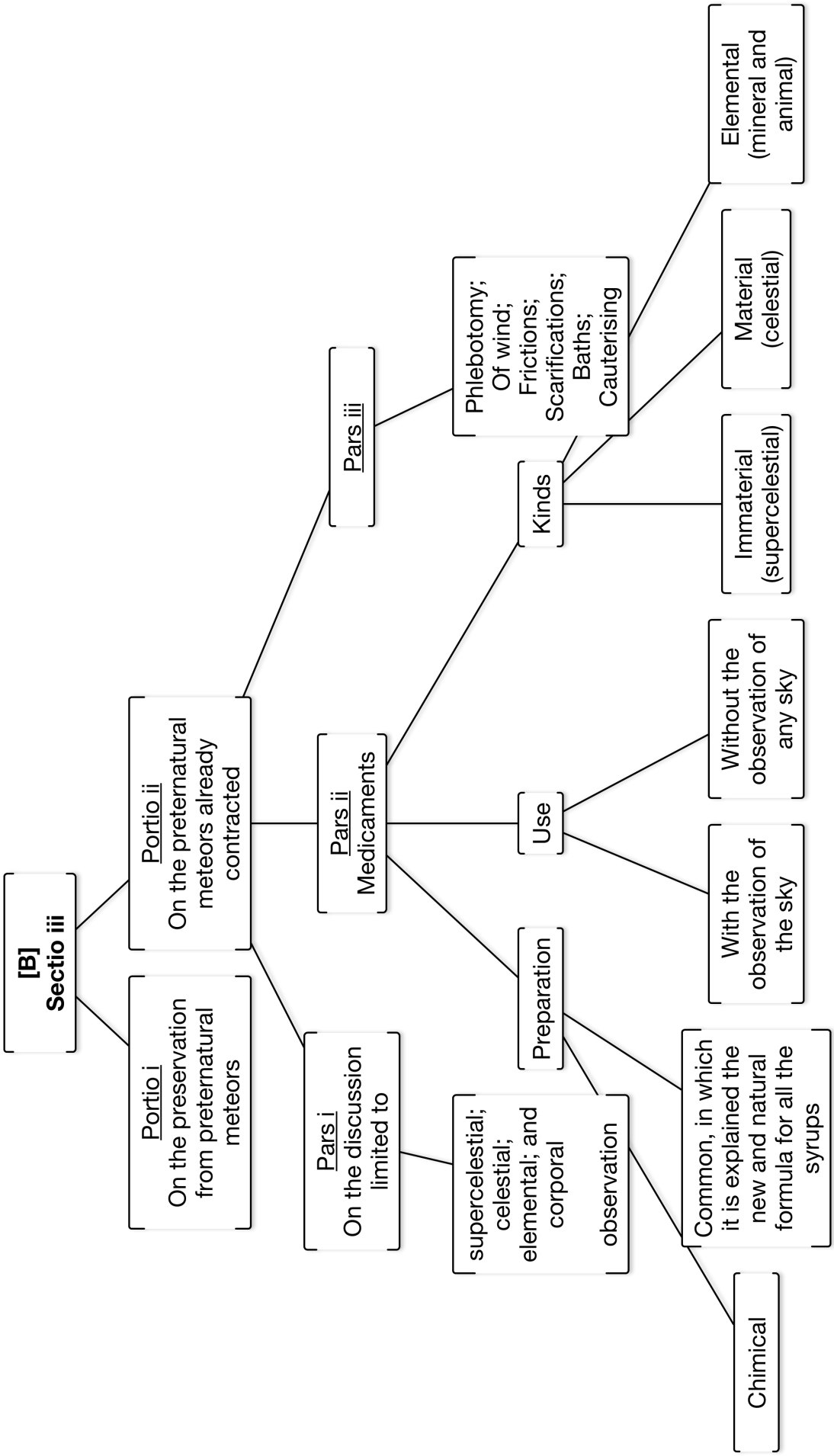

Figure 28b: 1621-plan-B

This is substantially similar to the descriptive schema for the third *tractatus* in the 1618-plan. There are some changes in *pars secunda*, which is now more detailed, but it is beyond doubt that we are talking about the same book.

In conclusion, what in the 1618-plan were *tractatus* ii and iii are, in the 1621-plan, 'downgraded' respectively to *portio* ii of *sectio* ii and *portio* iii of *tractatus secundus*. Moreover, with the publication of the plan for *tractatus* ii in 1621, the one I termed '1621-plan', something highly significant happens. The second *tractatus* is clearly referred to as "in medicina arte versatur", something which in the previous plans was never mentioned. It is possible then to consider this second *tractatus* as a sort of beginning of a new project specifically focused on medicine. As I have already observed, it is my opinion that the *metaphysica, physica atque technica historia* of the microcosm was virtually completed with *tractatus* i of *tomus* II. If *tomus* II were to have consisted only of its *tractatus* i, the *De utriusque cosmi historia* as originally planned would have been complete.

The frontispiece of the first *sectio* (figure 29) declares that it will be divided into three *portiones*;[81] the organogram the reader finds on the subsequent page, though, announces only two *sectiones.*[82] The announced appendix, which should conclude the whole *sectio*, will actually conclude the first two *portiones*. This appendix is Robert Fludd's first reply to Johannes Kepler about the *harmonia mundana*, which will be dealt with more extensively in the next chapter of this dissertation.

[81] "In portiones tres diviso [...]"
[82] "Sectio hæc prima [...] habet portiones duas [...]"

Tomi Secundi

TRACTATVS SECVNDVS;

Sectio Prima:

DE THEOSOPHICO, CABALISTICO ET PHYSIOLOGICO UTRIUSQUE MUNdi diſcurſu,

In Portiones tres diviſo.

IN QUIBUS STRICTA CAUSARUM REI METEOROLOgicæ (quæ eſt propinquior mixtioni perfectæ, illiuſque ruinæ atque corruptionis origo) in quolibet mundo ſe habentis, facta eſt inquiſitio.

Cui, in fine, Appendix quædam Analytica, comparationi in cauda Harmoniæ Mundanæ Joannis Keppleri, ſub titulo Appendicis, inter eandem illam ſuam & meam Harmoniam Mundanam factæ, ipſiſſimis veritatis argumentis reſpondens, inſeritur.

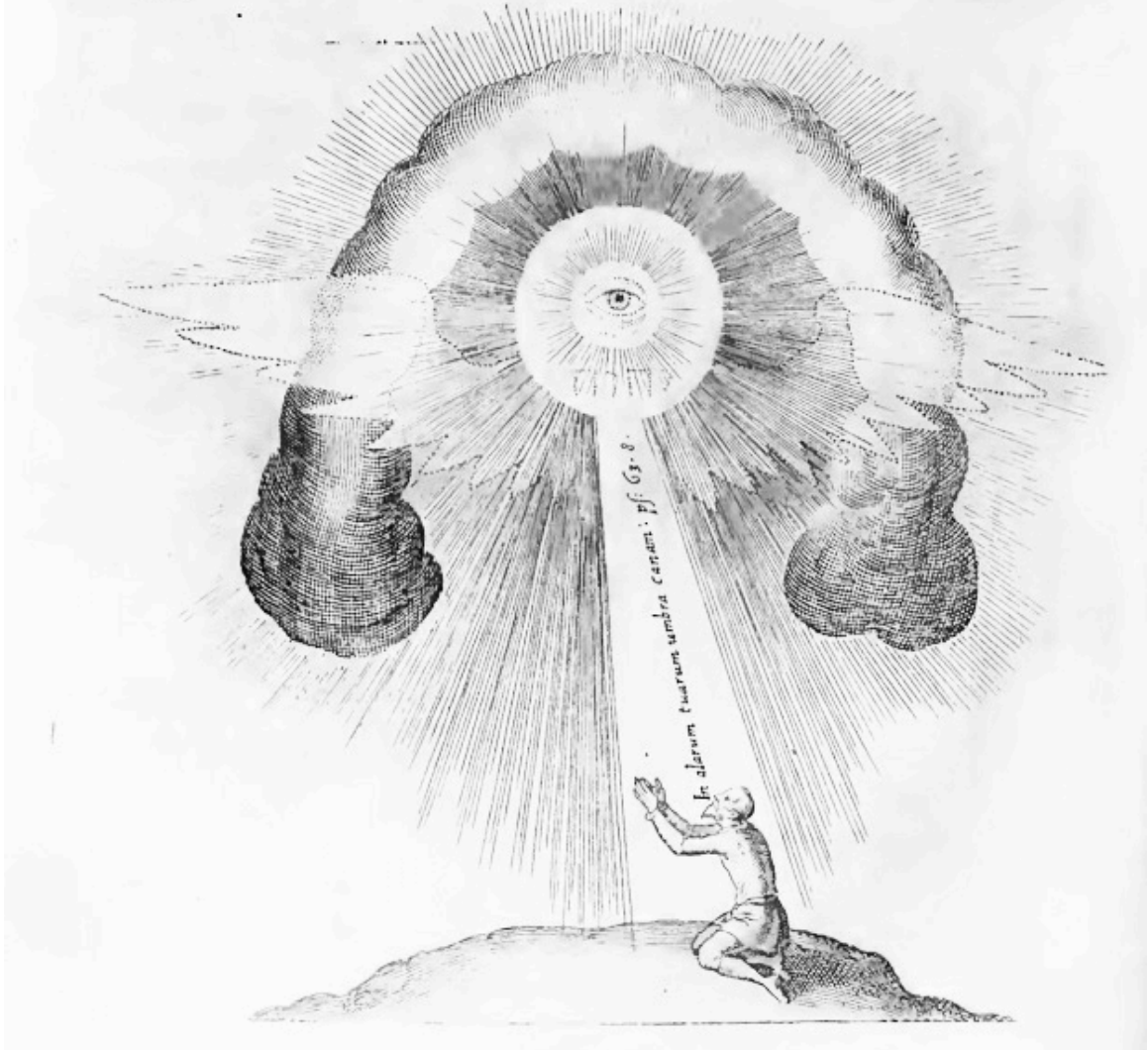

Figure 29: frontispiece to the first *sectio* of *DUCH* II, ii

Right after the frontispiece one can find the plan of the work. This is the description of *portio* i, while *portio* ii is just described as "[...] circa microcosmi principia", and there is not a detailed plan for this (see below).

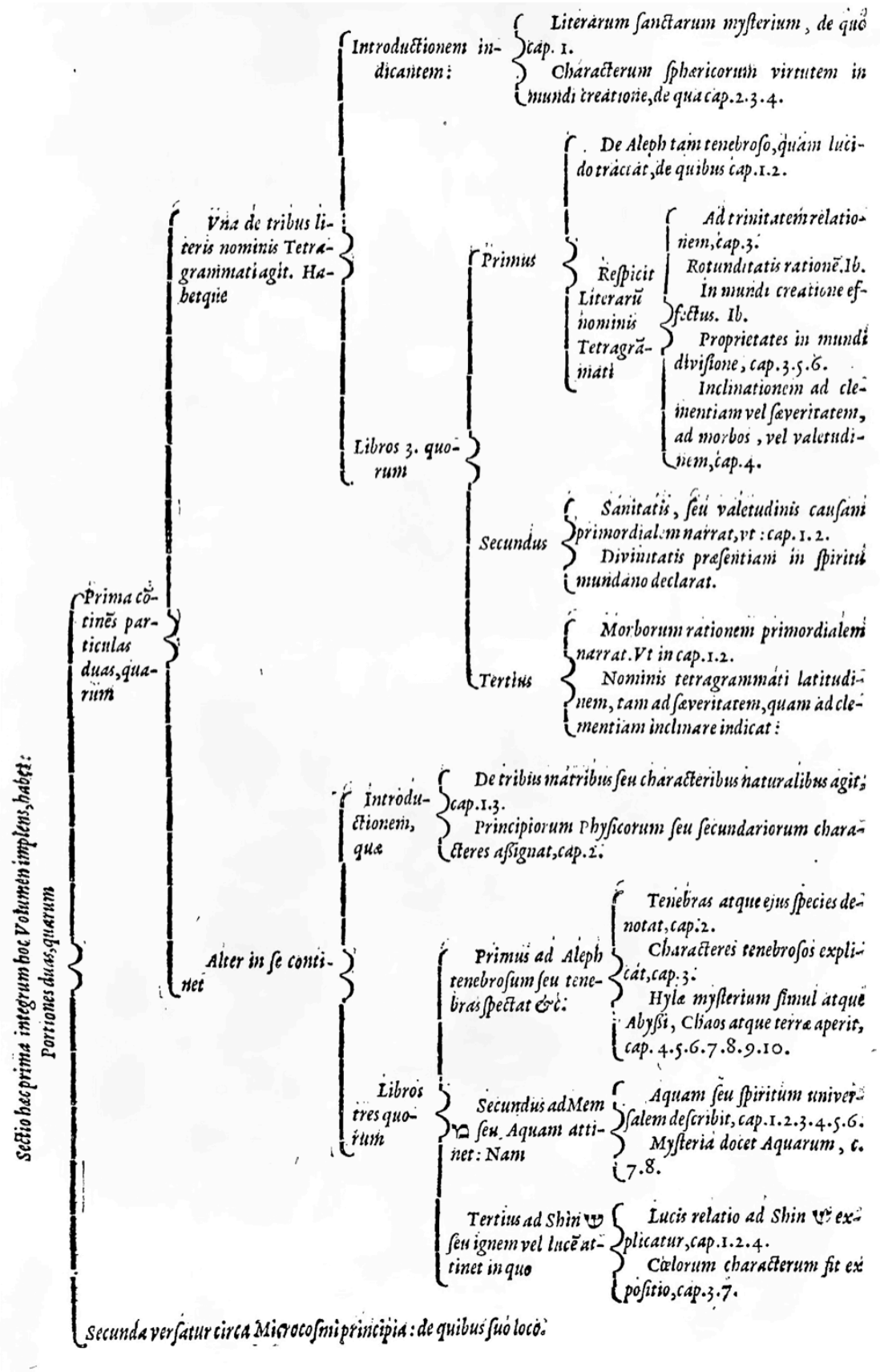

Figure 30a: 1621-plan-C

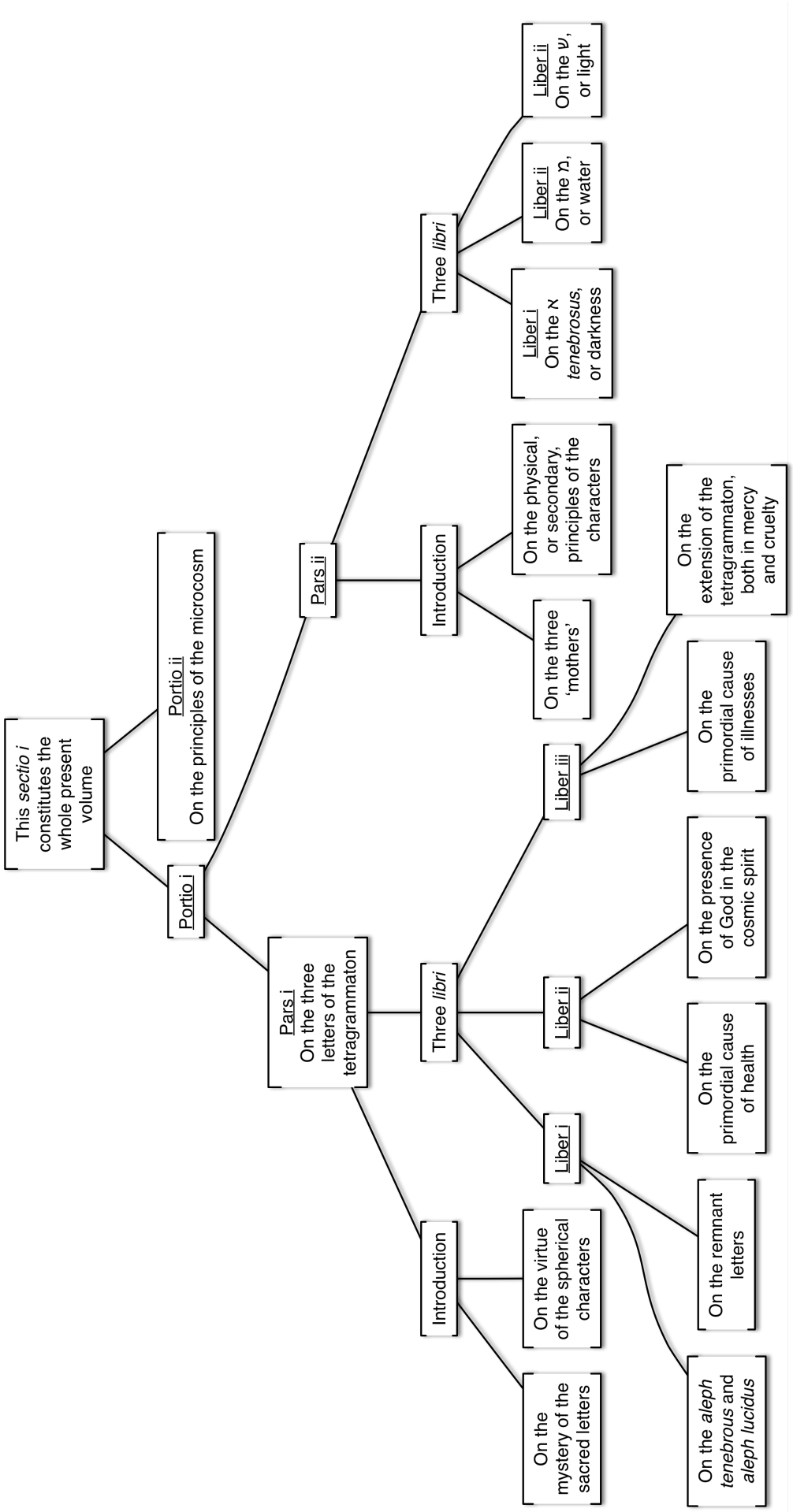

Figure 30b: 1621-plan-C

Sectio i, as one can read from its frontispiece, enquires into the causes of the meteorological things happening in each cosmos. This is the schema of *pars* i of *portio* i as I have inferred from the actual disposition of its components.

Præludium de principio in genere
Introductio ad partem primam (p. 2)
Liber I: De principiis supersubstantialibus (p. 12)
Liber II: De principiis supersubstantialibus (p. 34)
Liber III: De principiis supersubstantialibus (p. 58)
Epilogus (p. 68)

This *pars* i deals with the "supernatural and mystical characters, i.e. primary, archetypical and supersubstantial elements", and it is divided into three *libri*, with a *præludium* and an introduction. In the *præludium* Fludd illustrates the fundaments of his Cabalistic philosophy; the steps he follows here are mainly those of Giovanni Pico della Mirandola, Johannes Trithemius, Johann Reuchlin and Francesco Zorzi. These, and many other Cabalist philosophers, believed in a strong and harmonious parallelism between the Hermetic writings and the Cabala handed down by Moses himself. This teaching, as Frances Yates observes, was believed to be an esoteric doctrine taught by Moses to a few initiated; it completed, so to speak, the book of Genesis, explaining and clarifying its unsolved mysteries.[83]

Fludd begins the *præludium* by explaining the fundaments of his Cabala.[84] Noteworthy is the fact that he addresses the reader by saying that a full knowledge of Hebraic language is not required for the study of this divine *scientia*. Indeed, the reader is only required to learn the twenty-two letters of the Hebraic alphabet. Their illuminated interpretation will be enough to disclose the secret power of this divine language, thus opening the doors to the real truths of the Bible.

The first words of the book of Genesis, רבאישת (bereshiths, i.e. in the beginning), descends from the root ראש (i.e. top, summit). The Cabalistic study of the characters of this last word permits to understand all the different parts of the world. The letter ר (*resh*) denotes, in fact, the darkness; it then symbolises scarcity and dearth. The character ש (*shin*), instead, symbolises replenishment and the *spiritus*

[83] Yates, *Giordano Bruno*, p. 85.
[84] A good synthesis of the Fluddean Cabala is that provided in W. Schmidt-Biggemann, 'Robert Fludd's Kabbalistic Cosmos', in H., Douglas and S. Hutton (eds), *Platonism at the Origins of Modernity*, Dordrecht, 2007, pp. 75-92.

igneus, or *aquæ illuminatæ*. The letter in between – א, *aleph* – is the medium through which the darkness is swept away and creation takes place.

The *præludium* continues with the introduction of the two kinds of *aleph*. *Aleph tenebrosum*, the dark *aleph*, is God without form and void,[85] in His original unity, concealed in the profound abyss of the origin of the cosmos: that *hyle* we already met with at the beginning of this chapter. One can say that the dark א is God in potentiality. *Aleph lucidum*, the *aleph* of light, is God in action: He pronounced the *fiat lux*, and thus the light א was emanated out of the dark א. The process of constant creation out of nothing is important in Fludd's Cabalistic view of the cosmos, and it is symbolised by the letter *yod* (י), first character of the Tetragrammaton (see below).

The Trinitarian interpretation of ראש follows. In fact, Fludd writes that in that word one sees the image of the Holy Trinity: ר is the Father and unity, the א *lucidum* is the Son and duality, and ש is the Holy Spirit which proceeds from both the previous ones. The Tetragrammaton is then introduced; this is the unpronounceable name of God: יהוה, which will be dealt at great length, together with many other Cabalistic subjects, in the course of this *pars* of the *De utriusque cosmi historia*.

The long *Introductio ad partem primam* introduces the reader to the mysteries of the Fluddean Cabala, and describes in particular the 'sacred letters'. Fludd quotes his sources: Rabbi Moshe ben Nahman,[86] Johann Reuchlin, Gregory of Nazianzus.[87] The collection of these sources, together with citations from various books of the Bible, is aimed to demonstrate the Christianity and religious legitimacy of the Cabala. As I already mentioned, the Cabala was believed to have originated with Moses, the author of the Pentateuch. Since God created the cosmos by means of the word, and he spoke in Hebrew, one understands the importance of the study of the Hebrew alphabet and its symbolism. Hebraic characters and words must have special powers and secret meanings, since God himself used them for giving life to his Creation. He who understands these secrets, then, will have access to important truths that are only disclosed to the pious and dedicated researcher of the divine truth. The following plate illustrates and condenses in an effective way some of the key concepts of this Cabalistic philosophy:

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[85] Genesis, 1:2.

[86] Born in Girona 1194, died in Acre 1270. He was a Cabalist and commentator of the Pentateuch, the first five books of the Bible.

[87] Fourth century church father and Archbishop of Constantinople, he wrote several works focusing mainly on Trinitarian theology. Even though Fludd cites a Georg. Nazanz., it is very likely that he refers to Gregory of Nazanzius, thus possibly misspelling his name.

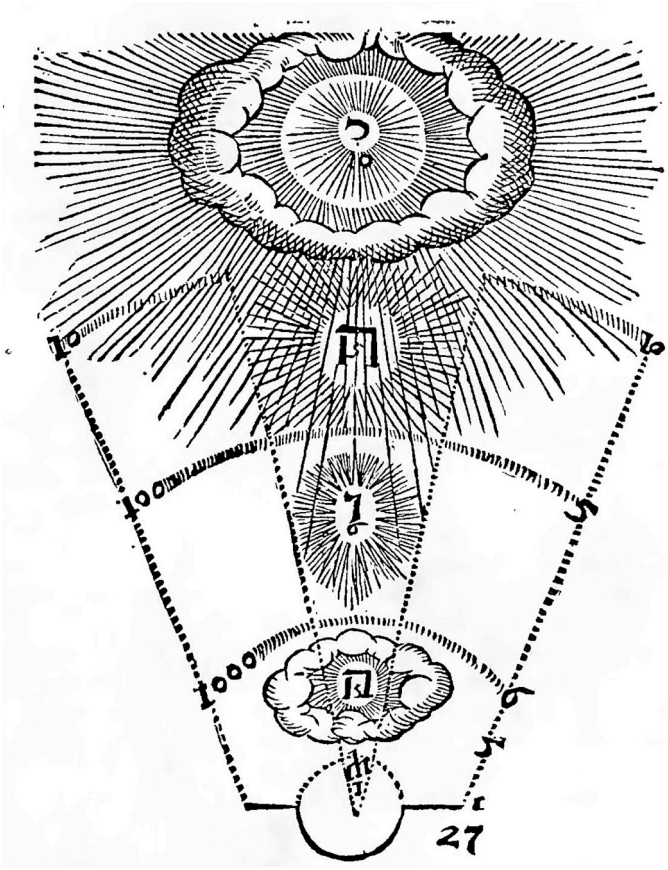

Figure 31 (*DUCH* II, ii, *sectio* i, *portio* i, p. 9)

Once again, one sees Fludd's pyramidal philosophy in action, joined here with his mathematical interpretation of the Hebrew letters: י corresponds in fact to the number 10, ה to 5 and ו to 6, giving a sum of 26. Adding 1, the א symbolising the divine unity, one obtains 27, which is 3^3, the Trinitarian divine number praised by Plato in his *Timæus*. In addition, 27 can be understood as 9+9+9: the three regions of the world, containing each one nine divisions: nine Angelical orders, nine spheres of the planets, and nine spheres of the elements. If one then adds an *aleph* (i.e. the *unitas*, see above) to this 999, one obtains the number 1000: the *Aleph magnum*, which represents the divine perfection.

In the course of the following pages, Fludd associates the number 10 with the Empyreum. Two figures compose this number: in the same way this region is made of two components, light and spirit. The number 100 is associated with the Æthereum, given its triune composition; this heaven has, as Fludd explains, the simplest geometrical shape, i.e. that of a triangle. Finally, the *cœlum elementare* is linked to number 1000, since its number of figures is four, like the elements this lower region is made of. This is clear in the above plate, where on the right-hand side one sees the correspondences between Hebrew letters and number, and on the left the 10-100-1000 numerology just described.

A detailed description of the Tetragrammaton is given. The origin of the ineffable world and all his creatures Jod (י) is dealt with at great length. The first emanation follows: this is the Jah (יה), which symbolises the union between uncreated light and the purest spirit and takes place in the Empyreum. Then the second emanation of the Tetragrammaton, the one which takes place in the medium region, is carefully described: it is the Jeho (יהו), the *sigillum Dei*. The full name of God, YHWH (יהוה), emanates in the elementary world. The following plate well illustrates this correspondence of the Tetragrammaton with the macrocosm.

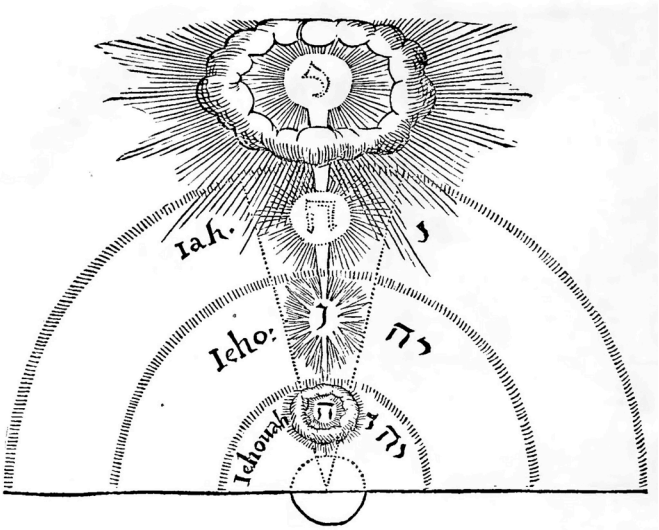

Figure 32 (*DUCH* II, ii, *sectio* i, *portio* i, p. 6)

At the beginning of *liber* ii of *pars* i Fludd describes three kinds of health. The first one is the redemption of both soul and spirits or, better, of the whole man. The second kind pertains either to the internal disposition of the soul alone, or to the good balance of the body. The third one is the deliverance of the whole man from the external tribulations. The whole *liber* is dedicated to the developing of these three states and more generally to the *ratione sanitatis*, i.e. the causes of health.

Liber iii focuses, instead, on the *morborum et ægritudinis ratio*: the cause of sickness. This is the last letter of the Tetragrammaton (ה): in it, the 'last He' represents the mortal life.[88] This third *liber* ends with an *Epilogus*, which is a recapitulation of the whole *pars* i (which Fludd terms erroneously *portio*).[89] The last page of this epilogue presents a plate that shows the omnipresence of God, backed up with some quotations from the Bible.

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[88] "[...] man is the only living being who lives two lives, a mortal and an immortal one". ([...] homo solus inter cætera animalia duplici vita vivere deprehendatur; videlicet immortali et mortali). *DUCH* II, ii, *sectio* i, p. 58.

[89] Indeed, the title runs like this: *Epilogus, seu totius huius portionis recapitulatio*. Ibid., p. 68.

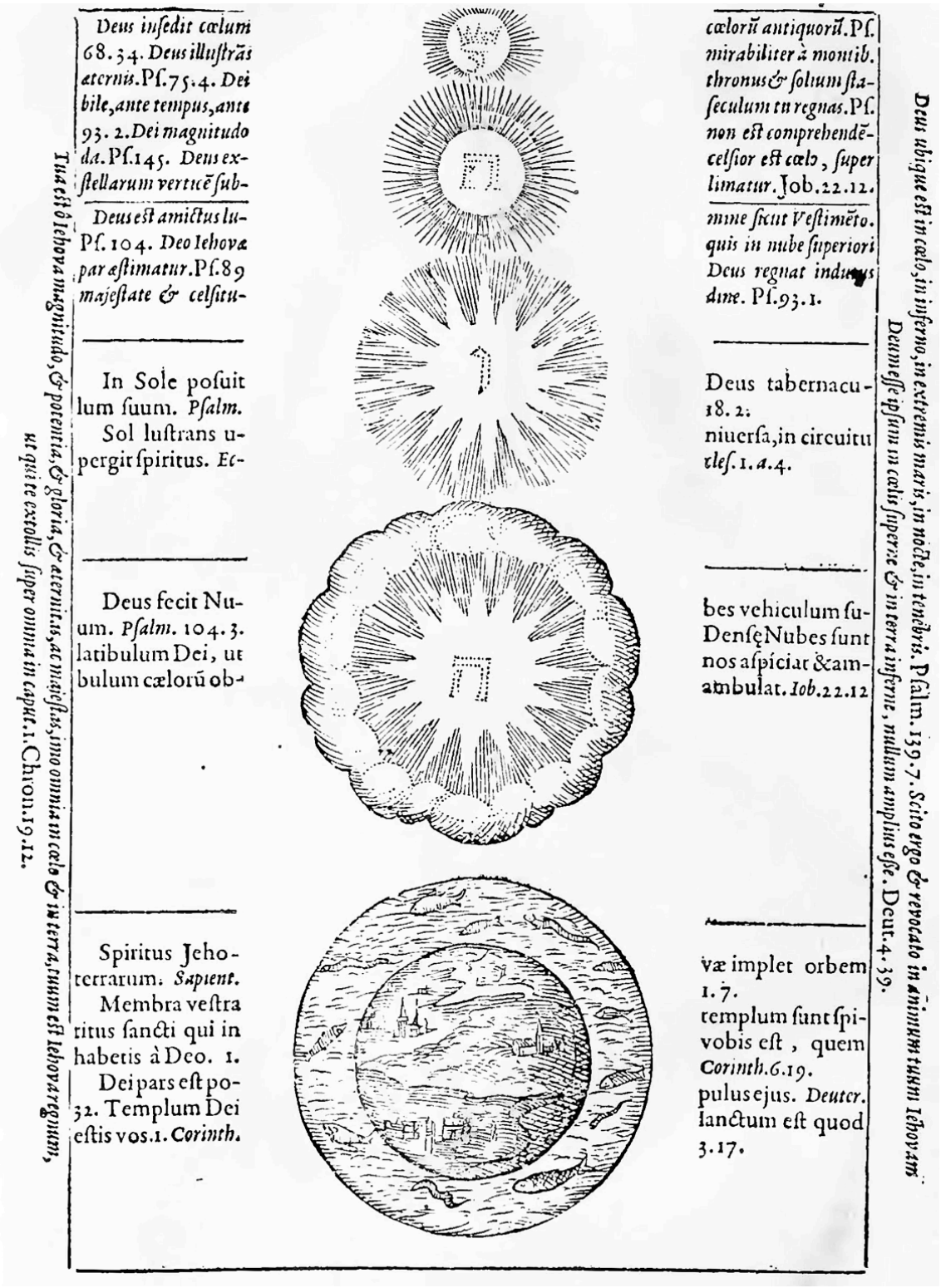

Figure 33 (*DUCH* II, ii, *sectio* i, *portio* i, p. 74)

As already seen before, God's name is imprinted in the whole cosmos. The first letter *yod* is above all; then the other three characters follow, corresponding respectively to the three regions (Empyreum, Æthereum, Elementare). The lower part, i.e. the Earth, would apparently be without any emanation of God, but some quotations from the Bible 'demonstrate' that God fills the Earth too.[90] With this plate, Fludd writes, the tractate on the metaphysical and supernatural first causes of health and illnesses sees its end, and the succeeding philosophical, physical and natural tractate begins.

Pars ii of *portio* i is organised in a way which reminds the previous *pars*.

Introductio (p. 75)
Liber I: De primariis naturæ elementis (p. 84)
Liber II: De primariis naturæ elementis (p. 107)
Liber III: De primariis naturæ elementis, et in specie de luce (p. 118)

Here the focus is on the correspondences of the Hebrew characters with the elements. According to the *Yetzirah*, the most ancient extant book on Cabala known and quoted by Fludd, the twenty-two letters of the Hebraic alphabet can be divided into three different groups. The first one is termed 'mothers', א, מ, ש; the second is that of the seven 'doubles': ב, ג, ד, כ, פ, ר, ת; and the third includes the twelve 'singles': ה, ן, ז, ח, ט, י, ל, נ, ס, ע, צ, ק. The first group, the 'mothers', which in the *Yetzirah* are associated respectively with air, water, and fire, is the focus of *pars* ii. To be sure, the first *liber* deals with א (air or, more precisely, darkness), the second with מ (water) and the third with ש (fire). These three characters are termed by Fludd the 'three natural characters', symbolising the three physical principles. Also, these three 'mothers' corresponds to the characters of God's name; thus, the *aleph* (א) is linked to the *yod* (י), the *mem* (מ) to the *he* (ה), and the *shin* (ש) to the *vau* (ו). In this way the three primary elements of Fluddean philosophy (air, water and fire) acquire divine power and obtain a Cabalistic status, so to speak.

[90] "The spirit of the Lord fills the Earth". Wisdom 1.7.

III.iii.b *DUCH* II, ii, *sectio* i, *portio* ii

Even though the whole *tomus* II was initially supposed to deal only with the microcosm, the frontispiece of its second *tractatus* promises again a (preternatural) survey of both cosmoses. As shown above, *portio* i of *sectio* i deals with the macrocosm, while the second *portio*, as already announced in the plan at the beginning of *tractatus secundus*, focuses on the 'microcosmi principia'. The structure of this *portio*, as I have deduced it, since it is not described in 1621-plan-C, runs as follows:

> Pars i: De principiis microcosmi archetypicis, idealibus, seu primariis (p. 129)
> Pars ii: De principiis microcosmi physicis seu secundariis (p. 158)
> Pars iii: De tertianis macro- et microcosmi principiis, hoc est, de causis meteorologicis, et compositioni propinquioribus (p. 177)
> Breve totius compendium (p. 160)
> [Five experiments] (p. 194)
> De multis aliis divinationis mysteriis (p. 197)
> Quomodo hoc speculum universale in quatuor characteres (p. 197)
> Speculum mundi minus (p. 197)

Macrocosm and microcosm being strictly interrelated and mirrored, the application of the same Cabalistic principles to both of them seems perfectly natural for Fludd. In the previous *portio*, from which the plate above is taken, some mention has already been made about this correspondence.

As one can see in the following figure, the four characters of the Tetragrammaton are linked to the microcosmical faculties in the same way as they have been previously linked to the macrocosmical regions. Thus *yod* is above all and outside the body, corresponding to the *mens* (mind). The higher *He* corresponds to the *intellectus* (intellect), *vau* to the *vita* (life's faculty) and the lower *he* to the *naturalis facultas* (natural faculty).



Figure 34 (*DUCH* II, ii, *sectio* i, *portio* i, p. 8)

The sephiroth are then introduced: they can be understood as the ten emanations of God, His ten names and ten divine primordial powers by way of which He continually creates and recreates the cosmos. According the psalm 103 ("amictus lumine sicut vestimento") they are interpreted as the ten garments of God, He being covered, almost dressed, with light. The sephiroth were first described in the already mentioned *Yetzirah*; the other main source for Fludd is Reuchlin's *De arte cabbalistica*. The commonly accepted English terms for them are: Crown, Wisdom, Prudence, Mercy, Power, Grace, Triumph, Honour, Redemption, and Kingdom.

Fludd, in his Renaissance love for harmonic sympathy and correspondence, applies the ten sephiroth to the ten spheres of the macrocosm (the one of the elements, the seven planets' spheres, the fixed stars and the *primum mobile*). In the same fashion, this is done for the microcosm. In the microcosm, they thus correspond to *Deus*, *Mens*, *Intellectus*, *Ratio*, *Memoria*, *Via æstimativa*, *Phantasia*, *Sensus internus*, *Sensus externus*, and *Voluntas*.[91] Astrological motifs can be here traced: in fact, the ten 'macrocosmical sephiroth' correspond with, and influence by means of planets and stars, the 'microcosmical' ones.

The tenth *capitulum* of *pars* ii, the last, gives the reader important clues about the overall schema Fludd is following and adjusting *in itinere*. In the beginning of this *capitulum*, in fact, Fludd writes that

> [o]ur aim of explaining the secret of this noble doctrine is primarily fulfilled by our next tractate to be published, to which we attributed the title of *Philosophical Key, or of the ocular mirror of some of the physical mysteries*.[92]

In other words, *capitulum* 10 is a short compendium of the key to the understanding of his philosophy. Its title is *Totius nostræ philosophiæ, tam Macro- quam Microcosmicæ clavis, seu demonstratio luculentissima*, and the tractate Fludd is referring to is actually the first *pars* of *portio* iii.[93] As I have already observed, this does not appear in any of the plans previously analysed,[94] and it looks as though it has been probably added to the 'great plan' just during the composition of *sectio i* of *tractatus* ii.

Pars iii features one of the most striking and representative amongst the Fluddean plates. This is so because of its purpose. It aims, in fact, to give a universal representation to the whole cosmos. Cabalistic, theosophical, astrological and alchemical motifs are intertwined all together in order to give a coherent and all-inclusive account of the Creation and its processes.

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[91] *DUCH* II, ii, *sectio* i, *portio* ii, *pars* i, p. 146.

[92] "Quoniam ad huius nostræ intentionis propositum, et perspicuam istius doctrinæ explicationem imprimis spectat Tractatus cuiusdam a nobis in publicum edendi secretum, cui quidem Tractatui *Clavis Philosophiæ seu ocularis mysteriorum quorundam Physicorum speculi* titulum attribuimus". *DUCH* II, ii, *sectio* i, *portio* ii, *pars* ii, p. 174.

[93] Also titled *De exacta alimenti panis seu tritici anatomia. Seu Clavis philosophica minor, hoc est, demonstratio ocularis, quamplurima Naturæ mysteria partim conclusionibus vivis et expertis, partimque speculationibus intellectus alis innitentibus aperiens atqeu revelans*. *DUCH* II, ii, *sectio* i, *portio* iii, *pars* i; published in Frankfurt, 1623.

[94] Even though it is true that the frontispiece of the *De theosophico, cabalistico et physiologico discursu* announces that it is subdivided into three *portiones*, the 1621-plan-C announces only two *portiones*.

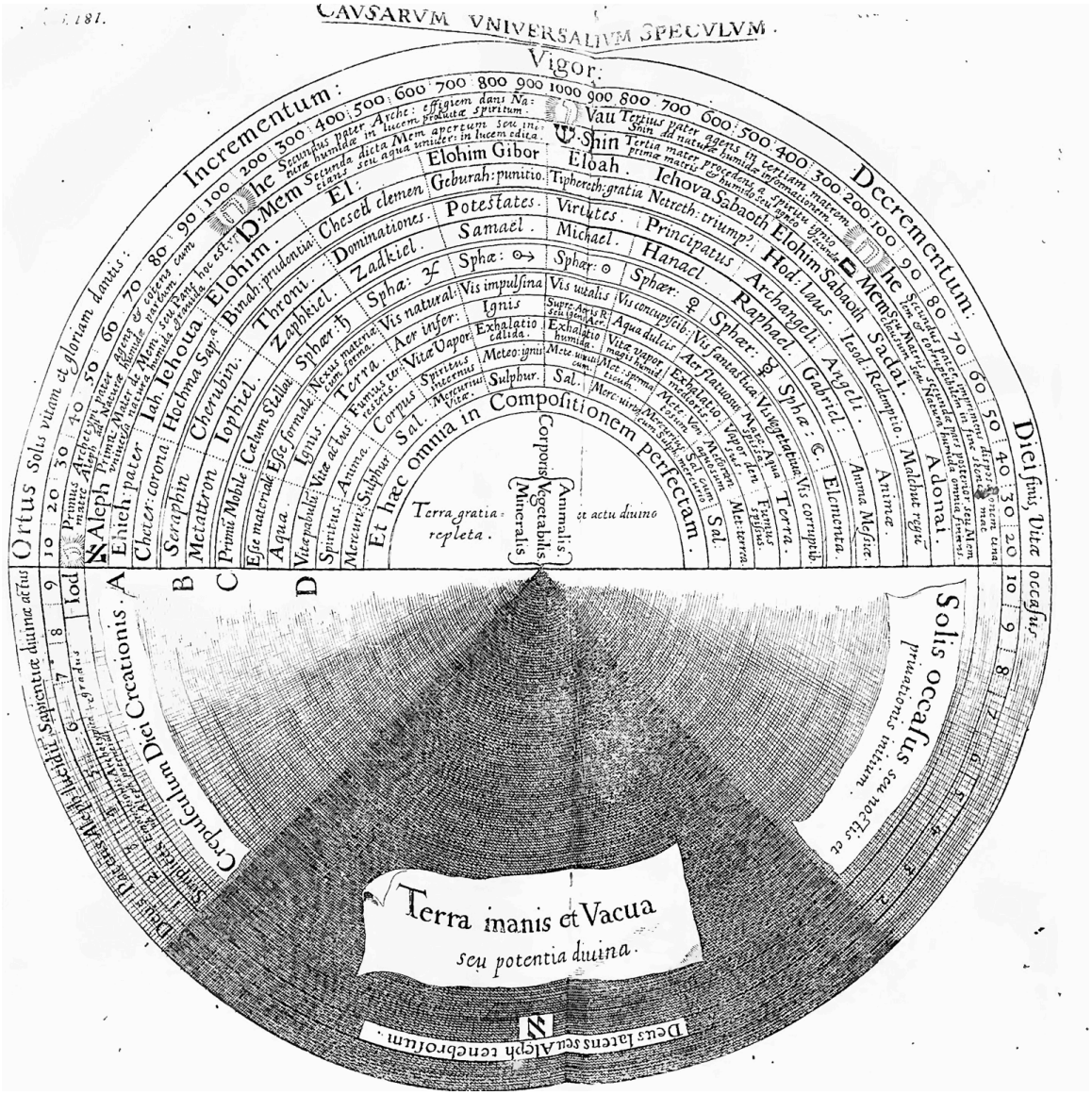

Figure 35 (*DUCH* II, ii, *sectio* i, *portio* ii, p. 180)

The *causarum universalium speculum* (mirror of the universal causes) represents the waning and the waxing of the ever-renewing divine process. It must be read clockwise: on the left there is the *incrementum* (ascent) with its climax in the middle, while on the right the *decrementum* (descent), leading to a new *incrementum* and so forth; the cyclic nature of this process is clear.

Beginning from the outer sphere, the second and the third cycles illustrate the numerology we have already met with in relation to the Tetragrammaton: number 10 is associated with *yod* (י), 100 with the two *he* (ה) and 1000 with *vau* (ו), with all the intermediary numbers in between. The following cycles, going towards the inner part of the *speculum*, are divided into four subdivisions **A B C** and **D**. These four subdivisions denote the material area of creation, as opposed to the purely spiritual one of the previous circles.

A is composed of three circles: one for the 'mothers' (א, מ, ש), one for the ten divine names of God and one for the ten sephiroth. In **B** one finds two spheres: the sphere of the nine hierarchies of angels, to which Fludd now adds a tenth, i.e. *anima*; and the sphere of the nine good angels ruling each hierarchy with the addition of a tenth *anima messiæ*. Subdivision **C** denotes the *primum mobile*, the *cœlum stellatum*, the seven planets and the sphere of the elements.

D includes five circles referring to the sublunary world. The first one refers to the processes of the becoming in the material world; the second one is that of the Aristotelian elements, which are once again, as all the items of this *speculum universale*, fitted into a pattern of ten: water, fire, earth, lower air, fire (again), region of higher or stronger winds, sweet water, ringing air, solidified water, and earth. In the third circle there are different ways in which natural life comes into aerial form: air of life, impulse of life, terrestrial fumes, life vapour, warm breath, damp breath, more damp life vapour, medium breath, dense vapour, dense fumes. The kinds of meteors, heavenly phenomena which will be the focus of a big part of the Fluddean writings from now on, follow in the fourth sphere. They are six (of fire, vivifying, fertilising, windy, watery and earthly) and are caused – and preceded in the circle – by spirit, soul, body and eternal spirit. The last sphere shows the Paracelsian elements, again expanded in order to fit the pattern of ten: mercury, sulphur, salt, mercury of life, sulphur, salt, mercury of virtue, mercury with sulphur, salt with mercury, salt.

Finally, the upper-centre of the mirror of universal causes represents the Earth, the realm of minerals, plants and animals: it is "fulfilled by the grace and work of God". In the lower part of the *speculum* one finds the night/darkness of the divine process of creation ruled by the *aleph tenebrosum*, as opposed to day/light in the upper part.

According to the 1621-plan-C, this *portio* ii should declare the end of the first *sectio* of the second *tractatus* of *tomus* II, i.e. Fludd's *præternaturalis historia*, and the beginning of *sectio* ii; but the following volume, to be published 1623, would be declared to be part of *sectio* i. Actually, the frontispiece of *sectio i* announces three *portiones*. Moreover, it is useful remembering here that in one of the last pages of this volume published in 1621 one can read:

> [o]n the imperfectly mixed bodes, which have been subdivided into several degrees in the circles of the mirror of the Elemental world, we have made a short account on the third *portio* of the first *sectio*, to which we have dedicated a whole volume.[95]

Whether planned or not, it is now clear that the first *sectio* of *tomus* II will have a third *portio*, which will deal with the imperfectly mixed bodies. Those are the meteors of the macrocosm; they had been previously surveyed, even though shortly, in *liber* vii of *DUCH* I, i.[96]

III.iii.c *DUCH* II, ii, *sectio* i, *portio* iii

Anatomiæ amphitheatrum effigie triplici

The third *portio* does not seem to appear anywhere in the 1621-plan. In fact, as I have shown above, the *De theosophico, cabalistico et physiologico utriusque mundi discursu* lacks of the third kind of *discursus*, i.e. the *physiologicus* one. Moreover, the frontispiece announced three *portiones*, the third of which does not appear in the scheme in the 1621-plan-C, while the frontispiece of Fludd's *Anatomiæ amphitheatrum*, published two years later in 1623, declares that this is the *portio* iii of *sectio* i. This 226-pages new publication is intended to be divided into three *partes*:

> Pars i: De exacta alimenti panis seu tritici anatomia (pp. 3-50)
> Pars ii: De vulgari microcosmi anatomia (pp. 51-196)
> Pars iii: De anatomia mystica (pp. 197-285)

The first *pars*, as already mentioned, is Fludd's *Clavis philosophica minor*,[97] which is announced in *capitulum* 10 of the previous *portio*; this is the translation into Latin of a work Fludd wrote in English a few years before and which had not been published yet, the *Philosophicall key*. The frontispiece shows three big circles, each representing one *liber* of this publication: the first *liber* on the bottom left, the second *liber* on the bottom right, and the third one on the top.

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[95] "De corporibus imperfecte mixtis, quæ multis gradibus distinguuntur in sphæris speculi mundi elementaris, sermonem quidem satis fusum in *Portion. tertia, Section. primæ* jactavimus, quib. Integrum libellum dedicavimus". *DUCH* II, ii, *sectio* i, p. 193.
[96] *DUCH* I, i, p. 183. Mixed bodies are the *inanimata*, and are divided into two kinds: *perfecte mista*, i.e. the metals and the plants, and *imperfecte mista*, i.e. the meteors.
[97] As opposed to a *Clavis Philosophiæ veræ* announced in p. 54 of the *Demonstratio analytica*. This would be the *Philosophia sacra* (Frankfurt, 1626).

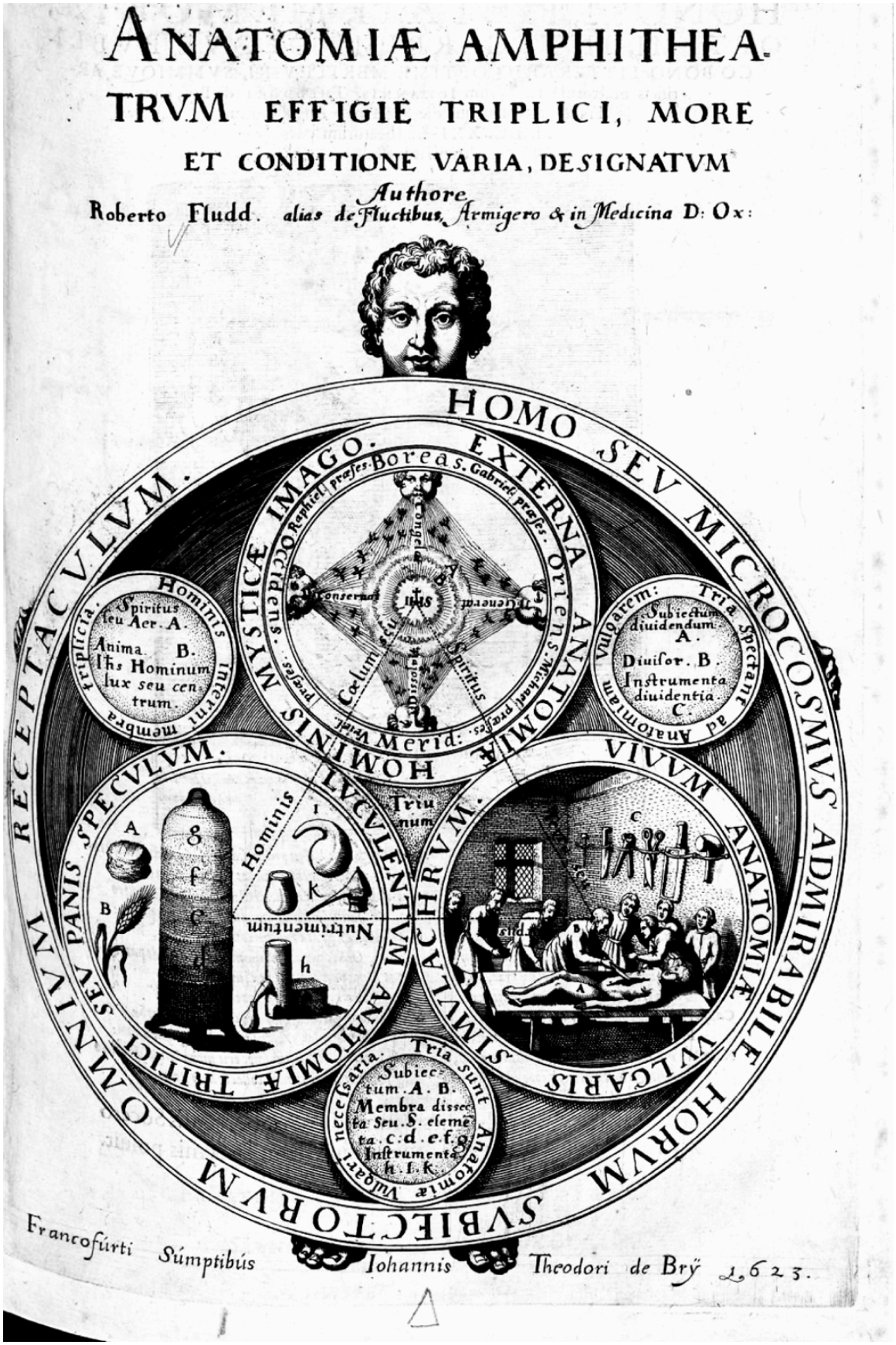

Figure 36: frontispiece to the third *portio* of *DUCH* II, ii, *sectio* i

Three lines connect the three circles thus forming a triangle; in the correspondence of each of the circles one reads “nutrimentum hominis” (this is the quintessential ether extracted in the experiment with wheat, described in the first *pars*); “terra seu corpus” (i.e. earth, or body, and this will be the focus of the second *pars*, *anatomia vulgaris*); and “Cœlum seu Spiritus” (Heaven, or Spirit, and this is the subject of the third *pars*, *anatomia mystica*). The first *pars* is dedicated to John Thornborough, and its organisation runs as follows:

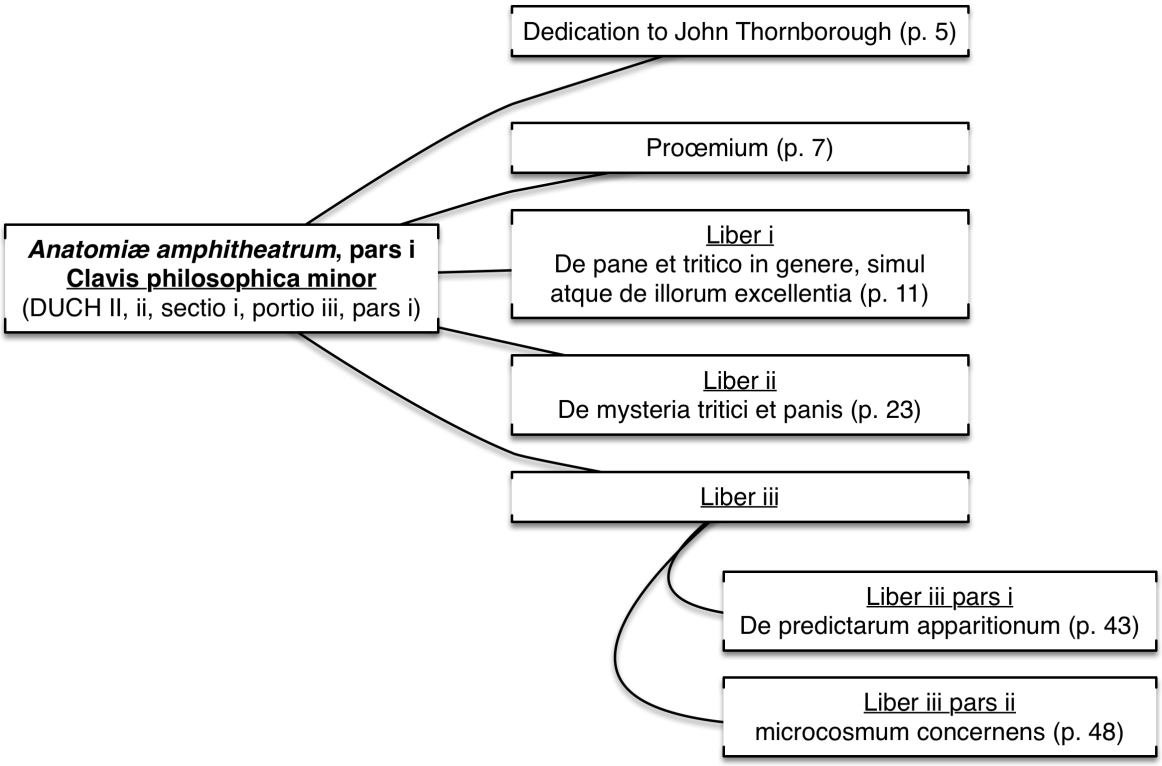

Figure 37: general plan of the first *pars* of *Anatomiæ amphitheatrum*

The experiment on wheat occupies the first of the three *partes* of this Fluddean publication. This is the key to unlock the mysteries of the macro- and microcosm; thanks to the alchemical workmanship of the wheat, in fact, the searcher of the real truth can obtain the quintessence, the divine fire by which God spiritually nourishes man. This is the *panis cœlestis*, the spiritual counterpart of the *panis terrestris*.

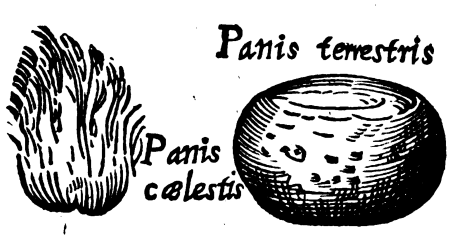

Figure 38 (*AA*, p. 4)

Why precisely wheat? Because, according to Fludd's philosophy of correspondences, wheat is linked to the Sun, and by now one has learned the importance that this 'planet' has in the Fluddean theosophical view of the cosmos. It is, consequently, associated to the gold amongst the minerals, and to the heart in the human body. The key role this *creatura* plays is therefore evident.[98]

The experiment runs as follows:[99] a gentle vapour is applied to grains of the best wheat in order to let them putrefy. This is done by way of a furnace with three vessels which was specifically designed by Fludd himself

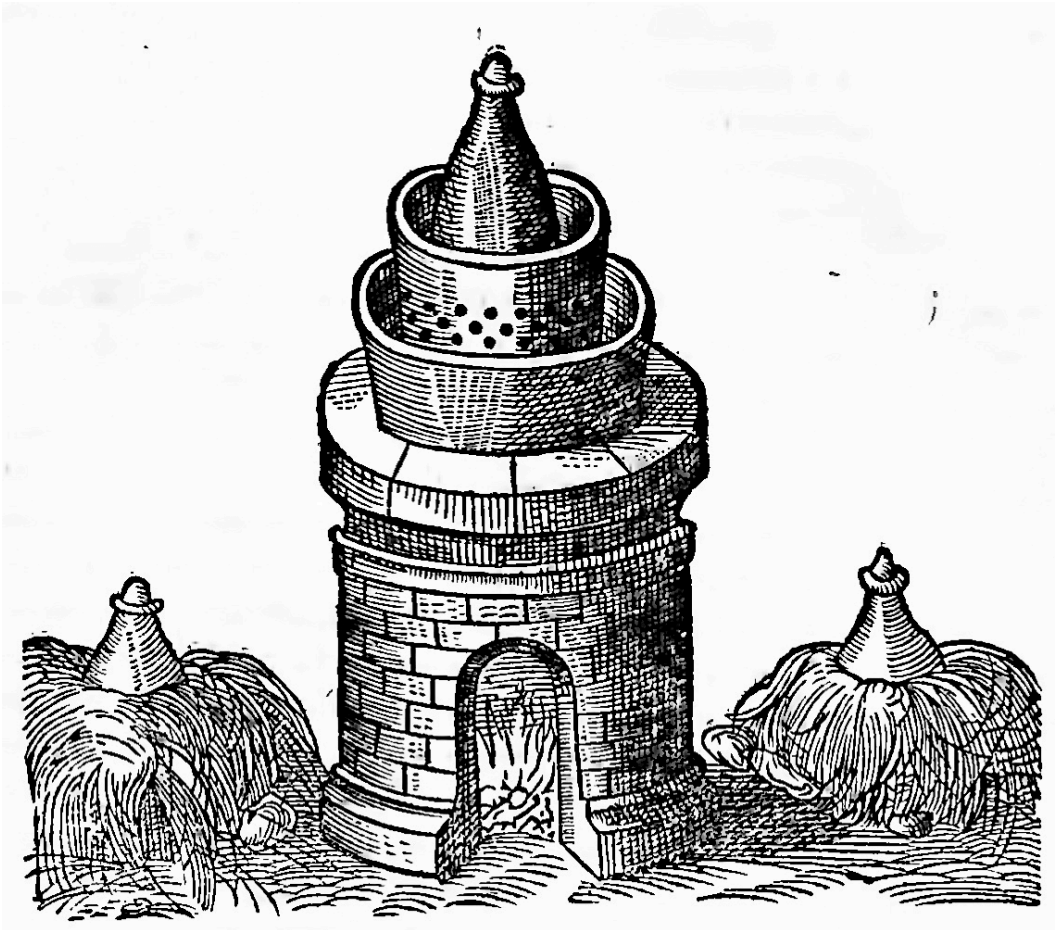

Figure 39 (*AA*, p. 25)

From this first step, Fludd obtained a stinky and dark mass, which the English philosopher associates with the first matter, the *hyle*. This is then put into another vessel opened at the top and warmed by a subterranean fire beneath it.

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[98] This is how Robert Fludd choses to term the wheat.

[99] C. H. Josten gives a short but effective explanation of the experiment in his 'Robert Fludd's "Philosophicall Key"', even though the importance of the Fluddean experiment in Fludd's overall philosophy has been perhaps not fully understood in that article. More complete and balanced is the account Allen G. Debus gives in his *Robert Fludd and his Philosophicall Key*.

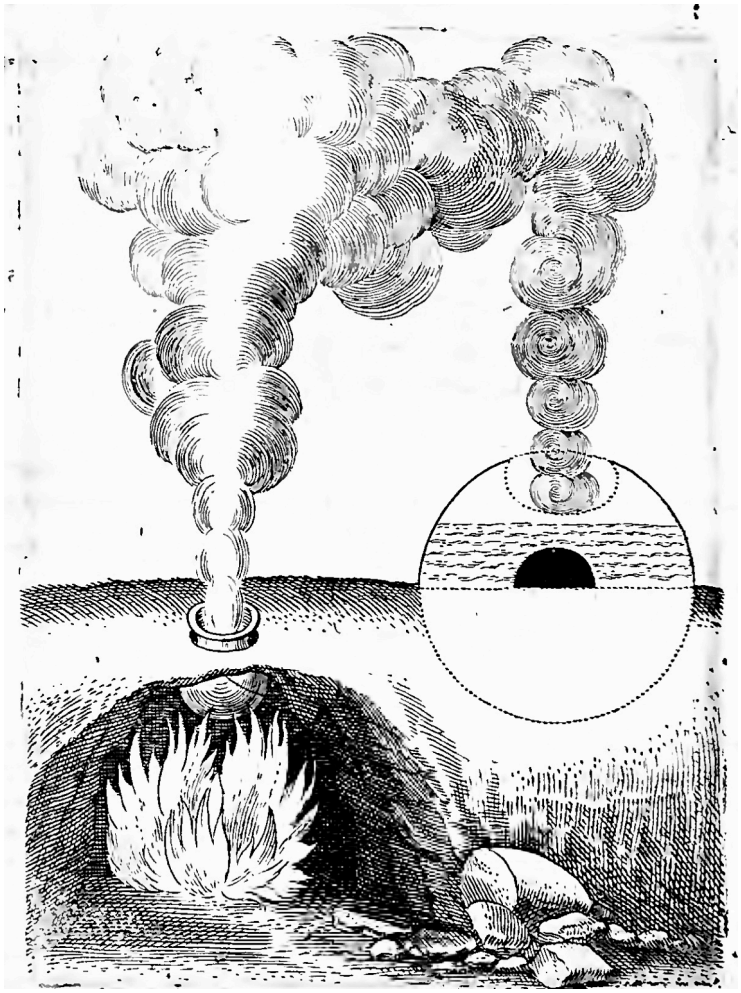

Figure 40 (*AA*, p. 27)

A dense smoke (*nebula oscura, seu vapor nebulosus*)[100] emanates from the vessel, and this is distilled and reduced to golden drops, forming little by little a "small abyss of water"; all this is likened to the biblical spirit hovering over the waters.[101] This obtained liquid is placed in another vessel.

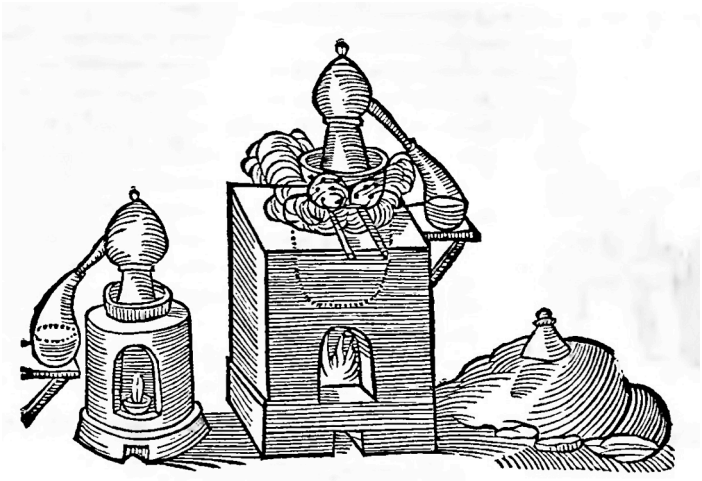

Figure 41 (*AA*, p. 29)

[100] *AA*, p. 27.
[101] Ibid.

Then Fludd separates, from this 'water', a crystalline spirit which is believed to be the pure aerial divine spirit: it is not to be likened to the common water, which putrefies, but is a precious substance which has purifying and nourishing powers in man, animals, and vegetables alike. It is what the Paracelsians had called 'aerial niter', without which life would not be possible.[102] For this reason it is clear how important a role this experiment plays for Robert Fludd. To be sure, the 'key' to his philosophy seems rather to be, in later writings, the weather-glass. This is contradictory only apparently, since it is thanks to the analogy between the air inside Fludd's later instrument with the nourishing aerial spirit that the weather-glass can serve as the perfect metaphor for the forces at work – i.e. the spirit's condensation and rarefaction – in the two cosmoses.

With subsequent distillations and alchemical processes, Fludd thought himself to have recreated in his alchemical laboratory the process of the Creation of the macrocosm. In his description of the experiment, he constantly parallels the substances he obtained with their spiritual counterparts, which he described in the *causarum universalium speculum*, thus operating, in small scale, in the same way God operates in a bigger one. As Allen Debus rightly pointed out,

> [f]inally, he obtained (1) a portion of the grosser water – or the watery element in the sublunary sphere, (2) an aerial spirit, (3) a fiery spirit, (4) aether and (5) earth. In this fashion Fludd thought it possible to use the experiment as a descriptive model of the Creation itself.[103]

In the last pages of *liber* ii the reader encounters once again one of Fludd's favourite tools for his metaphorical view of the cosmos: the intersecting pyramids are here employed in order to visually show his philosophical principles.

In fact, the ascent from the darkest matter, the *hyle*, to the purest spirit, the quintessence, can be seen as the ascent of the material pyramid b-m-c, while the opposite process by which the purest formal element is transformed into the grosser matter is represented by the formal pyramid A-d-e. In the region K-L the form/matter ratio is 3:1: it is then to be associated to the Empyreum, or *cœlum igneum*. In the middle region, where the *sphæra æqualitatis* is, form and matter are perfectly balanced: this is the ether, or *igneus aer*. Finally, in the region o-n form and matter are in a 1:3 ratio: this is the *regio elementare*, where the elements have their dominion.

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[102] See A. G. Debus, 'The Paracelsian Aerial Niter', *Isis*, 55, 1964, pp. 43-61.
[103] Fludd, *Robert Fludd and his Philosophicall Key*, ed. by Debus, p. 36.

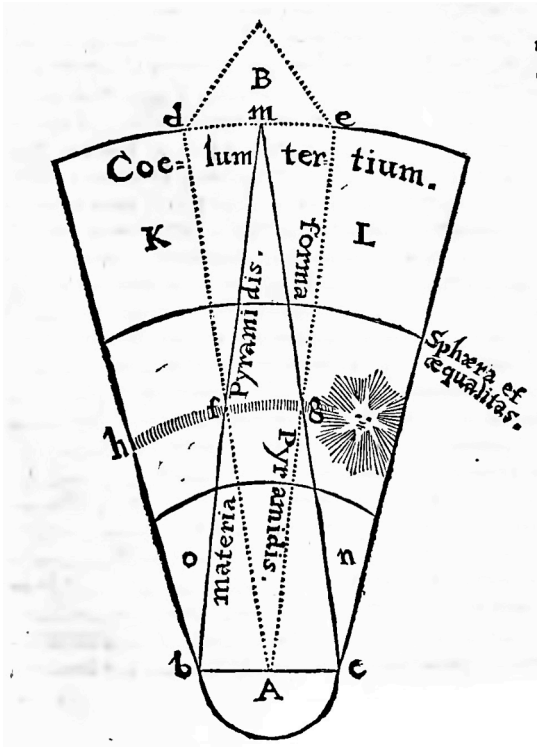

Figure 42 (*AA*, p. 37)

The aim of *liber* iii is the application of the experiment on wheat to the macro- and microcosmical structure. The first part of this *liber* is, actually, a short recapitulation of the Fluddean alchemical vision of the Genesis already expounded in *tomus* I of the *De utriusque cosmi historia*. Fludd constantly refers the reader to that *tomus* and its plates, which are not reprinted here, summarising the main concepts of his philosophy and constantly paralleling them with the key to his philosophy, i.e. the experiment on wheat just described. The second part of *liber* iii deals with the microcosmical correspondence of the experiment on wheat. Again, Fludd refers to previously published volumes of the *De utriusque cosmi historia* (this time from the *microcosmi historia*, i.e. *tomus* II). This, like *pars* i of this *liber*, is a very short account, and it can be summarised by saying that man, mirroring the macrocosm, "has within him all elements of the macrocosm and his life depends upon that wondrous quintessence". [104] The spiritual substance enters the human body during the breathing process, reaches the heart and, from here, is diffused throughout and nourishes every part of the body.

Pars ii of *portio* iii concerns the *vulgari microcosmi anatomia*, and this is anatomy as we know it today. Robert Fludd distinguishes it from the mystical anatomy, which will be dealt with in the third and last *pars* of this publication. *Pars* ii is subdivided like this:

[104] Ibid., p. 40.

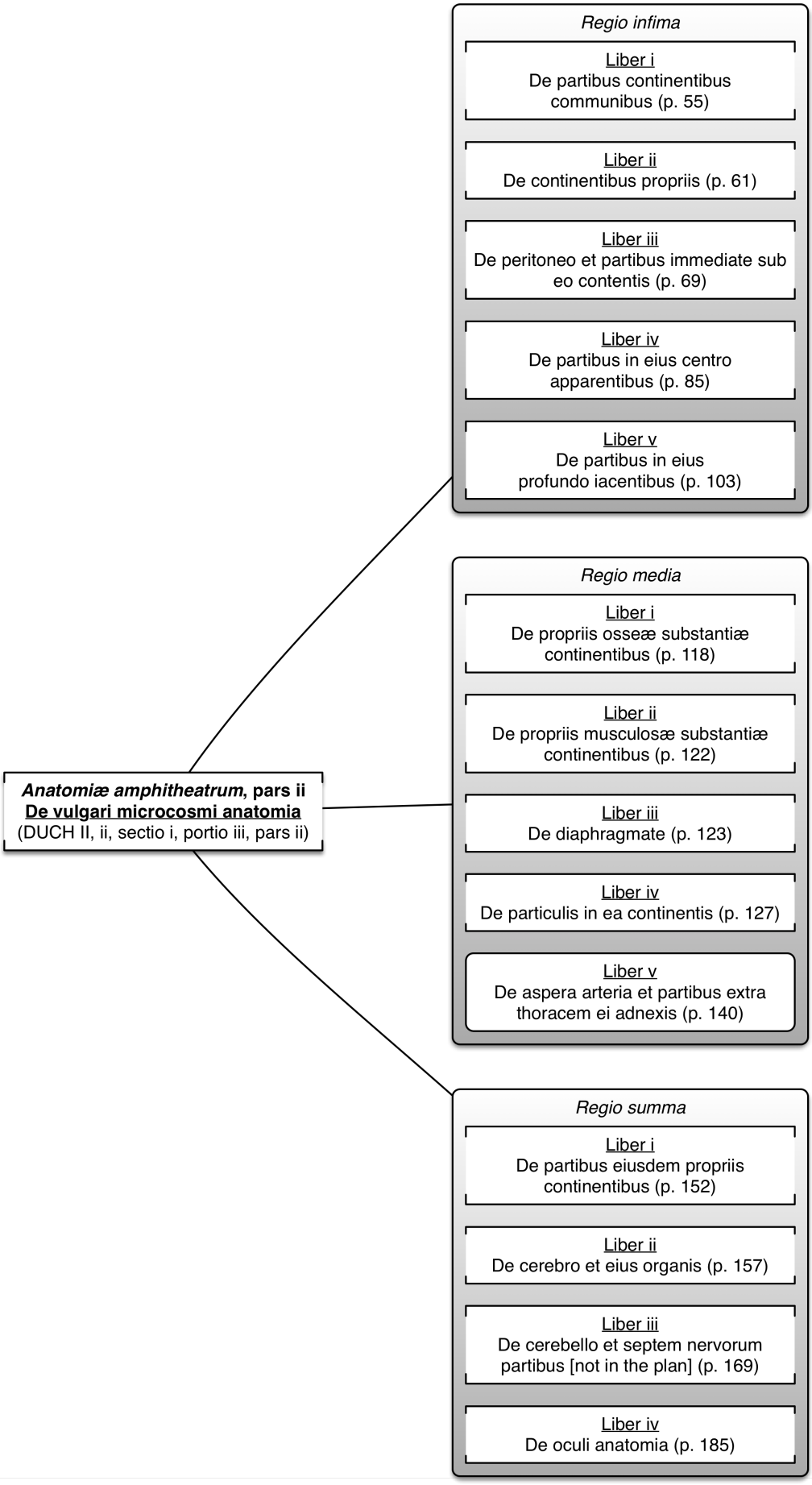

Figure 43: general plan of the second *pars* of *Anatomiæ amphitheatrum*

In the *Proœmium* Fludd enunciates his theory about how the human body has to be 'read'. Though, he writes, it apparently has an irregular geometric shape, it can be inscribed into a circle having its centre in the pudenda. Fludd here disagrees with 'certain others' who place the centre of the human body in the umbilicus, thus making the two semidiameters of the circle inequal, and refers the reader to other passages of his microcosmical historia for the demonstration of this assumption. Fludd interprets the human body as having a trinitarian subdivision, namely: the head is associated with the Empyreum, while the chest corresponds to the *regio media*, i.e. *cœlum stellatum*. This region is particularly relevant, since the heart has its place in it. The heart is the means through which the quintessential substance is circulated throughout the whole body. The lower region corresponds, conclusively, to the sublunary region, and its *cholera*, *sanguis*, *pituia* and *melancholia* are linked to the four Aristotelian elements; respectively fire, air, water and earth.

Fludd indeed deals with all the three microcosmical regions starting with the lowest, proceeding with the middle one and ending with the highest. This treatise, the only account Fludd gives on what nowadays is understood as anatomy tout court, shows Fludd's good skills on the subject.[105] Many plates are present, some of them closely resembling Vesalius' *De humani corporis fabrica.*[106] One of the most significant sections is the one dealing with the anatomical description of the heart.[107] Here, in fact, Fludd gives his first account of the circulation of the blood. The English physician, as early as in 1623, rejected Galen's long-standing (wrong) assumption that blood passed through the muscular septum from the right to the left side of the heart. Instead, Fludd suggested that the two parts are not connected, and serve different purposes. The right ventricle is dedicated to the purification of the blood, in

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[105] The *Proœmium* to the *Anatomiæ vulgaris* includes an *Oratio* which is the text of a prefatory discourse to the anatomy course at the London College of Physicians in 1620. This information, given by Fludd himself in the *Proœmium*, tells us about the status Robert Fludd had as a skilled and proficient physician and anatomist. See also *Annals of the College of Physicians*, 3.1, p. 188, 30 October 1624.

[106] Andreas Vesalius (1514-1564) was a strong advocate of a 'hands-on' learning of medicine (and in particular of surgery). In 1543 he published his highly influential yet controversial *De humani corporis fabrica* which, with its numerous beautifully engraved plates realized by Titian's Venetian workshop, aimed to imitate as best as possible what a student of anatomy would see in a real anatomy theatre during the dissection of a human body. Robert Fludd's *anatomia vulgaris* goes definitely in the same direction, even though he rejected some of Vesalius' ideas such as, for instance, that of an eighth cervical nerve root, together with the nine-roots theory of Realdo Colombo (*c*. 1516-1559).

[107] *DUCH* II, ii, *sectio* i, *portio* iii, *pars* ii (*De vulgari microcosmi anatomia*), pp. 128-131.

order to make it more apt to nourish the lungs. The left ventricle generates the vital spirit and is responsible for the spiritual nourishment of man.[108]

The third *pars* of the *Anatomiæ amphitheatrum* concerns the mystical anatomy, and it is organised in five *libri*.

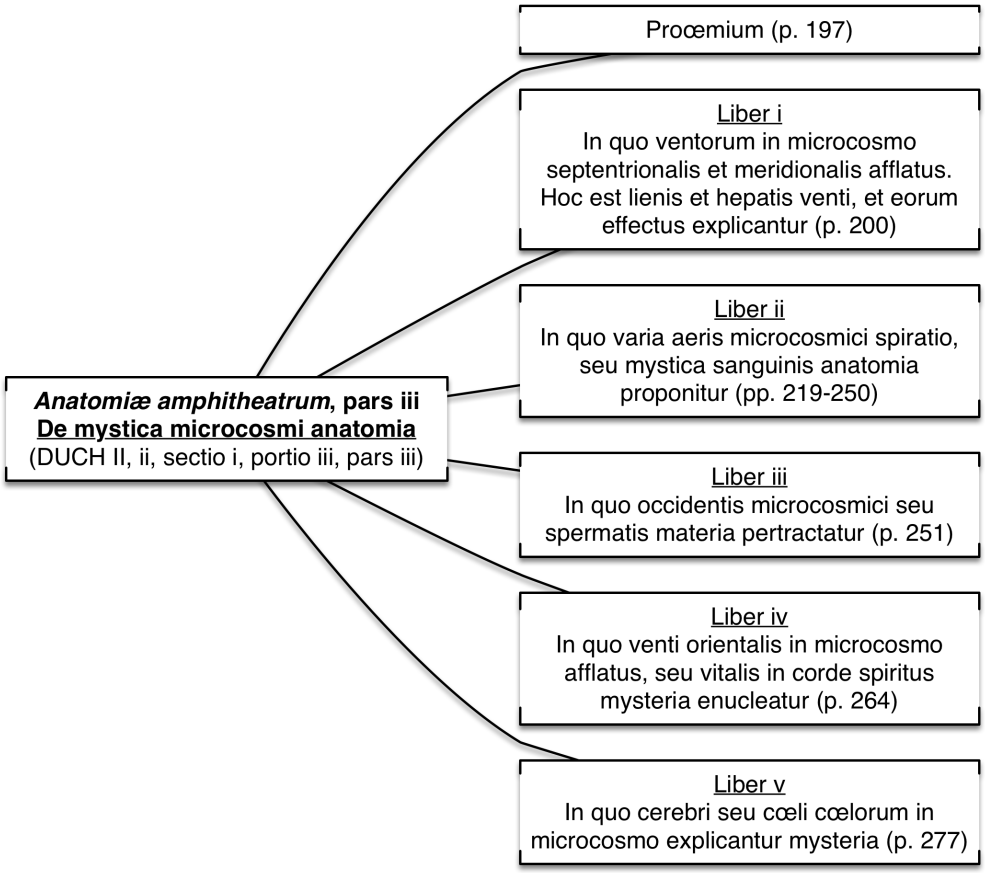

Figure 44: general plan of the third *pars* of *Anatomiæ amphitheatrum*

Liber i begins with setting the field of the microcosmical mystical anatomy. Since man is a little macrocosm, its body must reflect its bigger counterpart. Its left side thus corresponds to the Arctic pole, characterised by its cold northern winds. The macrocosmical northern plagues then correspond to the ones in the left-hand side of the human body. The nature of the Arctic pole is very cold and very dry; in the left side of the human body, in fact, there is the spleen, whose nature is cold and dry, it has astringent and constrictive effects and it is associated with the sphere of Saturn. On the other hand, the Antarctic pole with its hot and damp nature corresponds to the microcosmical right side; this is where the liver is, and it is connected with the

[108] Another element of Fludd's *AA* which is noteworthy of mention is the original depiction of the *rete mirabile* in the brain. As Richard Sugg has it, "Fludd includes a new drawing of the *rete*, devoid of any of the caveats of Vesalius or Crooke, and blandly explaining its function in processing vital spirit, and its position relative to the carotids" (R. Sugg, *The Smoke of the Soul: Medicine, Physiology and Religion in Early Modern England*, Basingstoke, 2013, p. 286).

sphere of Jupiter. The body's upper part is associated with the east, and its lower part with the west.

Capitula 3 and 4 analyse the meteors originating from the spleen and the liver, and compare them with the meteors issued from the Boreal and Austral winds. In an important passage, Fludd states that for him all the illnesses come from God: this is a fundamental statement, since in this he differentiates his doctrine from that of Galen.

> We Christians say, against the doctrine of Avicenna, Hippocrates, and some ethnic philosophers, that the cause of this or that illness is God.[109]

The reason for the diseases is not to be searched inside the human body, but outside of it. In fact, illnesses for Fludd are caused by evil spirits entering the body through the pores and through the process of breathing. Later on, a plate better illustrates the 'microcosmical winds'.

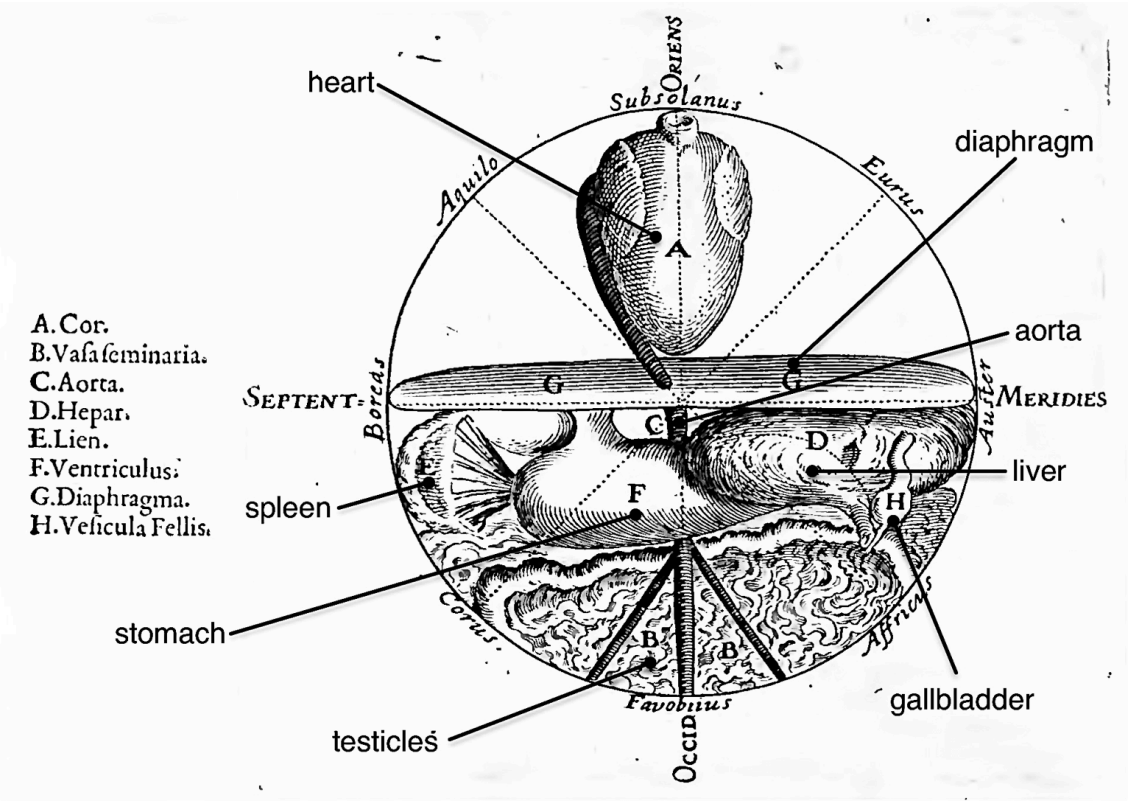

Figure 45 (*AA*, p. 214)

The heart (*cor*) breathes the spirit of life towards *occasus* (west) through the aorta vein. The microcosmical north, or spleen, breathes its dry and cold wind towards the hot and damp microcosmical south (the liver), and vice versa. The other cardinal winds are all put in relation with the microcosmical regions and main

[109] "God Dicimus ergo nos Christiani, contra Hippocratis, Avicennæ et cæterorum Ethnicorum doctrinam, quod causa huius vel illius morbi sit Deus". *AA*, p. 203.

organs. This is something Robert Fludd would further develop in great length in the following publication, the frontispiece of which features this very same plate.

Libri ii and iv, the 'mystical anatomy of the blood' and the 'mystical anatomy of the heart', are amongst Fludd's most important writings from our point of view and for the history of medicine. In fact, these books, the mystical counterparts of the *capitulum* on heart's *anatomia vulgaris*, feature the first Fluddean account of the idea of the circulation of the blood. In the first one, Fludd reproduces the blood circulation with an alchemical experiment, in which the liver is likened to the *athanor* (the furnace) and where the blood undergoes a series of alchemical distillations.[110] Fludd refers to the alchemist as the 'naturæ simia',[111] a term the reader already met with in the very title of the second *tractatus* of the first *tomus*. Also, the ape of nature is depicted in the plate which opens the *De utriusque cosmi historia* and the second *tractatus* of the first *tomus*. There is little doubt that in Fludd's mind the alchemist can mimic Nature's operations on a smaller scale, thus accessing the real knowledge of how Nature operates.[112] The ninth *caput* of *liber* ii is of particular interest since in it one finds the first, yet short, account of the 'magnetical' cure, a medicine that worked thanks to the sympathetic properties of the blood.[113]

The tract on the mystical anatomy of the heart (*liber* iv) reaffirms the correspondence of the macrocosm with the microcosm: in the same way the Sun in the macrocosm is the source of life, likewise in the microcosm the qualities of life spring from the sanctuary of the heart.[114] Moreover, as the Holy Bible testifies, God placed his tabernacle in the Sun; the heart in the human body is, by consequence, God's seat too. The air we breathe, imbued of the Lord's vital spirit coming from the upper regions of the Heavens, has the circular motion of the Sun impressed on it, the Sun orbiting circularly around the Earth. Once entered our bodies, the vital spirit retains its circular motion, thus replicating it inside the microcosm. The concept of diastole and systole are introduced too, with the metaphor of the fire: a flame breathes pure air (diastole) and successively rejects the superfluous in the form of smoke (systole).

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[110] This, as seen in chapter II, is a concept still present in Tobias Cohn.
[111] *AA*, pp. 224-226.
[112] See also A. G. Debus, 'Robert Fludd and the Circulation of the Blood', *Journal of the History of Medicine and Allied Sciences*, XVI, 4, pp. 374-393 (377).
[113] I shall expand this subject in chapter V. This *caput* on the magnetic medicine was later republished in AA. VV., *Theatrum sympatheticum auctum, exhibens varios authores*, ed. by S. Rattray, Nuremberg, 1662.
[114] *AA*, p. 265.

Liber iii is Fludd's 'mystical anatomy of the sperm'. In the same way the spirit of life blows from the Sun, in man's body it blows, through the *subsolanus* wind, from the heart towards the west, i.e. the seminal vessels, where it condensates. In this way the meteor of the generation (sperm) is produced. Fludd compares the spermatic meteor in the microcosm to white clouds in the sky blown by the two *subsolanus* and *favonius* winds.

Liber v, the 'mystical anatomy of the brain', emphasises the correlation between man's head and the region of the Empyreum. In the same way that God inhabits the *cœlo cœlorum* up in the heavens, likewise the mind inhabits the summit of man's body (*in totius corporis summitate*). At the end of his *Anatomia mystica* Robert Fludd announces the topic of the following publication: this will concern the causes of the diseases.[115]

III.iii.d *DUCH* II, ii, *sectio* i, *portio* iv

Philosophia sacra et vere christiana seu meteorologia cosmica

The year 1626 witnesses the publication of Robert Fludd's *Philosophia sacra*. In excess of 300 pages, this volume is focused entirely on the meteors, which in Fludd's philosophy are any kind of heavenly phenomenon. Fludd's survey of meteors had seriously begun with the previous publication with his *Anatomia mystica* (see above). Here, nonetheless, the emphasis is on their causes. It might look as though Robert Fludd is paying less and less attention to the original *De utriusque cosmi historia* plans (1617, 1618, 1619, 1621). But another explanation might be that he is just re-organising the knowledge he is acquiring thanks to his medical profession and his endless theosophical studies whilst trying not to lose track of the original project. Indeed, if one looks carefully, already in the 1619-plan he planned to devote the final volumes of his project to the study of the meteors. True, the internal subdivision does not entirely correspond, and in the early organograms it seems over-simplified. But this is to some extent understandable: it shows us a very active Robert Fludd, ready to adjust his original plans according to the new inputs he is receiving through his life

[115] "In our next treatise, which deals with the causes of the illnesses, we hope to better explain all these [things] [...]". (In tractatu autem nostro proximo, de morborum causis disceptante, hæc omnia speramus luculentiora reddere [...]). *AA*, p. 285.

while remaining faithful to the monster-project he set out to do at the beginning of his career.

The *Philosophia sacra* is dedicated to John Williams, bishop of Lincoln and archbishop of York, known for his relaxed attitudes towards puritanism. Published in 1626 in Frankfurt, this volume sees, together with the previously published *Anatomia mystica*, Robert Fludd delving deeper and deeper into his Catho-medical philosophy. The subdivision is apparently very simple.

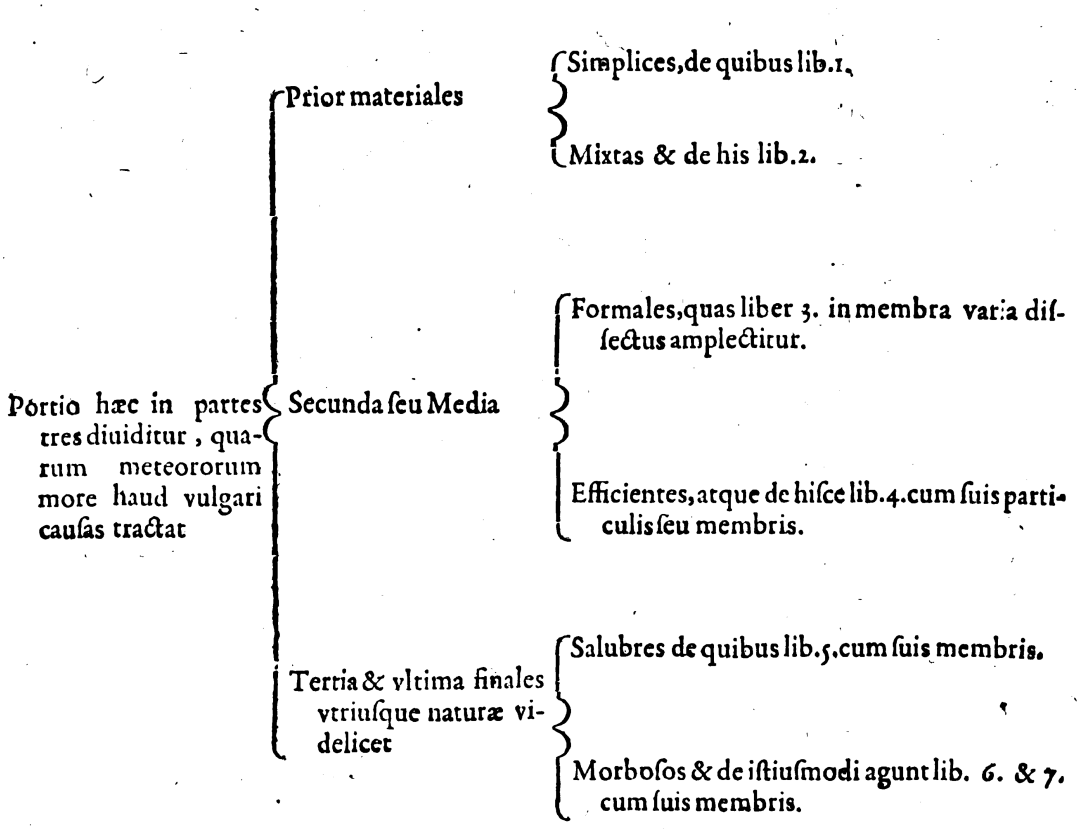

Figure 46: general plan of *Philosophia sacra* as announced at its beginning

Only the first two *partes* will be published in 1626, while the last *pars*, which concerns the final causes of both healthy and ill-bringing *meteora*, is missing. The actual realisation of the plan is this:

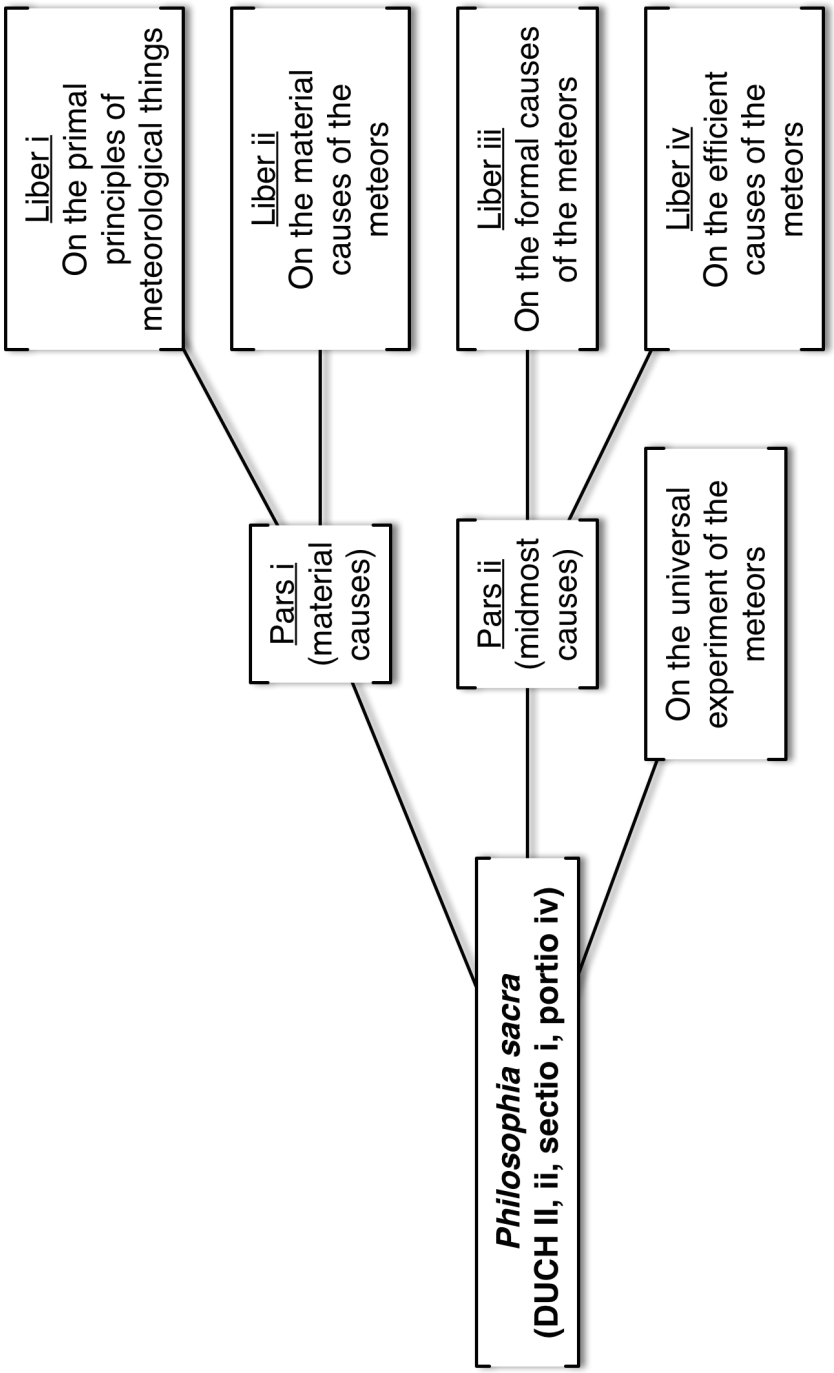

Figure 47: actual realisation of *Philosophia sacra* as published in 1626

This subdivision follows the Aristotelian taxonomy of the four kinds of causes: material (the materials composing a certain thing), formal (its essence), efficient (what or who produced it) and final (its purpose). The Fluddean account of the meteors perfectly respects this categorisation. At the beginning of *pars* i, he maintains that the principles of all natural things are divided into two kinds: simple and mixed. [116] Then he goes on with subsequent subdivisions, which are better

[116] *PS*, p. 5.

summarised in the following schema. Each of these elements will be dealt with in this first *pars*.

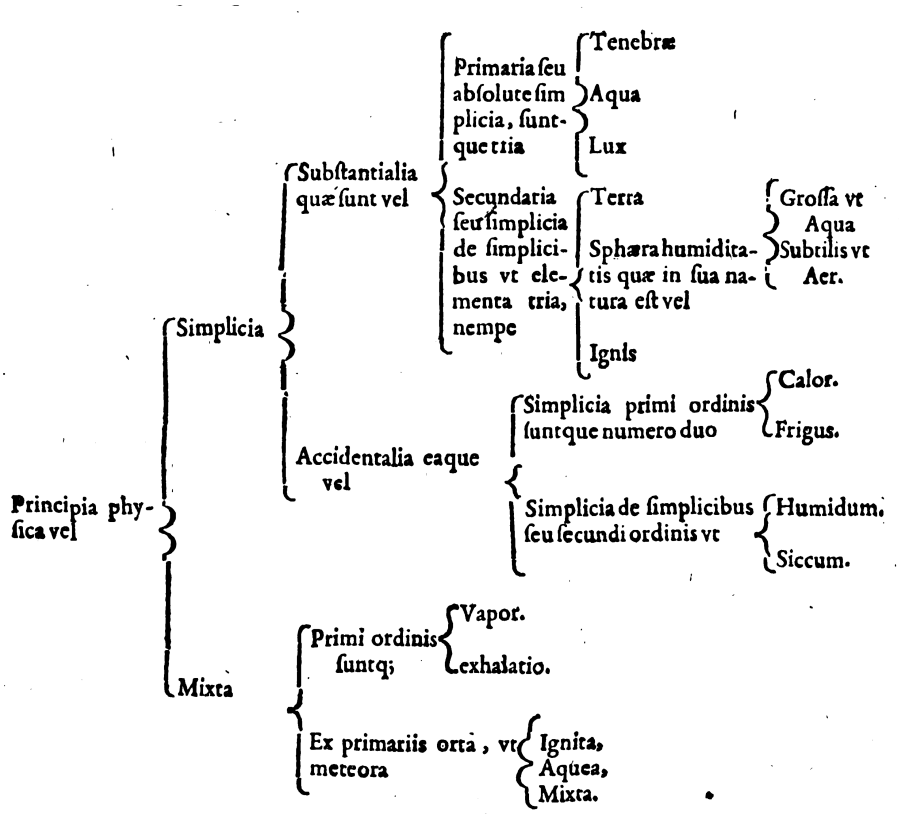

Figure 48 (*PS*, p. 6)

Liber iii, in *pars* ii, is dedicated to the formal causes of the meteors. I shall now take one example, which is valid for all the sections of *PS*, in order to show how Fludd constantly relates the events (meteors) in the macrocosm to those of the microcosm. The example is taken from *capitulum* 7, *liber* iii, *membrum* i. Fludd is describing the 'prince of all meteors', i.e. the wind. He begins from the macrocosmical point of view.

De octo ventis Collateralibus in macrocoſmo.

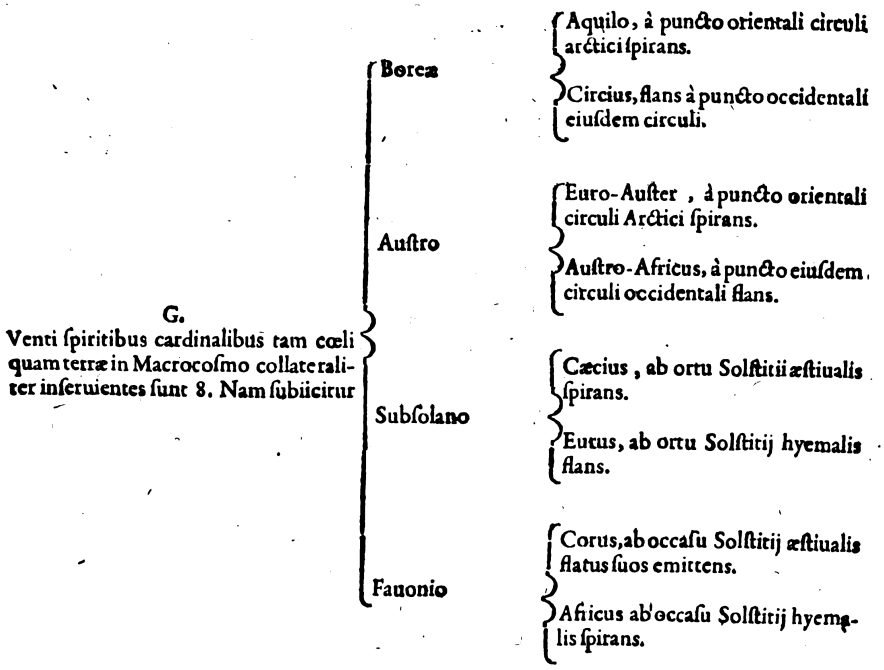

Figure 49 (*PS*, p. 49)

Each of these twelve 'macrocosmical' winds has precise qualities: each one is 'tempered' or counter-balanced, so to speak, by the opposite one. For instance, the dryness and coldness of Aquilo are mitigated by Euro-Auster's hotness and dampness.[117] Fludd then illustrates in another plate the correlation to the microcosm of the previous illustrated concept (in this case, the winds).

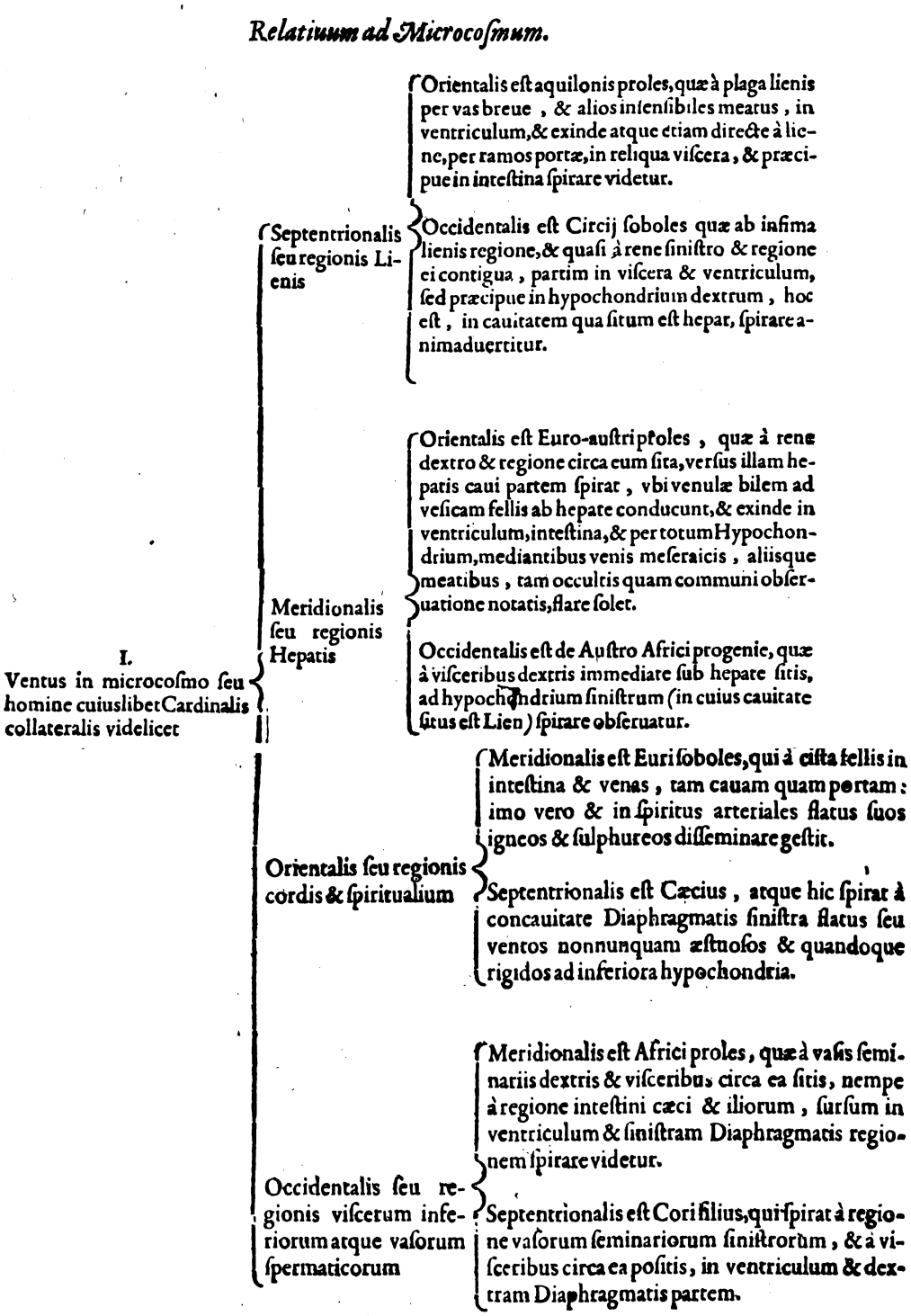

Figure 50 (*PS*, pp. 50-51)

[117] The two winds under the Austro blow from the Antarctic region and not from the Artic one as wrongly stated in the plate.

After having explained the correlation between the two phenomena, i.e. the macrocosmic winds and the microcosmical ones, the reader finds the very same plate that had already been used in both *Anatomia mystica* and in the frontispiece of *Philosophia sacra* (figure 45). It is clear that the winds have a particular importance in Fludd's medical writings. In fact, they are the source of both health and illness, since they are the means through which good or bad angels carry good and evil spirits from the upper regions of the heavens.

Liber iv considers in detail the efficient causes of the meteors. In the first *capitulum* of this *liber* Fludd first gives the Aristotelian definition of efficient cause but, he adds,

> [w]e, instructed by the doctrine of the sacred writings, affirm that the only agent in all the things is God, or divine word, or Holy Spirit.[118]

No-one but God is the efficient cause of the meteors. The *liber* is divided into three *membri*. *Membri* i and ii deal with the supernatural and spiritual efficient causes: God is the first source of meteors, and orders (*ordinans*, *membrum* i) to the angels, either good or bad, to act (*exequens et pro voluntate divina operans*, *membrum* ii) on His behalf. Natural efficient causes are surveyed in *membrum* iii, where one finds surveyed the ministers and organs divinely acting in the Ethereal and Elemental regions.

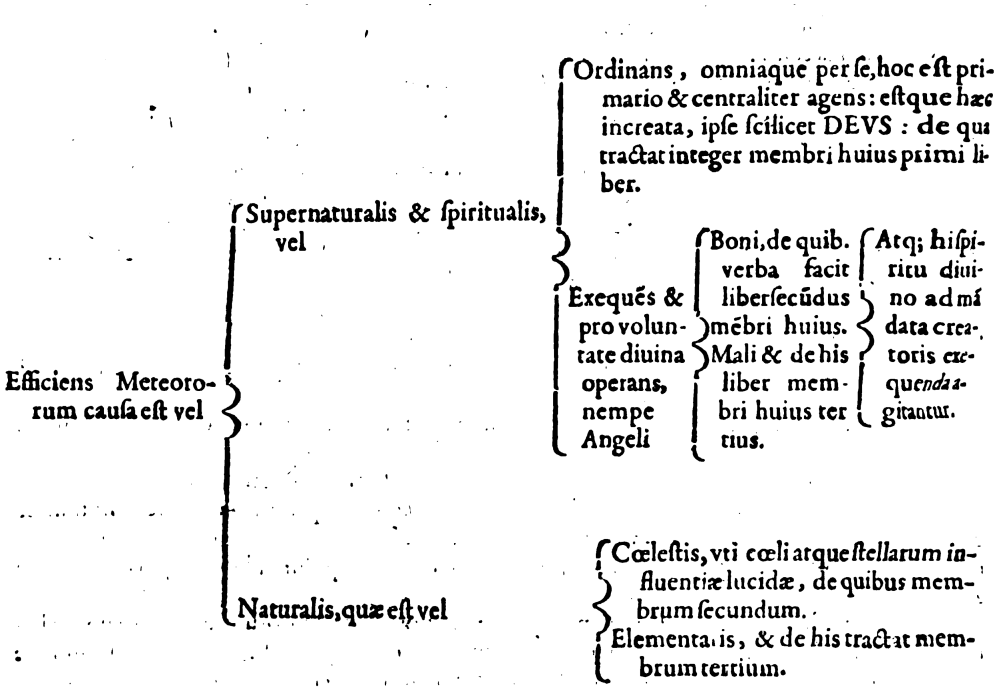

Figure 51 (*PS*, p. 148)

[118] "Nos vero ex sacrarum literarum doctrina instructi dicimus, solum rerum omnium actorem solumquein omnibus motorem esse DEUM, videlicet verbum divinum seu Spiritum sanctum". *PS*, p. 148.

Fludd's *Philosophia sacra* does not, in spite of the original plan of the work, end with the last two *libri*, i.e. the ones on the final causes of the meteors. Instead, the reader finds the lengthy explanation of the experiment already described in the *libri* i and vii of *tomus* I of the *De utriusque cosmi historia*.

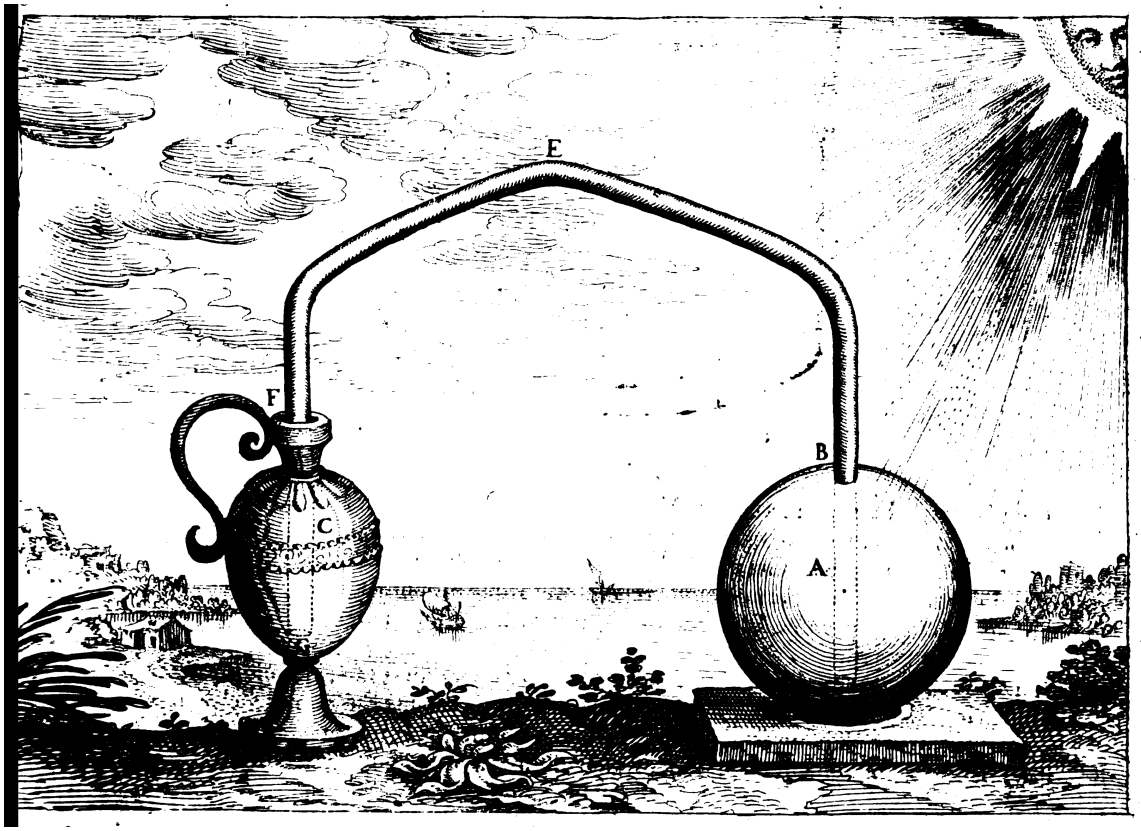

Figure 52 (*PS*, p. 283)

The air inside the sealed recipient A will expand or contract according to the increasing or decreasing of the heat, causing the water inside the open vessel F-G to bubble or fall respectively. The two vessels, in fact, are connected by a hollow pipe; on the right, air from outside cannot enter the pipe, since the vessel A is sealed. The left end of the pipe, on the other hand, is completely immersed in water (C): in this way, again, external air cannot enter the pipe. Fludd sets out from this experiment for the construction of a weather-glass. In a way that reminds us of other passages in his two *technicæ historiæ*, here he instructs the reader about how to build his/her own weather-glass, which is based on the above-explained principle.

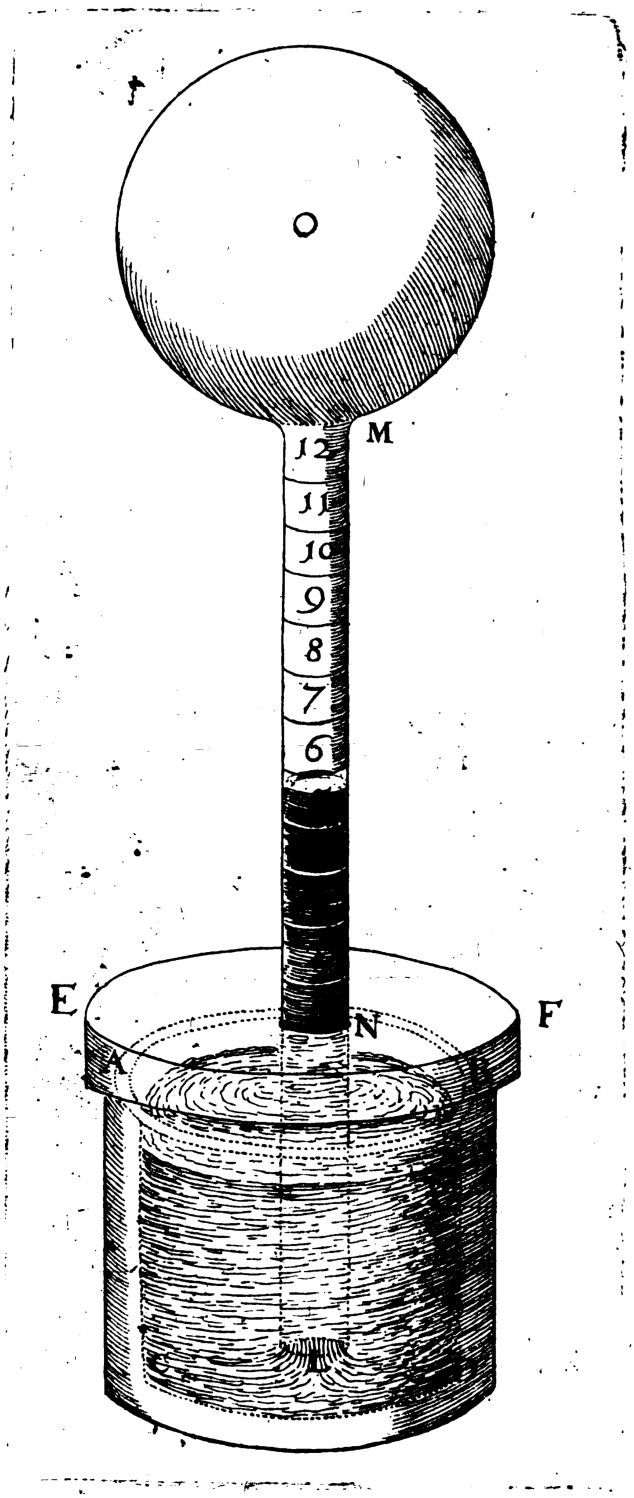

Figure 53 (*PS*, p. 287)

The vessel at the bottom is full of water; a hollow pipe ending with a bulb full of air is immersed in it, thus replicating in a more elegant and effective way the experiment of the two vessels connected by a pipe. The pipe is marked with numbers: this allows a better and more precise appreciation of the level of the liquid. Before sinking it into the water, the pipe and its hollow bulb are warmed; the open end of the pipe (still hot) is then sunk into the water. The air within the pipe-bulb system, while cooling down, will attract part of the water. The colder the temperature of the air in

the bulb, the higher the level of the water inside the pipe will be. *Vice versa*, the water into the pipe will decrease, pushed down by the expanding air of the bulb.

The applications of this instrument are several. To begin with, Fludd writes, it can be used to measure the external climate. It can be also used to measure the temperature of the human body: it is sufficient to put one's hand around the bulb, and the air inside it will adjust its temperature according to that of the hand, thus giving an estimate of one's temperature. Moreover, it can be used to measure the temperature of an alchemical furnace.

After this non-planned section on the weather-glass, the *Philosophia sacra* comes to its end without the fifth and sixth *libri*. But in the last lines of the text the English physician gives us an important clue about the direction that his project is taking.

> Here the topic to deal with is the microcosmic meteors and their effects. We will treat in great detail the health and the microcosmical ill-bringing meteors in the next volume, the title of which (if God wants) we rightly propose to be *Final causes of the meteors* or *Holy medicine*.[119]

There is no doubt about it: the dissertation on the meteors, and especially the one of their efficient causes, has grown more and more in such a way to require the manuscript of *Philosophia sacra* to be handed to the publisher before its completion. Moreover, the two final *libri*, i.e. the ones concerning the final causes of the meteors, now give birth to a brand new full volume with its own title: *Medicina sacra*. Fludd anticipates the plan too: it will be divided into three *partes*, the first describing the fortress of health, the second describing its invasion from the enemies, and the third the deliverance of the fortress from its enemies, and the restoration of the original health.

The following publication will actually bear the title *Medicina catholica*. This might seem a new project completely separated from the *De utriusque cosmi historia*, and as such it has been indeed considered by other scholars. It is my opinion that the new *Medicina catholica* project is, actually, strictly interconnected to the *De utriusque cosmi historia* and forms a united entity with it. After the analysis of how the *DUCH* plan has been realised by Fludd that I have carried in the above pages, it is in fact clear that what in 1629 became *Medicina catholica* had been originally planned (1621

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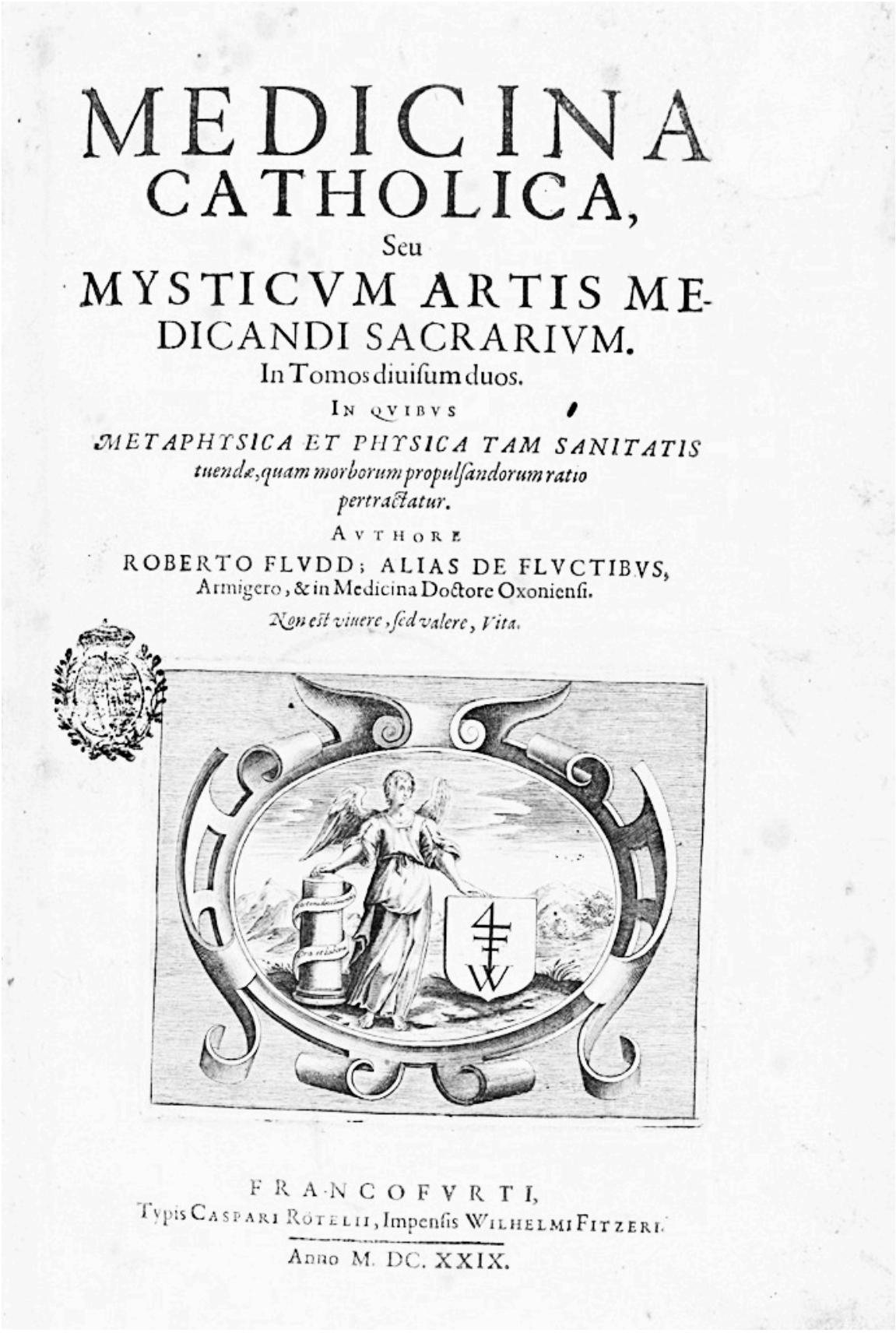
[119] "Hoc etiam idem de meteoris Microcosmicis et eorum effectibus censendum. De quibus quidem, utpote circa sanitatem et morborum in Microcosmo versantibus, in volumine sequenti (supremo propitiante numine) fusius agemus, cui quidem volumini causæ meteororum finalis seu Medicinæ Sacræ titulum recte insignire nobis proposuimus". *PS*, p. 303.

and 1623) to be contained in the second *portio* of the second *tomus* of *DUCH*, and successively assigned to the third *pars* of *Philosophia sacra* (i.e. *DUCH* II, ii, *portio* iv) in 1626. Fludd's plan did not change much in its contents, but rather in the priority and weight that certain topics gain over others. Unlike the relatively short macrocosmic survey, the microcosmic survey is by and large more extensive and elaborated. Thereby, *DUCH* II is given larger significance, and the fact that in the 1621-plan it received the appellation of 'in medicina arte versatur' is a clear sign of the direction on which Fludd's interests were focusing. His profession had arguably a certain influence in this choice.

III.iv *Medicina catholica*



MEDICINA
CATHOLICA,
Seu
MYSTICVM ARTIS MEDICANDI SACRARIVM.
In Tomos diuiſum duos.
IN QVIBVS
METAPHYSICA ET PHYSICA TAM SANITATIS tuendæ, quam morborum propulſandorum ratio pertractatur.
AVTHORE
ROBERTO FLVDD; ALIAS DE FLVCTIBVS,
Armigero, & in Medicina Doctore Oxonienſi.
Non eſt viuere, ſed valere, Vita.

FRANCOFVRTI,
Typis CASPARI RÖTELII, Impenſis WILHELMI FITZERI.
Anno M. DC. XXIX.

Figure 54: the frontispiece to *MC* I

Published between 1629 and 1631, *Medicina catholica* can be considered a full-length insight into Robert Fludd's Catholic medicine. The verbosity of the English physician seems to increase over time, rendering this work for the most part redundant and unnecessarily long. But considering this from another point of view, it sheds light on Robert Fludd's real vocation. The fact that he chooses to expand, *in itinere*, the sections of his *De utriusque cosmi historia* which deal with the meteors, to the extent that he apparently required a brand new project for it, significantly tells us about the self-awareness he attained through his expanding knowledge on the subject and the growing importance he placed on medical publications over the other subjects.

The *Medicina catholica* is planned to be subdivided into two *tomi* (and not three *partes* as previously announced at the end of *PS*), of which only the first would be published. The first *tomus* explains the origin of health and illnesses and it is divided into two *tractatus*, both divided into two *sectiones*.

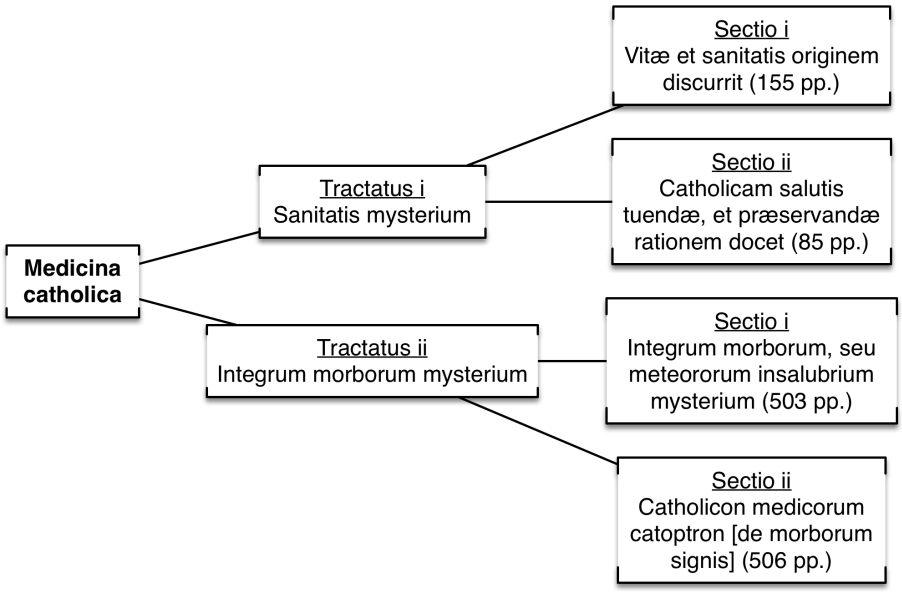


Figure 55: general plan of *Medicina catholica*

As can be noticed by the number of pages, the second *tractatus* – which will be published in two distinct *sectiones* unlike the first *tractatus* (included in one single publication) – exceeds in length the first one by far. This is a Fluddean tendency to which the reader is by now accustomed. A plan is often expanded towards its end or, when no substantial changes are made to the plan, the number of pages of its last sections is substantially increased.

III.iv.a *MC* I, i

The detailed subdivision of *tractatus* i, which as I have already mentioned in chapter II is dedicated to William Paddy, runs as follows:

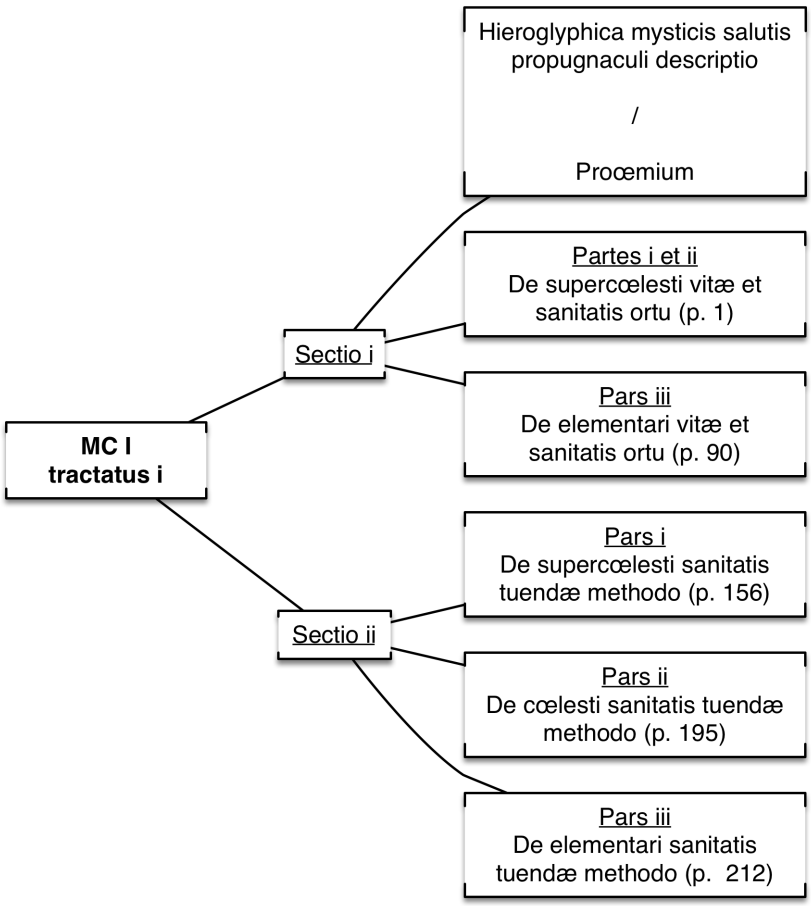


Figure 56: plan of the first *tractatus* of *MC* I

At the beginning of the first *sectio* one finds the description of the 'fortress of health', which accompanies and explains the 'emblem of the mystical fortress'. The healthy man (*homo sanus*) appears safe and protected against the evil spirits brought by the four cardinal winds.

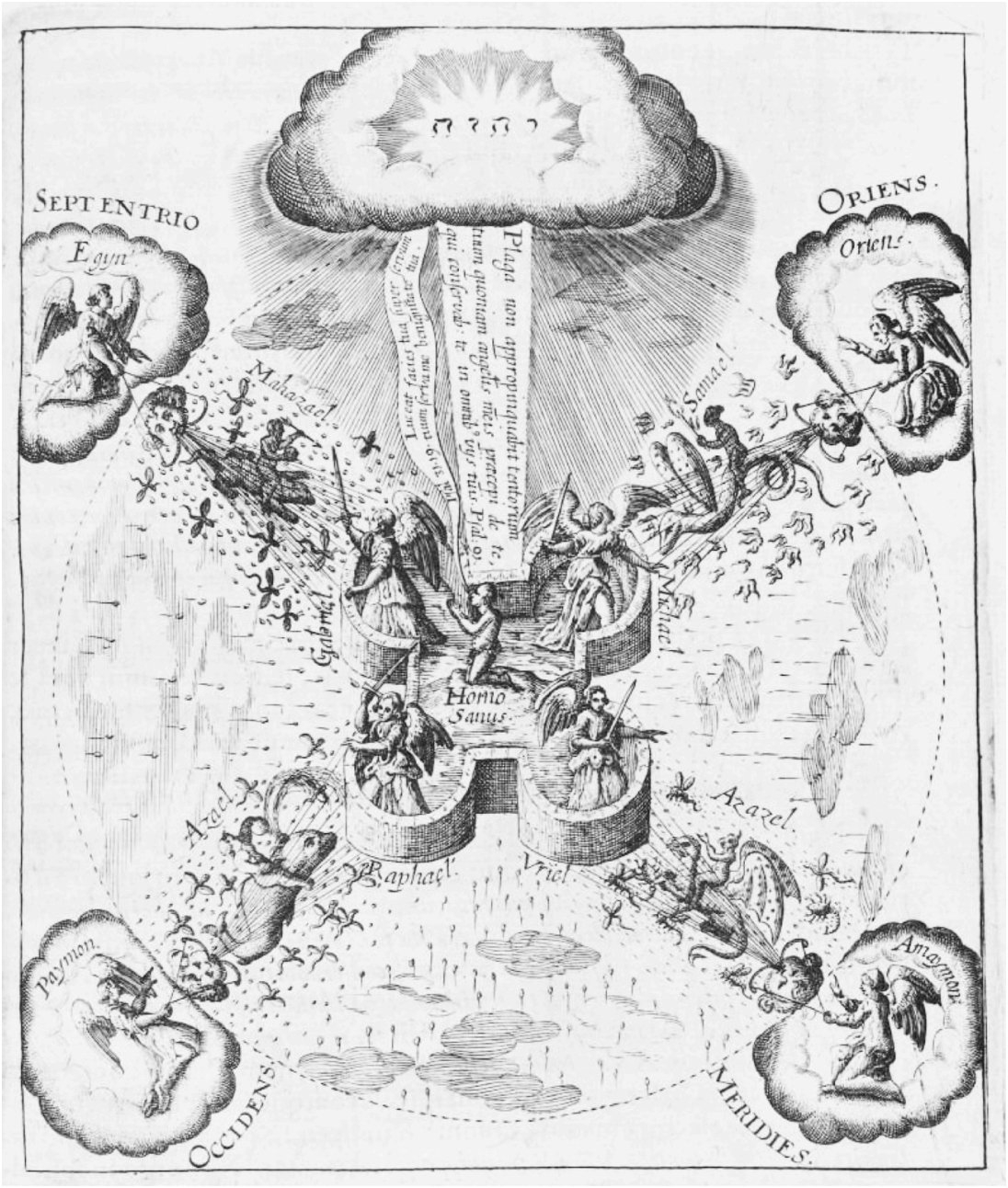


Figure 57 (*MC* I, fol. 8^{v})

The pious man is spiritually strong and the divine light is with him; the four angels (Michael, Uriel, Raphael and Gabriel) at the four corners of this mystical fortress defend him from the evil meteors arriving from the four evil angels Oriens, Amaymon, Paymon and Egyn and carried by their four servants. From the east, Samael brings meteors of fire, i.e. fever and similar diseases; from the south, Azazel brings windy meteors such as plagues and measles; from the west, Azael is the bringer of watery illnesses such as catarrh; finally, Mahazael from the north brings earthy meteors such as psoriasis and leprosy.[120]

[120] This denomination is the same employed by Agrippa in his *De occulta philosophia*, pp. 192-194.

Just a few pages later, the reader meets again with the weather-glass, which is used here to demonstrate the opposition between the cold and hot natures. The whole *sectio* i deals with the winds and their combinations; winds for Fludd are, as the reader had already learned from *Philosophia sacra*, the main cause for disease in man.

Sectio ii focuses on the ways to preserve health. There are three kinds of health to be preserved: the *supercœlestis*, the *cœlestis* and the *elementaris* ones, with which Fludd deals in three different sections. The *supercœlestis* health is mainly preserved through orations and prayers. The *cœlestis* refers to the *electiones* and *astrologia nativitatis* which Fludd already treated previously in *tractatus* ii of *tomus* II, *pars* x. Finally, the *elementaris* health concerns the physical body: in this last section Fludd give recommendations on sleep, food, physical exercise and so on. To be sure, in this last section one can find a few medical recipes for obviating costiveness and similar melancholic diseases. Fludd affirms that one of the most famous purgative remedies is the *pilula mastichina* of Jean Fernel, and gives the recipes for an electuary and a purgative powder. But the most successful medicine is the *pilula benedicta* (blessed pill), which Fludd claims to have personally discovered ("a nobis inventam").[121] Unfortunately, one does not find the recipe for this pill: Fludd announces that he will provide it in the following *tomus* of *MC*, which sadly would never see the light of the day. But in the *London pharmacopœia*, the dispensatory of the Royal College of Physicians to which Fludd contributed, I have indeed found a *benedicta laxativa*, which might be Fludd's pill. The same medicine is mentioned in the second part of the last edition of Burton's *Anatomy of Melancholy* as indeed a remedy against the 'windy melancholy'.[122]

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[121] *MC* I, i, *sectio* i, p. 241. It might just be a general name for a medicine considered particularly powerful. For example the French physician Joseph *DUCH*esne (*c*. 1544-1609), also called Josephus Quercetanus, proposed a laxative *pilula benedicta* too. Since Fludd does not give its composition, we will never know if this is the same pill or not. In the eighteenth century John Juxton published a book titled *Anglica pilula benedicta: or, the Blessed English pill, being an extract of the blessed thistle, and buckthorn-berries* (London, *c*. 1740).

[122] R. Burton, *The Anatomy of Melancholy*, London, 1676, p. 138.

III.iv.b *MC* I, ii, *sectio* i

The second *tractatus* of *MC* I is printed two years after the publication of the first one and it is dedicated to George Abbot, archbishop of Canterbury. It is divided into two *sectiones*, the first of which deals with the 'mystery of the meteors addressed in its entirety'. This is its plan.

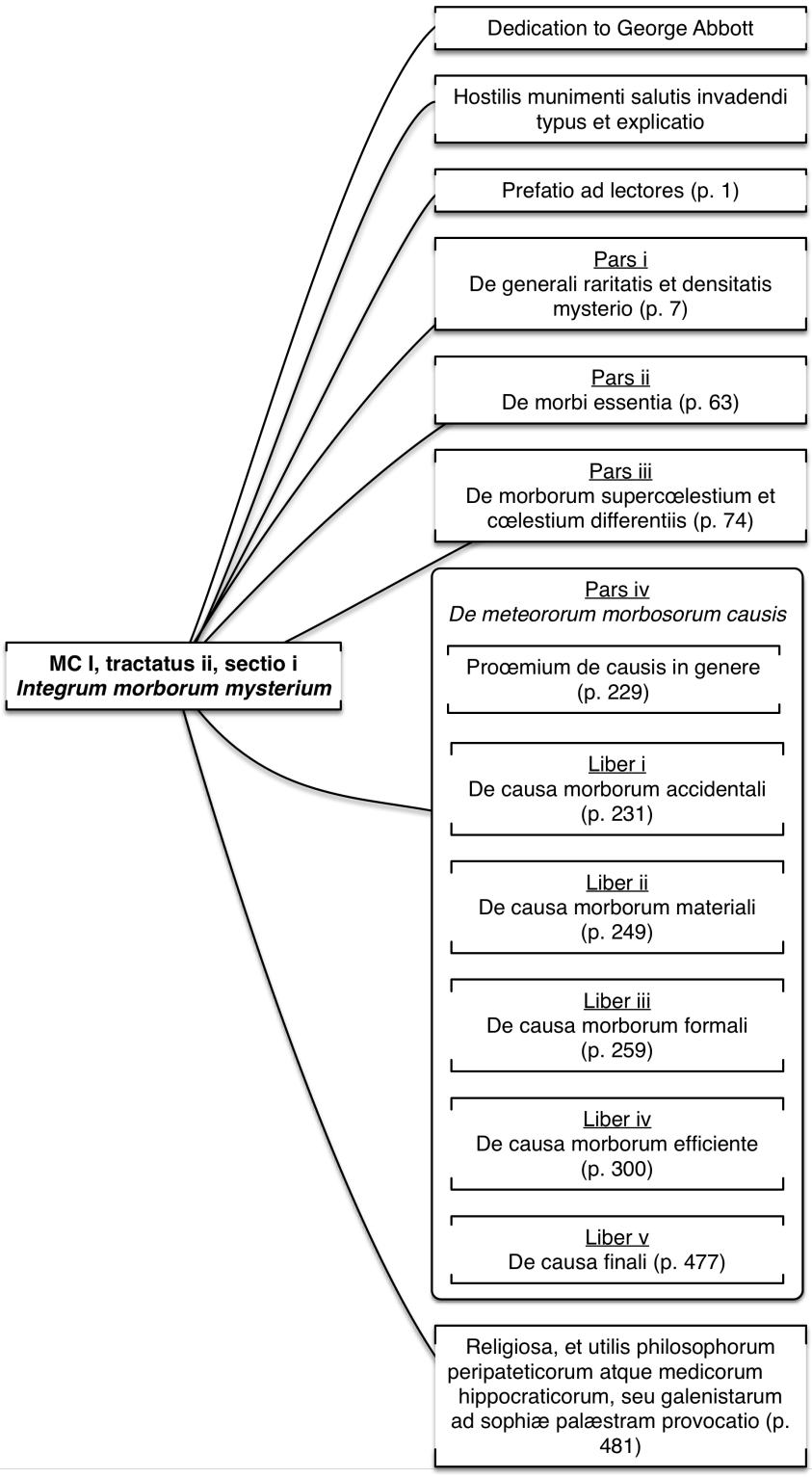

Figure 58: general plan of the second *tractatus* of *MC* I

Already from the frontispiece of *sectio* i it is clear that here Fludd is delving deeper and deeper into the theory of the winds as main causes of diseases.

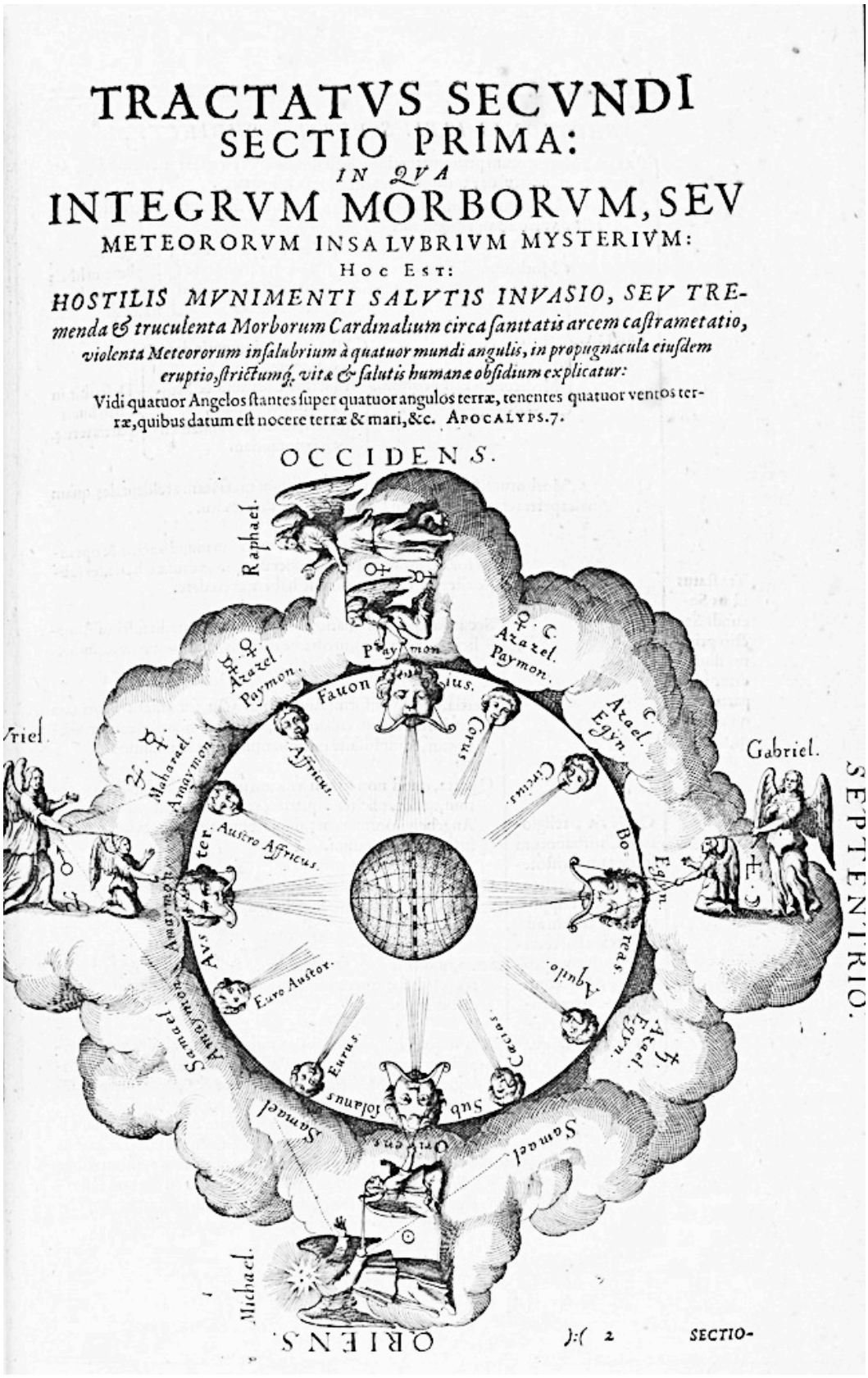

Figure 59: frontispiece to the first *sectio* of *MC* I, ii

A citation from the Apocalypse is given: "Vidi quatuor Angelos stantes super quatuor angulos terræ, tenentes quatuor ventos terræ, quibus datum est nocere terræ et mari". As it happened at the beginning of *tractatus* i of *Medicina catholica*, the reader is presented with the 'mystical fortress', but this time the fortress is under attack.

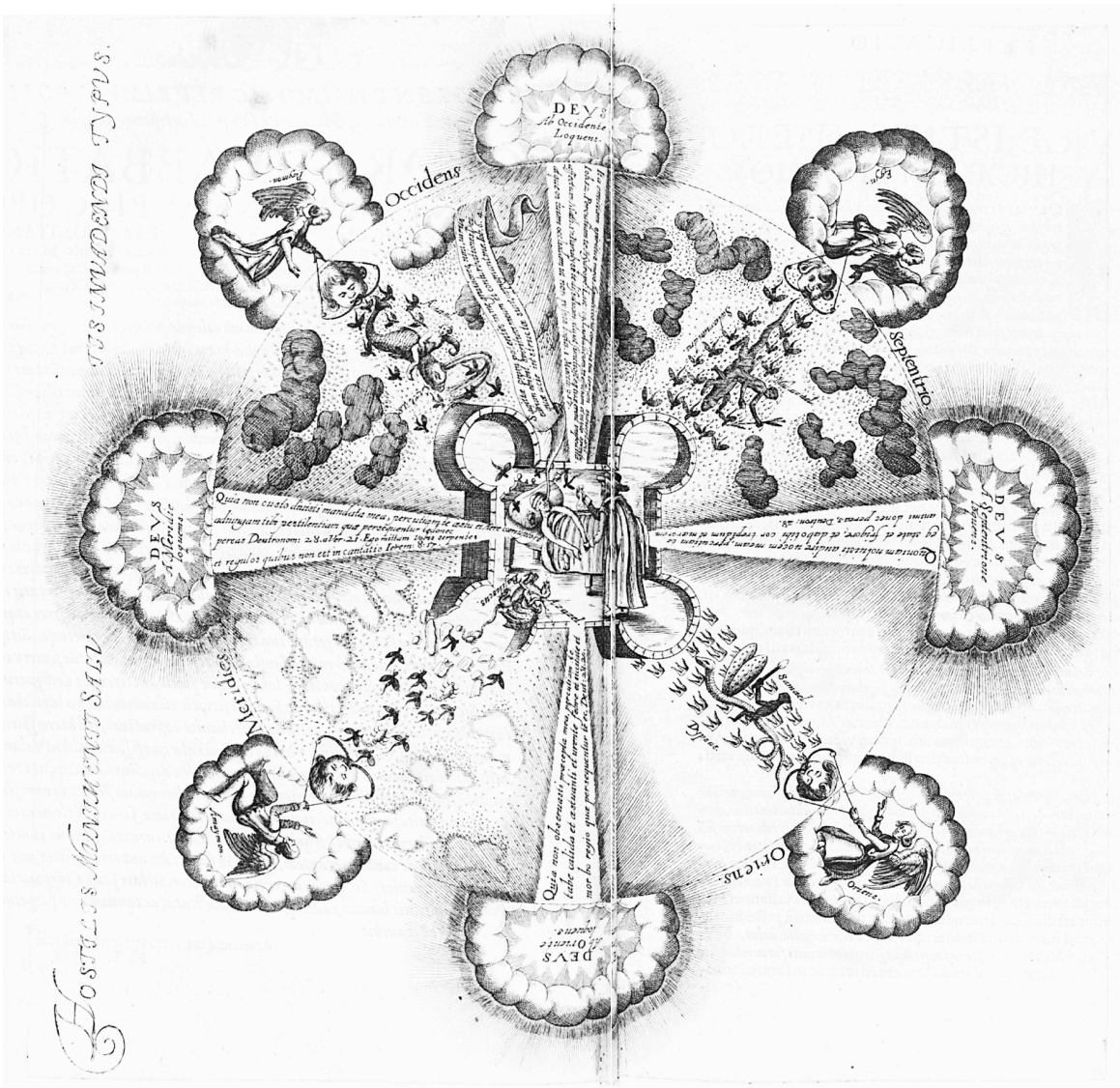

Figure 60 (*MC* I, ii, fols 3ᵛ-4ʳ)

As one can see, the evil bringer of disease has now conquered one of the four corners; the man in the centre is sick, and requires the help of a doctor. God himself is present at the four corners: He is punishing the man for his sins.

The beginning of this *sectio* deals again with the weather-glass: Fludd refers to the final book of his *PS* and to the previous *sectio* of *MC*, where he already explained how this instrument works. Interestingly, Fludd states that

> [t]his experiment is consonant, in its effect, with the one expounded at the beginning of our survey of the macrocosm, at the end of *capitulum* 6 of its *liber* i.[123]

In the opinion of Fludd the weather-glass is therefore the evolution, or a more 'practical' application, of the experiment of the two vessels communicating through a pipe. A close and deep analysis of this instrument as a tool not only for measuring temperature but also – and especially – as a key to the understanding of the secrets of the two cosmoses, will be given in the last chapter of this dissertation. For now, it is important to note that the Fluddean weather-glass returns several times throughout all *MC*, and in particular in this *sectio* i of *tractatus* ii.[124] The whole *pars* i is dedicated just to the weather-glass and its metaphorical use in connections with the macrocosm. In its *Conclusio*,[125] Fludd maintains that thanks to this instrument – and the experiments it allows to make – the Manichean belief of a coexistence of the principle of good and evil is banned forever, since both health and illness, life and death, derive from the very same God. Hence the biblical saying "I will kill and cause to live. I will strike and I will heal" (Deut. 32:39) and many others. "We therefore conclude", Fludd states,

> that every thickness comes from cold contraction brought about by the divine power, or darkness; and that every thinness [comes from] hot expansion generated by the divine act, or light, by means of the spirit within, or middle passive substance [...].[126]

After a quick survey of the essence of the illnesses in *pars* ii, where Fludd states that the final cause of illnesses is the scourge of God punishing man's sins, the English physician embarks on *pars* iii.[127] This is a rather long section, which is divided into four *libri* and treats the different kinds of ill-bringing *meteora* and their associated diseases. As the Fluddean reader by now knows, these *meteora* are of three kinds:

1. The Empyreal ones, i.e. *supercœlestis*, directly derived from God, can be divine (issued directly by God) or angelic (coming from the evil angels).
2. The Ethereal ones, i.e. *cœlestis*, deriving either from the adverse planets Saturn and Mars (thus called *Saturnina* and *Martialia*), or from the

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[123] "Hoc etiam experimentum in effectu consonans est cum illo in *Principio Physicæ nostræ Macrocosmi Historiæ* expresso, videlicet *in fine cap. 6 lib. 1. eiusdem*". *MC* I, ii, *sectio* i, p. 9.
[124] Cfr., for instance, *MC* I, i pp. 17-19, *MC* I, ii, i pp. 7-10, pp. 26-28, p. 55-60.
[125] *MC* I, ii, *sectio* i, p. 62.
[126] "Concludimus igitur, quod omnis densitas fit contractione frigida a potentia divina seu tenebris orta, omnisque raritas a dilatatione calida, ab actu divino seu luce procreata, spiritu interim, sive subiecto medio passivo [...]". Ibid.
[127] Note that this is wrongly referred to as *pars secunda* in the plan to be found in *MC* I, i, *sectio* i, p. 74.

combination of the above with Jupiter (*Iovialia*), Venus (*Veneria*), the Sun (*Solaria*) and Mercury (*Mercurialia*).

3. The Elemental ones (i.e. *elementaris*), which concern the insalubrious agency in the body.

Liber i describes the first and the second ones, while *libri* ii and iv focus on the third ones, which Fludd calls also *meteora finalia*, since they take place in the *cælo infimo*, i.e. the lowest. These last can be subdivided into four kinds, corresponding to the four directions of the winds: *septentrionalia*, *occidentalia*, *orientalia*, *meridionalia*. The first two are of a *tenebrosa natura* (darkness), the last two of a *lucida natura* (light). To each of them is devoted a *membrum* of *liber* ii, and in them Fludd takes often issue with Galenic and Hippocratic medicine, emphasising his own ideas of the external origin of the illnesses (the meteors) and denying the theory of the imbalance of the humours in the human body: *liber* iii is entirely dedicated to this topic. This *pars* iii has been completed in February 1628, as Fludd states at its end.[128]

Pars iv is dedicated to the causes of the illnesses. As Fludd explains in the *Proœmium*, this has been already done in his *Philosophia sacra* for both the healthy and the ill-bringing meteors of the macrocosm. Here the same method of investigation is applied in depth only to the *meteora morbida* of the microcosm. To the four Aristotelic categories of causes, Fludd now adds a fifth one. To be sure, he groups the four Peripatetic ones under the label of 'real causes', to which he adds an 'accidental cause'. This, also termed 'sine qua non', is the sin.[129] This publication of 1631 volume ends with a "religious and useful provocation against the school of thought of Aristotelian philosophers and of Galenical and Hippocratic physicians".[130]

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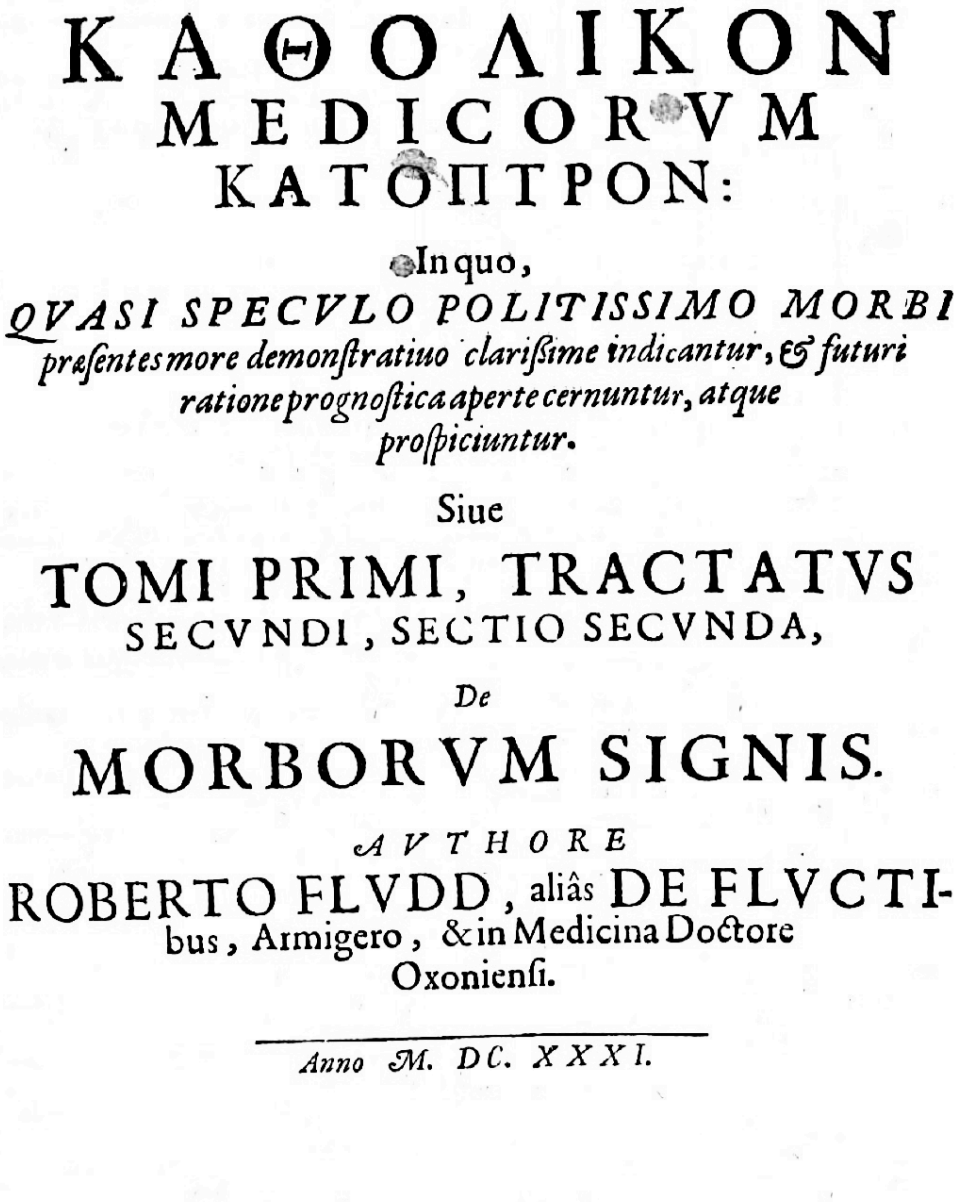
[128] Interestingly, the precise day is missing, and in its place one finds an empty space ("Anno isto 1628. Die.....Februarii feliciter (uti spero) pertexui". *MC* I, ii, *sectio* i, p. 228). This was left perhaps intentionally blank to be filled by the printer, who possibly copied Fludd's manuscript *verbatim* and did not provide the missing detail. It is only a conjecture, but this might lead to the conclusion that the writings by Fludd were being (or were expected to be) published very soon after their completion.

[129] Ibid., p. 230.

[130] *Religiosa, et utilis philosophorum peripateticorum atque Medicorum Hippocraticorum, seu Galenistarum ad Sophiæ palæstram provocatio*. Ibid., pp. 481-503.

III.iv.c *MC* I, ii, *sectio* ii

The last published volume of *MC* (and, by implication, of the *DUCH*) sees the light of the day in 1631. It is *sectio* ii of *tractatus* ii of *tomus* I and promises to delve into the symptoms (*signa*) of the diseases.[131] The frontispiece this time has no plates and it just presents the reader with the title *Katholicon medicorum katoptron*.



ΚΑΘΟΛΙΚΟΝ
MEDICORVM
ΚΑΤΟΠΤΡΟΝ:

In quo,
QVASI SPECVLO POLITISSIMO MORBI
præsentes more demonstratiuo clarissime indicantur, & futuri
ratione prognostica aperte cernuntur, atque
prospiciuntur.

Siue

TOMI PRIMI, TRACTATVS
SECVNDI, SECTIO SECVNDA,

De

MORBORVM SIGNIS.

AVTHORE
ROBERTO FLVDD, aliâs DE FLVCTIbus, Armigero, & in Medicina Doctore
Oxoniensi.

Anno M. DC. XXXI.

Figure 61: frontispiece to the second *sectio* of *MC* I, ii

[131] Both *sectiones* i and ii of *tractatus* i are separately published in 1631. Nevertheless, we know from internal evidence that *sectio* i (or at least its first three *partes*) was finished in February 1628 (see note 131) while *sectio* ii would be finished in October 1629.

The new publication is dedicated to Sir Robert Cotton, who Fludd terms 'amicus meus singularis', and is divided into three *portiones*.

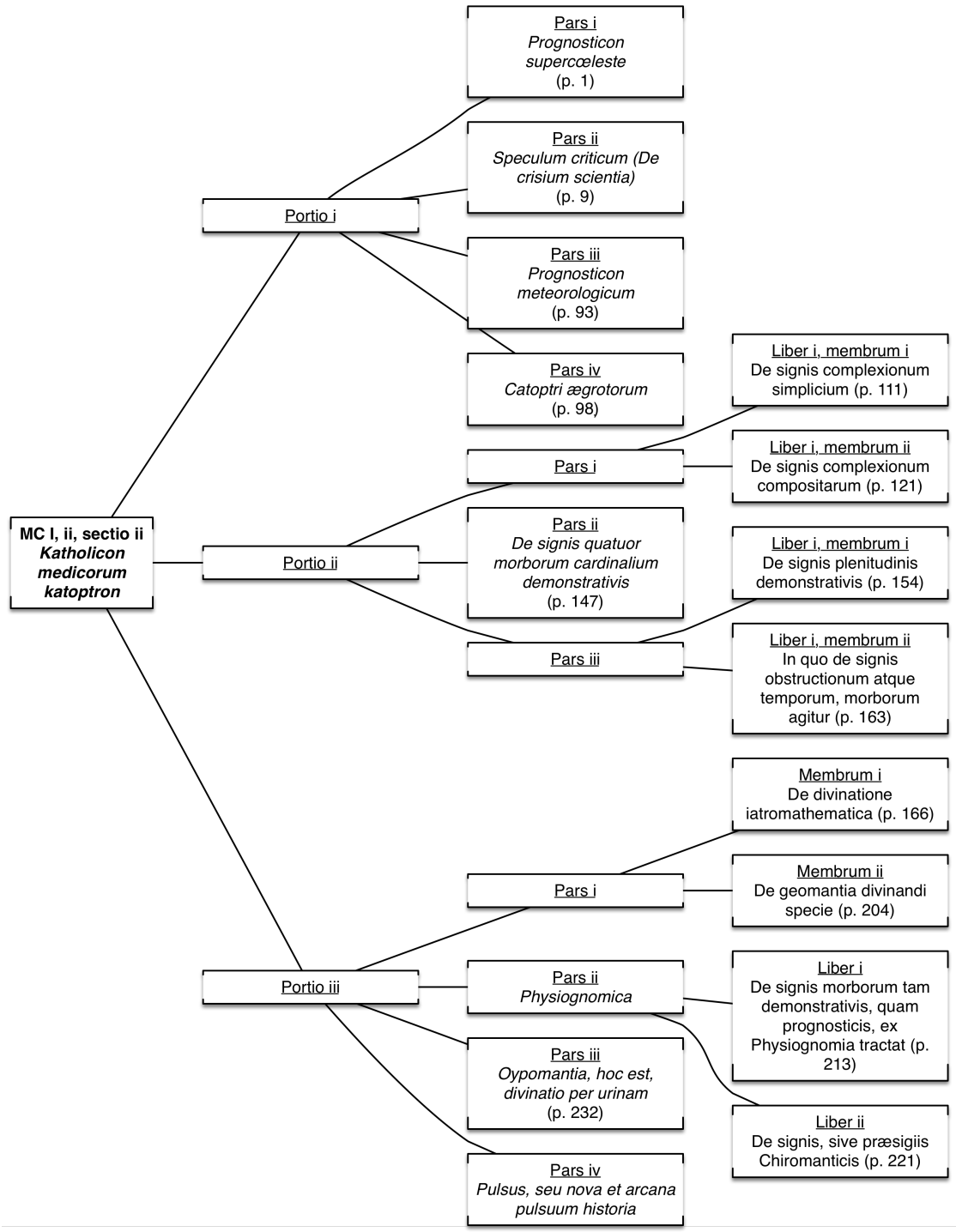
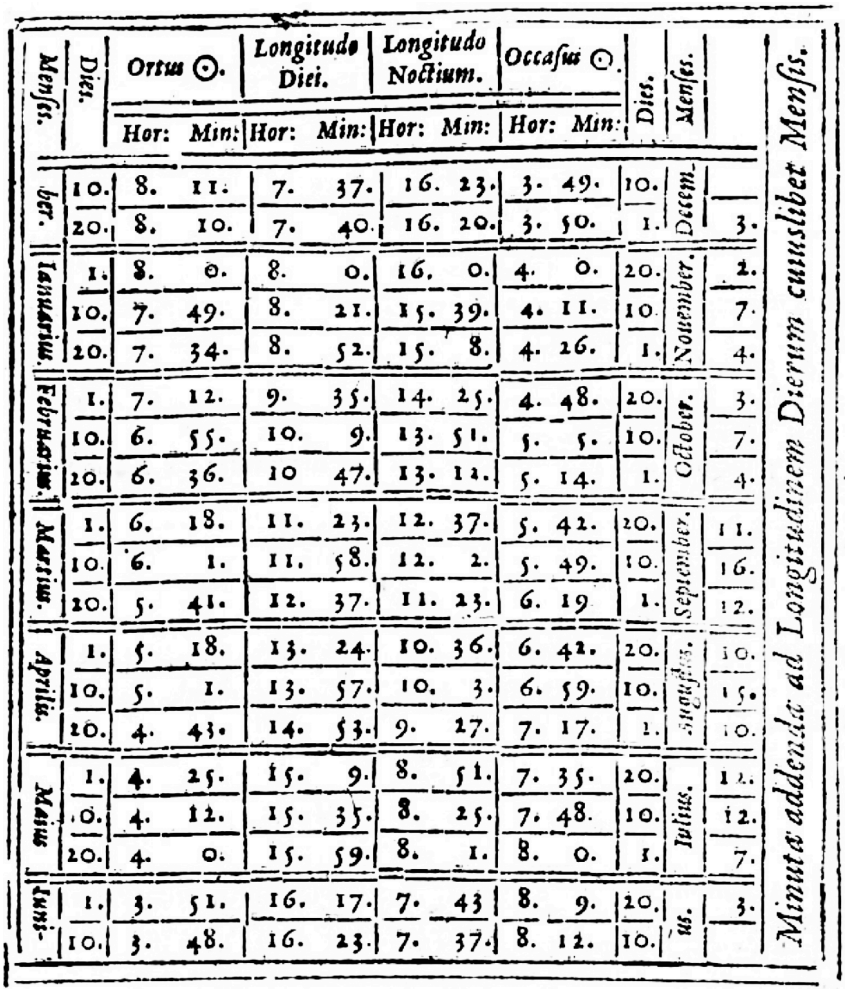


Figure 62: general plan of the second *sectio MC* I, ii

The first *portio* focuses on the diagnoses of symptoms from *supercœlestium speculatione*. They can be inferred from the examination of man's sin (see above), from a revelation to a prophet, from a revelation through a dream, and via astrology. To this last method Fludd will dedicate a large part of the following pages, since in his *medicina catholica* it plays an important role.

Portio ii deals with the *scientia* of crisis. Crisis is the moment in which an illness reaches a crucial point from which the patient can either go towards a worsening and eventually to death, or towards healing. Who decides in the critical days for the illness to take one direction or another is of course the almighty God. The number 7 is essential in this process: in fact, 7 is to be interpreted as 3+4, thus symbolising a combat between the two principles of light/life and darkness/death. Fludd is keen to underline the fact that his meaning of crisis is different from that of Galen and Avicenna; his definition of crisis is, instead, based on the Bible. The amount of pages Fludd dedicates to this *scientia* of crisis is significant and full of complicated charts and calculations. For instance, the plate below shows a table on how to calculate the days of mutations of the illness. Fludd's crisis *scientia* is, as one might expect, fully grounded in astrology and numerology.



Menſis.	Dies.	Ortus ☉. Hor:	Min:	Longitudo Diei. Hor:	Min:	Longitudo Noctium. Hor:	Min:	Occaſus ☉. Hor:	Min:	Dies.	Menſes.	
ber.	10.	8.	11.	7.	37.	16.	23.	3.	49.	10.	Decem.	
	20.	8.	10.	7.	40.	16.	20.	3.	50.	1.		3.
Ianuarius.	1.	8.	0.	8.	0.	16.	0.	4.	0.	20.	November.	2.
	10.	7.	49.	8.	21.	15.	39.	4.	11.	10		7.
	20.	7.	34.	8.	52.	15.	8.	4.	26.	1.		4.
Februarius.	1.	7.	12.	9.	35.	14.	25.	4.	48.	20.	October.	3.
	10.	6.	55.	10.	9.	13.	51.	5.	5.	10.		7.
	20.	6.	36.	10	47.	13.	12.	5.	14.	1.		4.
Martius.	1.	6.	18.	11.	23.	12.	37.	5.	42.	20.	September.	11.
	10.	6.	1.	11.	58.	12.	2.	5.	49.	10.		16.
	20.	5.	41.	12.	37.	11.	23.	6.	19	1.		12.
Aprilis.	1.	5.	18.	13.	24.	10.	36.	6.	42.	20.	Auguſtus.	10.
	10.	5.	1.	13.	57.	10.	3.	6.	59.	10.		15.
	20.	4.	43.	14.	53.	9.	27.	7.	17.	1.		10.
Maius	1.	4.	25.	15.	9.	8.	51.	7.	35.	20.	Iulius.	12.
	10.	4.	12.	15.	35.	8.	25.	7.	48.	10.		12.
	20.	4.	0.	15.	59.	8.	1.	8.	0.	1.		7.
Iunius.	1.	3.	51.	16.	17.	7.	43	8.	9.	20.	us.	3.
	10.	3.	48.	16.	23.	7.	37.	8.	12.	10.		

Minuta addenda ad Longitudinem Dierum cuiuslibet Menſis.

Figure 63 (*MC* I, ii, *sectio* ii, p. 57)

After having dealt, in *pars* iii, with the observation of the winds and of the meteors more or less as we nowadays interpret them (i.e. comets and similar signs), Fludd introduces his *catoptri ægrotorum* in *pars* iv. In this last *pars* of the first *portio* the English physician goes into detail and surveys the predictions from the symptoms of the four main diseases associated with the winds: fever (associated with the oriental wind), plague (with the southern wind), epilepsy (occidental wind's disease) and leprosy (correlated with the northern wind). For each of them, Fludd lists the symptoms for predicting which way – healing or death – the progression of the illness will undertake.

Portio ii is divided into three *partes*. *Pars* i discusses the theory of complexions; this is an ancient doctrine which studies the predominance of one of the four humours in respect to the others in the body. This gains new light under Fludd's astrology. As Walter Pagel rightly noticed,

> [t]he close connection of the whole of Fludd's system with astrology demands such a study of temperaments and complexions. The predominance of black bile directs the attention to Mars, and the appropriate therapy in disease has to obviate the influence of this planet. Hence suitable medicinal herbs must be collected at the time when Mars is on the wane.[132]

The considerable length of this *pars* reveals that, together with the *scientia* of crisis, the doctrine of the complexions holds a particular place in Fludd's medical theory. The twelve zodiacal signs are put in relation with a vast number of dispositions and diseases, and for each one an accurate description of both natural and preternatural symptoms is given. *Pars* ii reports the demonstration of the symptoms of the for cardinal diseases: in *pars* iv of *portio* i, Fludd explains, he dealt with the symptoms of the four cardinal diseases. Here he now reports their demonstrations, i.e. he confronts the opinions of both *testimonia ethnici* (as Galen, Hippocrates, Avicenna) and *sancti* (the Holy Bible) about these diseases.

Pars iii reconnects with *pars* i of *portio* iii, i.e. the one dedicated to the doctrine of the complexions. Here Fludd focuses in more details on the symptoms coming from the complexions in the single parts of the body, for example the stomach or the lungs.

The third *portio*, the last of Fludd's *Katholicon medicorum katoptron*, is divided into four *partes*. The first surveys the two divination methods of iatromathematics (medical astrology) and geomancy. The second treats the prognosis through

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[132] Pagel, 'Religious Motives', p. 274. Pagel gives 'in' for 'is' in the final sentence.

physiognomic (*liber* i), and chiromancy (*liber* ii).[133] The third surveys the divination through urine, or urinomancy. The English physician devotes to this form of divination a lengthy dissertation in which he demonstrates that this is one of the medical skills he possessed in depth. The Fluddean treatise on urinomancy gives, in fact, a detailed account on the examination of urine and how to infer the state of the patient from its colour.

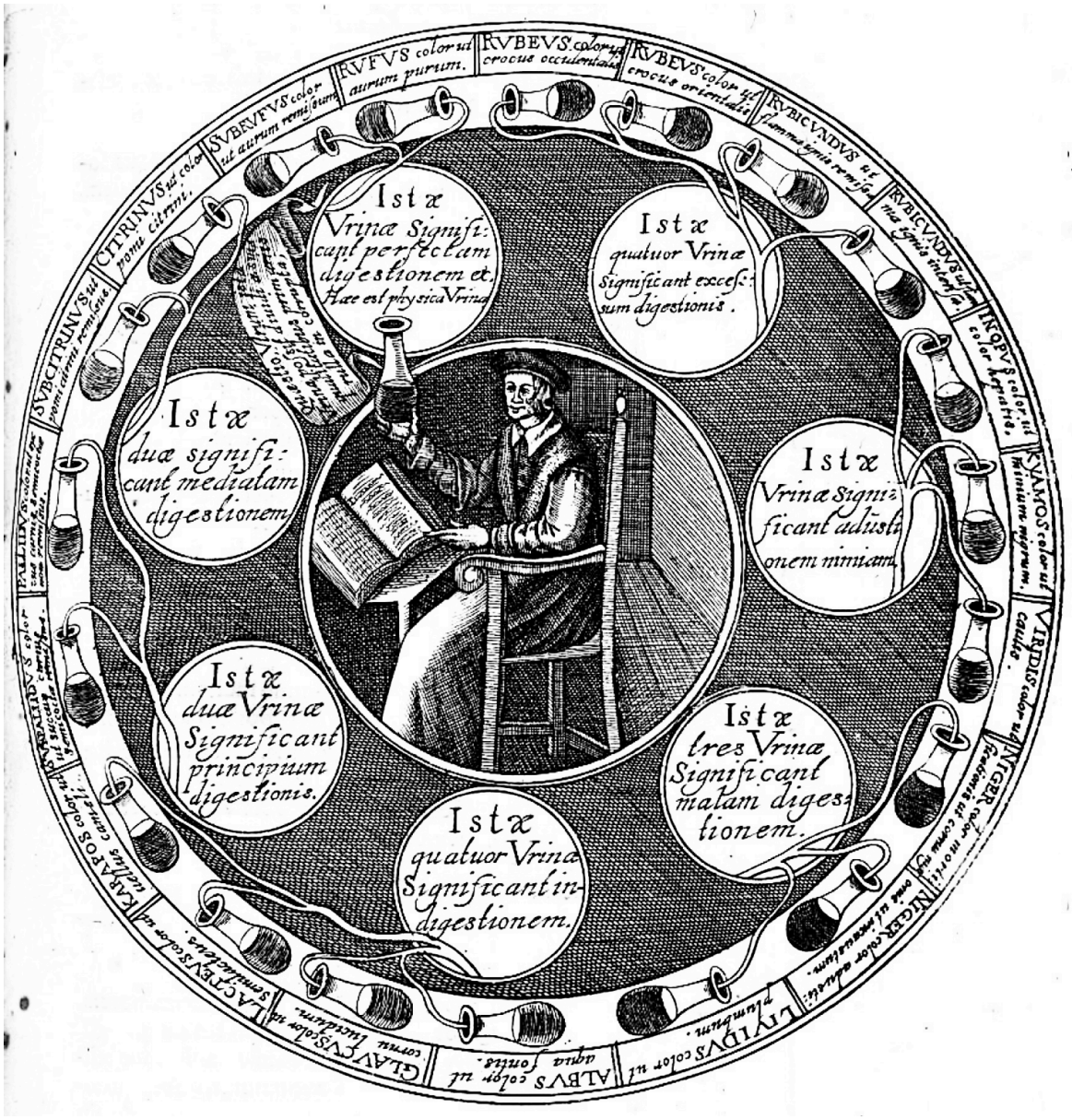

Figure 64 (*MC* I, ii, *sectio* ii, p. 343)[134]

[133] *De signis, sive præsigiis Chiromanticis* (*MC* I, ii, *sectio* ii, *portio* iii, *liber* ii) has been reprinted in *Ludicrum chiromanticum* (Jena, 1661, pp. 157-214) by Johannes Prætorius (1630-1680), professor of philosophy at the University of Leipzig. Also reprinted in the same work is an account on chiromancy by Caspar Schott who, as opposed to Fludd, explains chiromancy in natural terms, rejecting astrological connections. Goclenius also is present in this compendium of chiromantic works.

[134] This plate resembles remarkably the one on the judgement of urine from its colour in J. de Ketham, *Fasciculo di medicina vulgare*, fol. 2v.

The above plate summarises effectively the correspondence of colours with their associated diseases. More importantly, the Fluddean weather-glass makes its appearance once again and it is applied as a philosophical experiment. Here the Fluddean instrument is adapted in order to better show the association between the colour of the urine and several diseases.

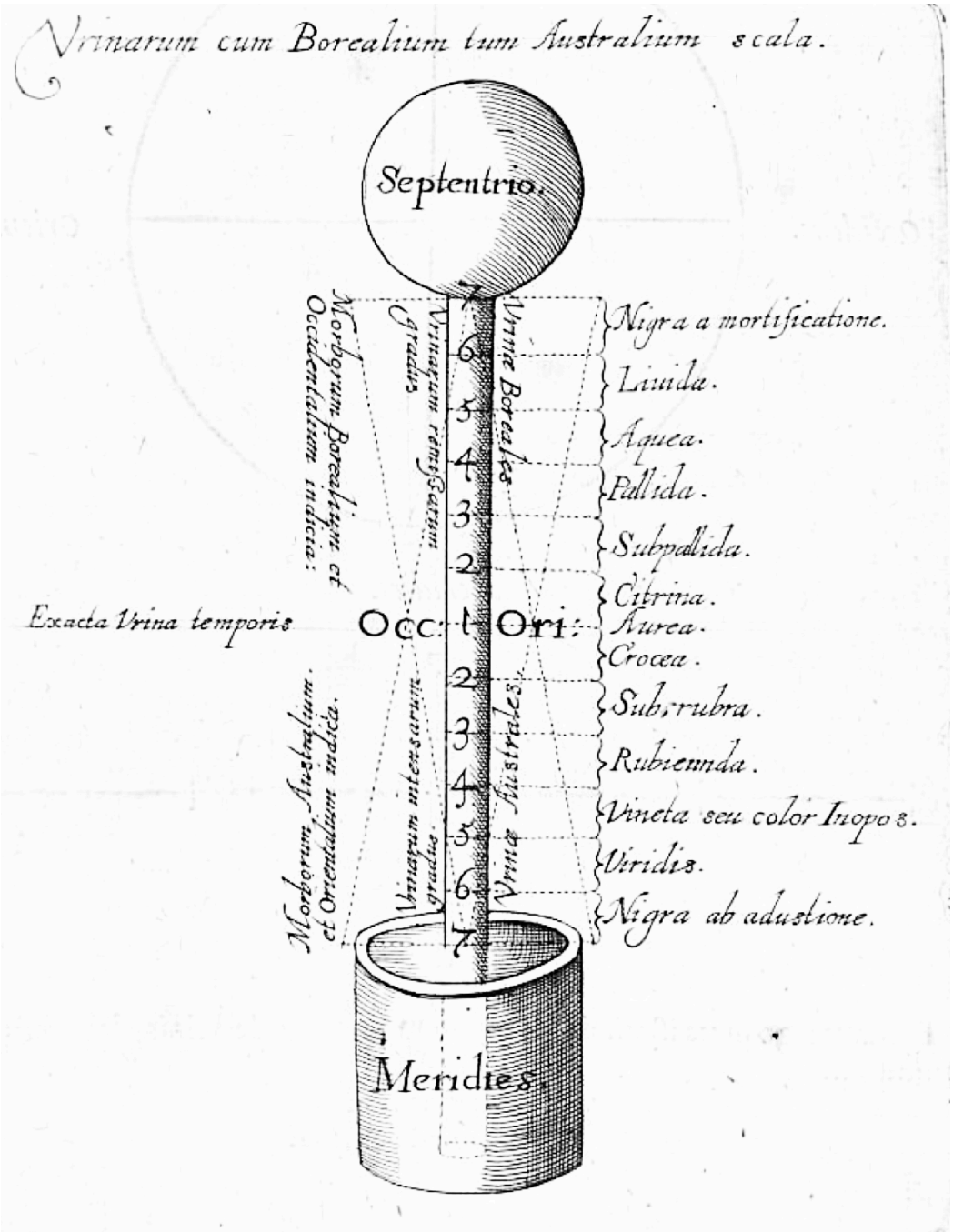

Figure 65 (*MC* I, ii, *sectio* ii, p. 271)

With Fludd's treatise on urinomancy the reader is finally arrived at the last tract of the *MC*, which is the Fluddean dissertation on the human pulse. Given its originality and its relevance, I shall describe it in detail in the course of the following chapter.

In this chapter I have set out to inspect Robert Fludd's two main big works, *DUCH* and *MC*. The risks of this operation, i.e. an over-simplification of the actual contents of their subdivisions and a density of description, have been definitely compensated by an overall view which has permitted us to detect some slight but revealing changes in Fludd's philosophy. To begin with, the development of a particular experiment which opens the *DUCH*, the two vessels connected by a pipe. The theory of expansion and contraction playing a relevant role on Fludd's explanation of the processes at work in the cosmoses, this particular experiment permitted Fludd to demonstrate his philosophy via a simple but effective means. The two-vessels experiment, as I have shown, recurs several times in Fludd's writings; then, at the end of his *Philosophia sacra* he inserts a short section, not announced in the plan of the work, which is a full-length account of this experiment with all its physical and especially metaphysical meanings. In the same section Fludd introduces a new instrument, which is based on the same principle. It is a rudimental weather-glass, which from then on will elegantly substitute for the previous experiment on the two opposite properties of expansion and contraction.

At the same time the monochord, which ruled *tomus* I and the beginning of *tomus* II of the *DUCH*, slowly disappears, and is substituted in the first place by complex Cabalistic-mystical plates (*De theosophico, cabalistico discursu*) and then by medical illustrations and diagrams (*Philosophia sacra*, *Anatomiæ amphitheatrum* and *Medicina catholica*). In a superficial reading it might seem, therefore, that the musical metaphor, so powerfully present at the beginning of the *DUCH*, slowly surrenders to the Fluddean medical writings. These last, after the completion of the first *tractatus* of *DUCH* II, play indeed a central role in Fludd's production.

In other words, it might seem that after the initial publications on speculative music, numerous references to Renaissance and Hermetic theories of balance, sympathy and parallelisms between the two cosmoses, the day-to-day practice of medicine slowly changed Robert Fludd's mind. It appears that he focused more and more on the human body-soul system and the cure of its diseases, forgetting all the rest, musical metaphors included, and turning towards a more 'practical' approach, even changing and expanding original plans in order to fit more and more new medical knowledge into his publications. But this is true only in part: the musical metaphor silently underlies the author's later writings; it is only taken for granted, while the English physician focuses on his Catholic medicine, having already

explained his theory on the harmony of the cosmoses in his previous works, to which from time to time he refers the reader.

In chapter IV I shall focus on all the direct and indirect musical references I have been able to trace in Fludd's production, listing them and commenting on them. It will be clear that Fludd did not abandon his musical metaphor: his musical-mystical philosophy will not undergo fundamental changes and will remain consistent throughout all his writings. What changes, though, is something in his approach. The weather-glass, as I have pointed out in the course of this chapter, enters the Fluddean production in 1626, at the end of his *Philosophia sacra*. This is a pivotal point: as I shall show in chapter V, in fact, the new instrument will be Fludd's 'new monochord'. With its marked pipe, it resembles in fact the monochord with its scale of notes and proportions marked throughout its wooden support. It will replace the monochord only 'visually', but not conceptually. All this will be clearer with the close analysis of the *Pulsus, seu nova et arcana pulsuum historia*, the last published section of *MC*, where Fludd's musical metaphors and parallelisms re-emerge in all their strength, and with them the image of the monochord; but this time side-by-side with Fludd's new instrument: the weather-glass.

IV. *De musica historia*

The wide-ranging survey of the *opera omnia* I have carried out in the previous chapter has lead to at least two results. First of all, it has provided a general view of Fludd's main *corpus* of publications and the philosophical implications presented in them; and it has made it possible to determine a slight change of direction in the Fluddean philosophical path. The treatise on the human heartbeat, i.e. the *Pulsus*, is perhaps the one which better represents the tendency I have underlined in the previous chapter, while at the same time presenting, for the first time after years of 'silence', a return to musical themes. Before delving into the analysis of the *Pulsus* and Fludd's latest publication, the *De philosophia moysaica*, one needs to understand in greater detail the characteristic traits of Fludd's musical philosophy. Therefore, I shall here focus on the writings exclusively concerned with the pure musical speculation at which, for sake of brevity, I have previously only hinted. This will allow us to gain the necessary ground for an understanding of the speculation on music by Robert Fludd and, more importantly, its development.

The current chapter begins with a brief survey of the idea of music as a metaphor for the representation of the cosmos (the so-called 'music of the spheres') from its beginning to Fludd's time.[1] I shall afterwards describe how Fludd relates to this tradition, and point out where he differs from his predecessors. To be sure, Fludd's music of the sphere springs mainly from the proportions of the two basic constituents of the universe, i.e. matter and spirit. This is something that has been overlooked in previous treatments of the Fluddean *monochordum mundi*,[2] while it is strictly interconnected with the whole Fluddean philosophy and, to be sure, with the pyramidal *scientia*.

Fludd's treatises on *musica* cover a time-span from 1617 to 1622; in that final year, in fact, one finds the last full account of *musica speculativa*. To be sure, in *Clavis philosophiæ et alchymiæ fluddanæ* (1633), which is dedicated to answering Gassendi's criticism, one finds a brief and superficial mention of speculation on music. I have

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[1] In this respect, the work of Joscelyn Godwin has proved highly significant for the field. See also, amongst others, D. P. Walker, 'The Harmony of the Spheres' in Gozza (ed.), *Number to Sound*, pp. 67-77; J. Haar, 'Musica mundana: Variations on a Pythagorean Theme', Ph.D. dissertation, Harvard University, 1960; and Pesic, *Music and the Making of Modern Science*, pp. 11-72.

[2] To my knowledge only Peter Ammann, in his 'The Musical Theory', pp. 200-205, clearly stressed the relation between Fludd's divine monochord and the Fluddean matter-spirit proportions.

included it at the end of this chapter for sake of completeness, though it does not add anything new to the topic. Scholars dealing with Fludd's musical philosophy have focused their enquiry on the Fluddean production between 1617 and 1622 (e.g. Ammann, Gozza, Gouk, Godwin, Hauge). This is to a large extent logical because, as it shall be clear at the end of this chapter, it is in that timeframe that Fludd exposes his *musica speculativa* as such. Nevertheless, hidden between the verbose mystical-medical speculations of *MC*, a work much less perused in scholarly research, one finds the *Pulsus*, a treatise in which music plays a reasonably important role, though subtler and, as it were, detached from the Pythagorean tradition expounded in the *DUCH*. The proportions of which the present chapter deals with are still the same in the *Pulsus*, though the context in which they are applied – a context in which the best philosophical model is the weather-glass – is a different and original one.

I argue that the monochord, which plays a key role in the first Fluddean writings, slowly fades into the background after the year 1622 and, together with it, the pure musical speculation. Mystical-medical writings, from 1623 onwards, would absorb Fludd almost completely. If the musical metaphor remains a more or less apparent drone in Fludd's philosophy throughout his whole output, the monochord would slowly but inexorably lose its status as epistemological tool *par excellence* in favour of the weather-glass.

IV.i The music of the spheres from Pythagoras to Robert Fludd

Pythagoras, none of whose writings reached us, has been regarded by his disciples and a great number of later writers as the founder of a fruitful tradition based on the concept that the whole cosmos is permeated and, as it were, ruled, by balanced proportions. Plato's *Timæus* is the first written work in which one finds a description of the harmonic arrangement of the cosmos, Timæus being a Pythagorean philosopher giving his account of the Creation.

Pliny the Elder, in his *Historia naturalis*, describes the Pythagoreans' planetary-musical scale, identifying the cause of the different pitches as the distance of the celestial bodies from the Earth. Pythagoras, Pliny writes, placed a whole tone between the Earth and the Moon, a semitone from the Moon to Mercury, another semitone from Mercury to Venus, a minor third from Venus to the Sun, a whole tone between the Sun and Mars, a semitone between both Mars and Jupiter and between Jupiter and Saturn, and finally a minor third between Saturn and the Zodiac, i.e. the sphere of the fixed star.[3] Supposing it starting from *c*, this is the transcription of this planetary scale.

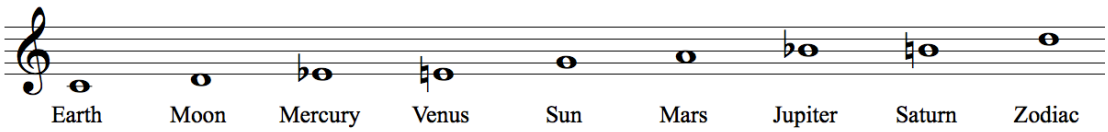

Figure 66: the Pythagorean celestial scale according to Pliny

This scale, Pliny says, encompasses what the Greeks term *διὰ πασων ἁρμονίαν*, or *universitatem concentus*. It actually comprises an octave and a tone, being thus better suitable for a mirror-like division into two identical parts of a perfect fifth each, with the Sun at the centre.[4] Assuming the Earth stands still and is thus unable to produce any sound, one could say with Pliny that an octave *d-D* actually extends from the Moon to the Zodiac.[5]

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[3] "Sed Pythagoras interdum et musica ratione appellat quantum absit a terra luna, ab ea ad Mercurium dimidium spatii et ab eo ad Veneris, a quo ad solem sescuplum, a sole ad Martem tonum [id est quantum ad lunam a terra], ab eo ad Iovem dimidium et ab eo ad Saturni, et inde sescuplum ad signiferum; ita septem tonis effici quam διὰ πασων ἁρμονίαν hoc est universitatem concentus; in ea Saturnum Dorio moveri phthongo, Iovem Phrygio et in reliquis similia, iucunda magis quam necessaria subtilitate". Pliny the Elder, *Historia naturalis*, *liber* II, *capitulum* xix.

[4] It might seem that Fludd has this concept in mind when he places the two perfect fifths above and below the Sun. Nevertheless, he does not clearly group the two fifths into a single octave+tone; rather, they pertain to different octaves.

[5] See J. L. E. Dreyer, *History of The Planetary Systems from Thales to Kepler*, Cambridge, 1906, *p*. 179.

Boethius, who can rightly be considered the most influential representative of the Pythagorean tradition, and the one who transmitted the ancient tradition of the music of the spheres to the Middle Ages and beyond, thought that the music of the spheres originated from the difference in composition or movement of each sphere in comparison with the others. It is worth quoting the following highly influential passage:

> [t]he first kind, the cosmic, is discernible especially in those things which are observed in heaven itself or in the combination of elements or the diversity of seasons. For how can it happen that so swift a heavenly machine moves on a mute and silent course? Notwithstanding that sound does not reach our ears, and the causes of this are various, it is not possible that so quick a movement of such big celestial bodies does not produce any sound, especially because there are many stars of which their courses are linked together, inasmuch that such a comingling is impossible to understand.[6]

Boethius gives an account of two different harmonic schemes of the heavens. The basic assumption of the first one, which he attributes to the Greek mathematician Nicomachus of Gerasa (*c*. 60-*c*. 120 A.D.), is that the closer to the Earth a planet is, the faster is its speed of rotation, and thus the higher is its note. Likewise, a short string produces a higher sound compared to a longer one. If transcribed in modern notation, this is Boethius' musical scale, with the Moon having the highest pitch and Saturn the lowest, according to their distances from Earth.

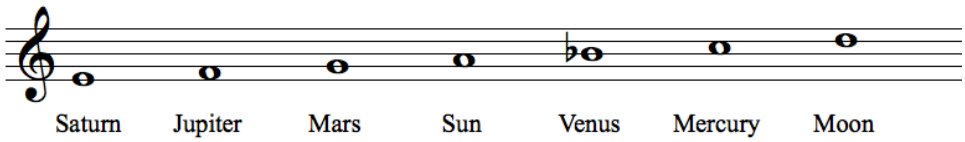

Figure 67: the planetary musical scale which Boethius attributes to Nicomachus

The second system, Boethius writes, is inferred from the account of the music of the spheres Cicero gave in his *Somnium Scipionis* (The dream of Scipio). Even though it is true that Cicero wrote about the celestial concert, he nevertheless did not assign precise intervals or notes to each celestial body; he rather just supplied a general description of the celestial harmony, stating that the sphere of the fixed stars rotates

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[6] "Et primum ea, quæ est mundana, in his maxime perspicienda est, quæ in ipso cælo vel compage elementorum vel temporum varietate visuntur. Qui enim fieri potest, ut tam velox cæli machina tacito silentique cursu moveatur? Etsi ad nostras aures sonus ille non pervenit, quod multis fieri de causis necesse est, non poterit tamen motus tam velocissimus ita magnorum corporum nullos omnino sonos ciere, cum præsertim tanta sint stellarum cursus coaptatione coniuncti, ut nihil æque compaginatum, nihil ita commissum possit intellegi". Anicius Manlius Severinus Boethius, *De institutione musica*, ed. by G. Friedlein, Leipzig, 1867, pp. 187-188.

faster, while the Earth, standing still, emits no sound.[7] This is the scale Boethius attributes to Cicero.

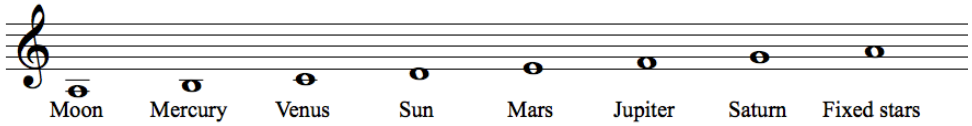

Figure 68: the planetary musical scale which Boethius attributes to Cicero

Another huge legacy of Boethius is the clear subdivision of music into three kinds, namely: *musica mundana*, i.e. the harmony of the spheres; *musica humana*, i.e. the harmony of the human body and soul; and *musica instrumentalis*, i.e. the music we humans produce in the attempt of imitating the celestial one.

The speculation of the Irish philosopher Johannes Scotus Eriugena (*c*. 810-*c*. 877) had a considerable impact on the thought of many intellectuals such as Nicholas of Cusa, Marsilio Ficino and Fludd himself. Thanks to his unusually extraordinary (for his time) skills in Greek language, he translated into Latin, for the first time, the works by Dionysius the Areopagite and other Greek works previously unknown to the Western world. The philosophical system of Eriugena is highly permeated with Christian and Neoplatonic elements, and two of its recurrent themes are the unity of man and cosmos and the concept of a divine harmony permeating the whole creation. In elaborating his own theory of celestial music he introduced original elements that are worthy of notice, since Fludd would incorporate them in his *monochordum mundi*. Eriugena's *musica mundana* encompasses in fact a two-octave musical interval, and not a single octave or a seventh as the harmonic schemes described by Boethius do. The first octave, the Irish philosopher maintains, extends from the Earth to the place where the Sun is, while the second octave resounds between the Sun and the fixed stars. As Susan Rankin has observed, this "two-octave system represented (at least in

[7] "Wherefore the highest of all, the celestial zone equipped with stars, whose revolution is more swift, moves with a sharp, high note; while this one of the Moon, as it is the lowest, with the deepest tone of all. For the earth, which is the ninth, remaining motionless is ever firmly planted in one spot, clinging closely to the centre of the universe. Now the revolutions of those eight spheres, of which two have the same power, produce seven sounds with well-marked intervals; and this number, generally speaking, is the mystic bond of all things in the universe". (Quam ob causam summus ille cæli stellifer cursus, cuius conversio est concitatior, acuto et excitato movetur sono, gravissimo autem hic lunaris atque infimus; nam terra nona inmobilis manens una sede semper hæret complexa medium mundi locum. Illi autem octo cursus, in quibus eadem vis est duorum, septem efficiunt distinctos intervallis sonos, qui numerus rerum omnium fere nodus est). Cicero, *Somnium Scipionis*, §10. English translation in Cicero, *M. Tulli Ciceronis Somnium Scipionis: The Dream of Scipio Africanus Minor*, ed. and tr. by W. D. Pearman, London, 1883, p. 9.

music theory of the period) the compass of all notes in *musica instrumentalis*".[8] Eurigena's harmonic scheme can be considered "richer in the extent to which it was developed than any other from antique or early medieval philosophy".[9]

Many other authors speculated on the alluring idea of a universal music well into the Renaissance: Jacques de Liège (*Speculum musicæ*, 1330-40), Ugolino of Orvieto (*Declaratio musicæ disciplinæ*, *c*. 1430), Giorgio Anselmi (*De musica*, 1434), Ramos de Pareja (*Musica practica,* 1482), Marsilio Ficino (see in particular his *Epistola de rationibus musicæ*, *c*. 1484), Franchinus Gaffurius (*De harmonia musicorum instrumentorum*, 1518), Francesco Zorzi (*De harmonia mundi*, 1525), and Gioseffo Zarlino (*Institutioni harmoniche*, 1558) are the best known.

The above-mentioned treatise by Gaffurius is of particular interest in the present discussion because in it one finds a plate that for some aspects resembles Fludd's *monochordum mundi* (figure 70). At the top of it one can see Apollo, which with the force of his mind sets all the muses in motion ("mentis apollineæ vis has movet undique musas"). His classical lyre has been here replaced with a cithara. From the feet of the god to the Earth a mythological creature with a body of a snake and three heads descends:[10] the resemblance with the Fluddean monochord is striking. Beginning from the bottom, the seven planets and sphere of the fixed stars are arranged according to the following minor scale.

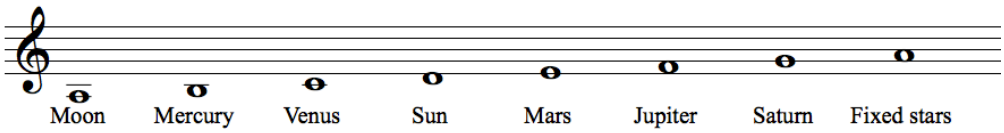

Figure 69: musical scale obtained from Gaffurius' plate

Gaffurius assigns each planet to a Muse, a Greek musical mode and a pitch. The Earth, by virtue of its immobility, is silent, so no interval is given between it and the Moon. The silent muse Thalia governs it, as Cicero in his *Somnium Scipionis* taught:

[8] S. Rankin, 'Naturalis concordia vocum cum planetis: Conceptualizing the Harmony of the Spheres in the Early Middle Ages', in S. Clark and E. E. Leach (eds), *Citation and Authority in Medieval and Renaissance Musical Culture: Learning from the Learned*, Woodbridge, 2005, pp. 3-19 (11).
[9] Ibid., p. 9.
[10] This creature is the Cerberus and represents the python that Apollo defeated, here servant of the god in putting harmony in the world. It is interesting to note that the tail of the creature forms a hoop which symbolises eternity and perfection; time, thus, originates from the eternity and from its contact with the highest sphere.

> [f]irst, they put Thalia underground, as silence. Indeed, we find in Cicero that the Earth (because it does not move) is like silence; they compare it to triple-headed Cerberus crushed beneath the feet of Apollo.[11]

The Moon is linked with Clio, the note proslambanomenos (*a* in ancient Greek music) and the Hypodorian mode; Mercurius is characterised by the Muse Calliope, the hypate hypaton (*b*) and the Hypophrygian mode; and so on. The obvious source for Gaffurius' plate is Boethius (see figure 68: the two scales are indeed identical).

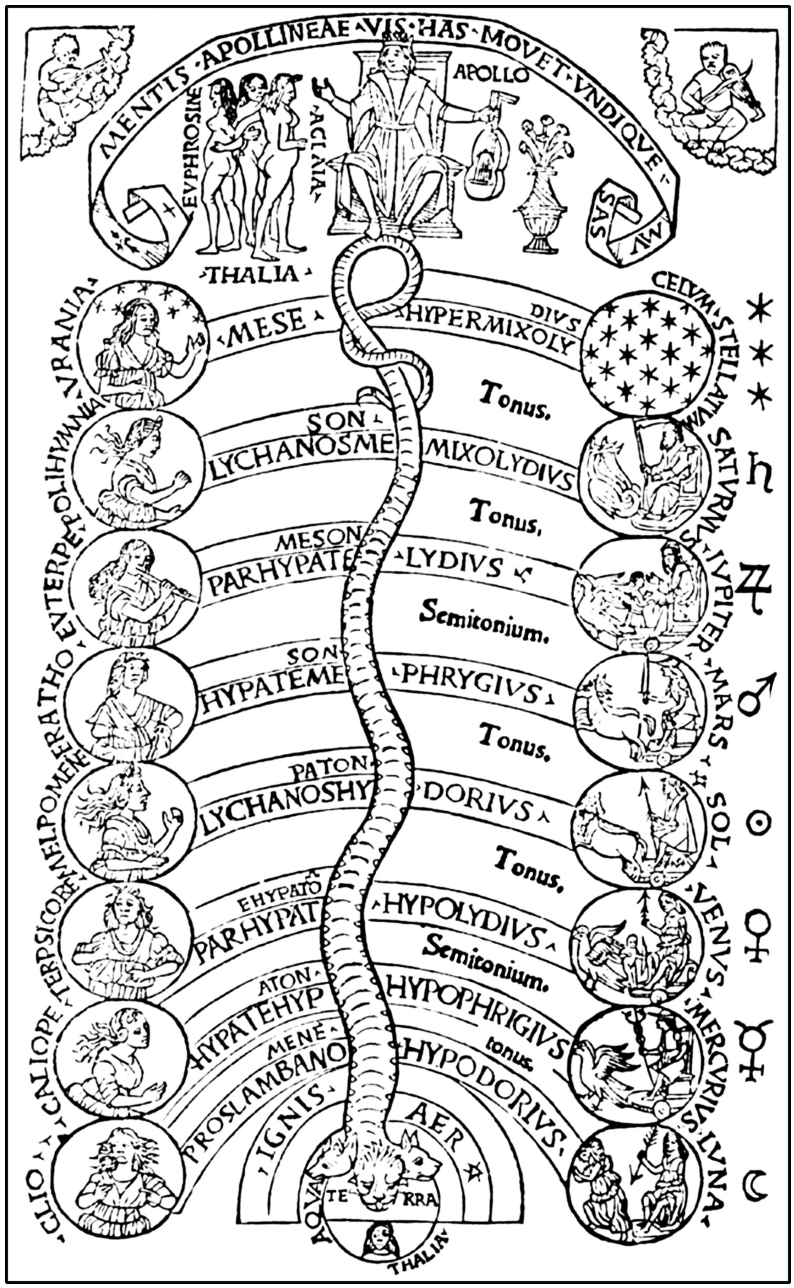

Figure 70: frontispiece to F. Gaffurius, *Practica musicæ* (1496), which was reprinted and accompanied with a commentary in *De harmonia instrumentorum opus* (Milan, 1518)

[11] "Germinat in primo nocturna silentia cantu: quæ terræ in gremio surda Thalia iacet. Constat quidem apud Marcum Tullium: terram (quod sit immobilis) silentio comparatam: quam Tricipiti Cerbaro Appollineis pedibus substrato comparant". F. Gaffurius, *De harmonia instrumentorum opus* (Milan, 1518), *liber* iv, fol. lxxxxlllv. Agrippa quoted this passage of Gaffurius in his *De occulta philosophia* (*liber* ii, p. 262).

Interestingly, in the first *folio* of a late-eleventh century copy of the Boethian *De institutione musica* one can find a diagram which could be considered the prototype, so to speak, for both Gaffurius' and Fludd's plates.[12]

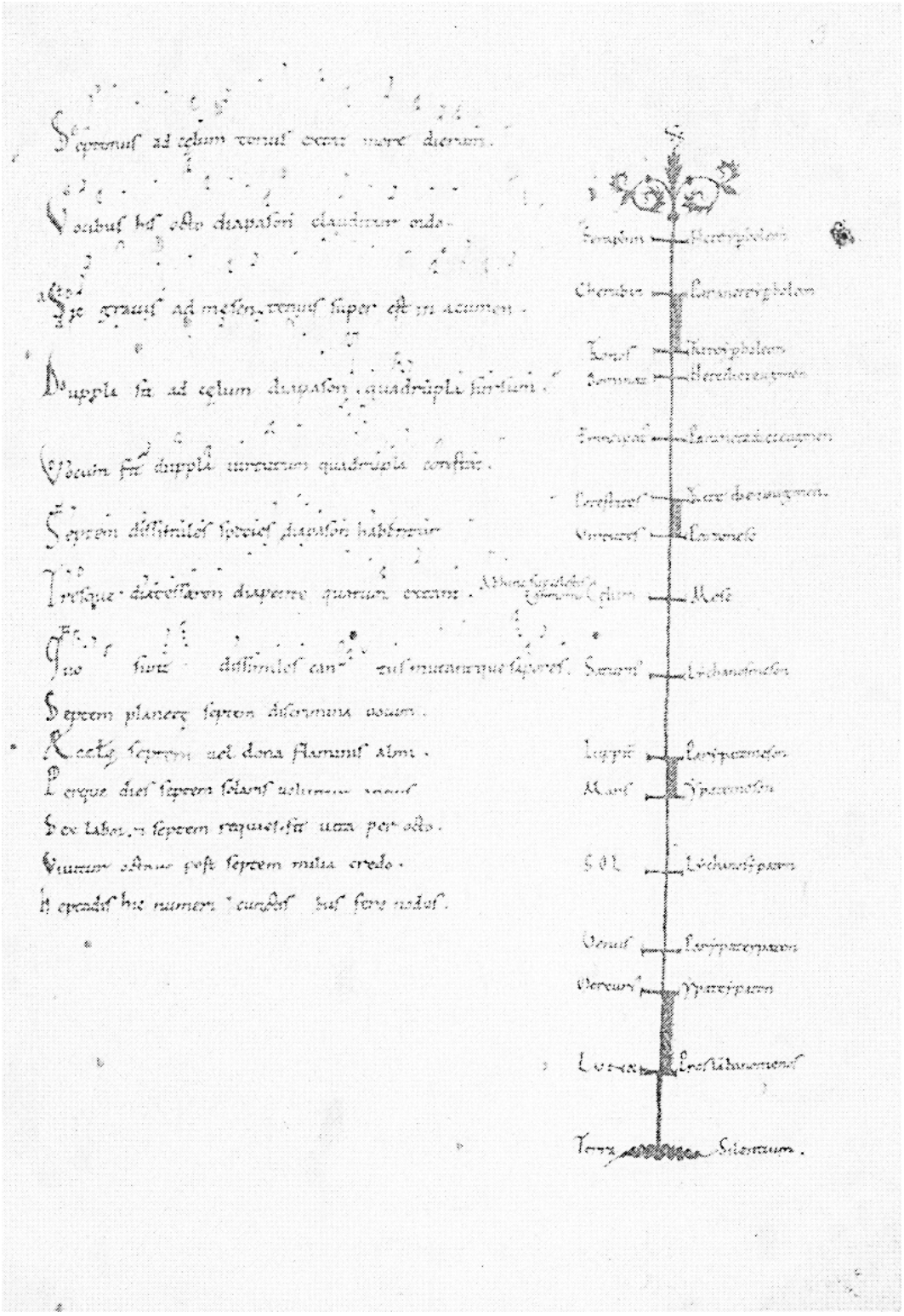

Figure 71 (F-Pn lat. 7203, fol. 1v)

[12] For a transcription, translation and commentary of the portion of the manuscript concerning this plate see Rankin, 'Conceptualizing the Harmony of the Spheres', pp. 13-19.

It is interesting to compare this last plate with the one by Gaffurius. In doing so, one can notice that in the above diagram the four elements are absent, while in Gaffurius' plate water, air, and fire fill the gap between Earth and the Moon. Though this follows a concept dating back to Ptolemy and Aristotle, it is with Gaffurius that, to my knowledge, the four elements are for the first time placed in a visual musical scale 'playing' from the Earth to the heavens.

It is likely that Fludd had Gaffurius' plate in mind when he devised his own celestial monochord. Should this be the case, first of all Fludd substituted Apollo with the hand of God, much more in harmony with his Christian Theosophy. Secondly, he put the monochord at the centre of all: in this way the musical intervals are not only preserved, but also better visually 'demonstrated'. Thirdly, he added an octave, thus re-arranging the internal disposition of the macrocosm in order to fit his extended scale; in doing so he was perhaps following Eriugena's work. If in the 'monochord' of Gaffurius there are only two of the three heavenly regions (i.e. the Elemental and the Ethereal one), in the Fluddean monochord of the world the higher region, i.e. the Empyreal, is added. Finally, the four elements play an active part in Fludd's musical/visual representation of the cosmos. In other words, they take part in the *musica universalis* with their own pitches: and beyond the sphere of the Elemental fire, the musical scale proceeds consequentially towards the Moon, the first sphere in the Ethereal region. It is noteworthy that the four elements count as separate intervals, which with Gaffurius and other pre-Fludd authors does not happen. Fludd actually devised another separate metaphoric monochord dedicated to the music of the elements; I shall describe it later in this chapter.

Thomas Morley gives an account of both the Boethian scales in his *A Plaine and Easie Introduction to Practicall Musicke* (1597). The eminent English composer tells us that he found the two celestial scales in Robertus de Handlo's *Regulæ, cum maximis Magistri Franconis, cum additionibus aliorum musicorum*,[13] a treatise that Fludd also knew and used as a source for his treatise on *musica instrumentalis*.

[13] A modern edition can be found in R. de Handlo and J. Hanboys, *Robertus de Handlo/The Rules and Johannes Hanboys/The Summa*, ed. and tr. by Peter M. Lefferts, London, 1991.

IV.ii The first *musica* (1617)

The first time Robert Fludd mentions music is in his second publication, i.e. the *Tractatus apologeticus* (1617), where he dedicates a chapter on the occult and extraordinary effects of secret music.[14] It begins with the following incipit taken from the Rosicrucian manifesto *Confessio fraternitatis*:

> [h]e who chooses to sing with the sound of his voice or of a musical instrument in such a way that, instead of stony rocks, he draws to him pearls and precious stones; instead of wild beasts, spirits; and instead of Pluto from Hell, moves the mighty princes of the world, let him enter the Fraternity.[15]

Fludd, who by means of the *Tractatus apologeticus* hoped to gain access into the Rosicrucian fraternity and thus take part in the reformation it set out to achieve, embraced the concept of music that comes from the above quotation and inscribed it into the wider macro- and microcosm net of connections. The above-mentioned chapter deals mainly with the concept of sympathy, building upon the opinions of Plato and Cardano on the subject. Here one finds the first, though still in embryonic form, brief account on *musica mundana* according to Fludd.

> If we follow the opinions of Plato and Cardano at all, the best harmony is generated from the heaping together of the spheres, which our ears cannot hear due to our great distance from them. Nevertheless, we know it through not only the effect of the consonance of this symphonic music, but through the effect of its dissonance too.[16]

We are not allowed to hear the *optima harmonia*, because of the distance which separates us from the regions where it is produced, even though its effects on Earth can still be observed. In fact, the consonances of this heavenly music inspire love and sympathy, while the dissonances attract hate and antipathy, similarly to what happens between the cockerel and lion, man and the catoblepa,[17] the lamb and the wolf, etc. According to the same principles, there are some planets which complete the most perfect of the consonances, i.e. the octave, in the element with the opposite nature. Thus, Saturn, which is naturally cold and dry, forms an octave with

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[14] 'De occultis et admirandis musices arcanæ effectibus' (*Tractatus apologeticus*, p. 177).
[15] "Qui voce oris vel organi musici sic canere exoptat, ut non saxa illa Amphionis, sed margaritas et gemmas attrahat, nec bestias Orphei, sed spiritus, non Plutonem ex Tartaro, sed principes mundi potentes, is intret Fraternitatem". Ibid.
[16] "Si Platonis et Cardani opinionibus fidem aliquam adhibeamus, optima harmonia ex sphærarum conglomeratione generatur, quæ auribus nostris propter distantiæ magnitudinem percipi non potest, cum tamen ab effectu, in his inferioribus non modo huius musicæ consonantiæ symphoniacæ cognoscantur, sed etiam dissonantiæ". Ibid.
[17] The catoblepa is a mythological African animal which has the ability to kill with its mere sight, and was first described by Pliny the Elder. Others coeval writers who mention the catoblepa are Andreas Libavius (*D.O.M.A. Singularium*, 1599) and Jan Jonston (*Historia naturalis de quadrupedibus*, 1614).

fire, which is naturally hot. Mars, naturally hot and dry, resounds at an octave with cold and wet water. On the other hand, Jupiter, which is hot and wet, terminates its diapason with the sphere of the element of its own nature, which is air. Therefore the lamb is said to be jovial (i.e. under the influence of Jupiter) and calm, while the wolf is martial (of Mars) and ferocious; man is jovial, woman is cytherean (of Venus).[18]

An experiment follows: one takes two harps, and put a straw over one of the first harp's strings. One then plays, on the second harp, the string that is in unison with the one over which the straw was put. What will happen is that one will visually be able to see that the straw on the first harp's string will vibrate, indicating that the string underneath is vibrating without anybody having touched it. This is the demonstration of the power and influence at a distance that a creature may have on another creature or, more generally, that the like attracts the like, and *vice versa*.[19]

The sympathetic-strings argument was firstly introduced by Plotinus,[20] and would enjoy a particular revival with Marisilio Ficino who translated for the first time into Latin the Plotinian works and commented on them. Paracelsus and his followers were advocates of the idea of sympathetic powers of natural magic, and perpetrated this tradition. This concept is present in Francis Bacons's *Sylva sylvarum* (1627) and is opposed by Marin Mersenne's *Harmonie universelle* (1636), who suggests instead a mechanical explanation for it. Henry More (*The Immortality of the Soul*, 1659) is one of the last great minds to have a spiritual approach to the experiment of the sympathetic strings: in fact, he hypothesised that the medium between the two strings is the spirit of nature. Later on, David Hume (*A Treatise of Human Nature,* 1739-40), from a very different point of view, will use the same concept to demonstrate his 'psychological sympathy'.[21] The concept that there is sympathy between like-minded things is still present in Robert Hooke's *Micrographia*,

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[18] Ibid., p. 178.

[19] This sort of resonance is still believed by René Descartes around the same time. In the *Compendium musicæ*, written around 1618 and published posthumously, he states that "[...] only the human voice is the most pleasing to us; because amongst all the others it is the one which is most in conformity with our spirits. Thus the voice of a friend is more pleasing than that of an enemy, given the sympathy and antipathy of the affections. For the same reason from which people say that the skin of a sheep used for a drumhead becomes silent, if stroked, if a wolf's skin resounds in another drum". (Id tantum videtur vocem humanam nobis gratissimam reddere, quia omnium maxime conformis est nostris spiritibus. Ita forte etiam amicissimi gratior est quam inimici ex sympathia et dispathia affectuum, eadem ratione qua aiunt ovis pellem tensam in tympano obmutescere si feriatur, lupina in alio tympano resonante). R. Descartes, *Compendium musicæ*, Utrecht, 1650, p. 5.

[20] Plotinus, *Enneads*, IV, iv, 41.

[21] From the second half of the seventeenth century onwards the concept of sympathy will begin to conquer other philosophical frames and scientific fields like acoustics.

published in 1665 under the aegis of the Royal Society, where the hitherto 'invisible' world was detailed and pictured thanks to the use of the compound microscope:

> [...] particles that are all *similar*, will, like so many *equal musical strings equally* stretcht, vibrate together in a kind of Harmony or *unison*; whereas others that are *dissimilar* [...] will, like so many *strings out of tune* to those unisons, though they have the same agitating *pulse*, yet make quite *differing* kinds of *vibrations* and *repercussions*, so that though they may be both mov'd, yet are their *vibrations* so *different*, [...] that they [...] *cannot agree* together, but *fly back* from each other to their similar particles.[22]

In another work, Hooke also recalls the idea of the sympathetic-strings vibrating together:

> [...] in the same manner as a Musical String being moved, does make another String that is unison or harmonious with it, move also, and so together make the Sound the louder, or the Impression the stronger.[23]

Returning to Fludd and his musical chapter in the *Tractatus apologeticus*, a brief account of the effect of music on man follows:

> [b]y the movement of the air, musical sound puts the body in motion: by purified air it excites the spirit, bond between the body and the soul; [...] by the movement of subtle air it penetrates the deepest part of the soul; [...] by emotion it affects the senses; by meaning it acts on the mind; by contemplation it gently soothes.[24]

This passage is copied verbatim from the commentary on Plato's *Timæus* by Marsilio Ficino, and it had been repeated and commented on by several authors such as Gregor Reisch in his *Margarita philosophica* (1503), a text which enjoyed several reprints and which Fludd knew.[25] After reinforcing the idea of the correspondence between the heavenly music and man, the chapter ends with a consideration which recalls the incipit: one does not have to be astounded if the members of the Rosicrucian brotherhood are well-versed in this kind of music, since through its powers mighty princes can be attracted to them!

In the seven pages of this chapter of the *Tractatus apologeticus*, Fludd explains the fundamental elements of his musical philosophy that he will further develop in the following publications. In this apology of the Rosicrucian ideals one can find many of the elements developed in the *De utriusqe cosmi historia*: the *Tractatus apologeticus*

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[22] R. Hooke, *Micrographia*, London, 1665, p. 15.
[23] R. Hooke, 'An Hypothetical Explication of Memory; how the organs made use of by the mind in its operation may be mechanically understood', in *Posthumous Works*, London, 1705, pp. 138-148 (145). For a recent account on Hooke and his use of the concept of harmony see Wardhaugh, *Music, Experiment and Mathematics*, pp. 113-118.
[24] "Nam musica, per aeream naturam in motu positam, movet corpus, et per purificatum aerem concitat spiritus, aereumque animi et corporis nodum. [...] per subtilis aeris motum interiora animi penetrat [...] per affectum afficit sensum, per significationem agit in mentem, per contemplationem mulcet suaviter". *Tractatus apologeticus*, p. 181; repeated in *DUCH* I, ii, p. 166.
[25] It is quoted, for instance, in *De philosophia moysaica*, fols 17^{v}-18^{r}.

can thus be safely considered as a valid introduction to the Fluddean philosophy. The first *tomus* of the *De utriusque cosmi historia* would be published later in the same year (1617), and would consist of a much deeper and lengthier survey of the two cosmoses.

IV.iii The music of the cosmos (1617)

The third *liber* of the *DUCH* is the first publication Fludd dedicated entirely to the *musica mundana*. The fact that this topic is dealt with at the beginning of the first *tomus* of Fludd's great project, just after having described the origin and the structure of the macrocosm, reveals the great importance he put on this topic. And indeed, this *liber* features the very first detailed exposition of the Fluddean pyramidal *scientia*.[26]

In the structure of the cosmos, Fludd states, both consonances and dissonances can be found; only the two last pages of *liber* iii are dedicated to the latter – Fludd is definitely more interested in describing in greater detail the consonances. He begins his dissertation of the *musica mundana* by explaining how to calculate the cosmic proportions. The highest region, the Empyreum, is the realm of the supernatural fire and light, while the region opposed to it, the Elemental one, is the reign of darkness and heaviest matter. For the continuation of the world, thus, it is necessary that the two opposing qualities (light and darkness) be in specific proportions to each other. Thanks to these proportions the oppositions of the contrary qualities are balanced and the ears of the intellect are allowed to perceive an inexplicable harmony.

Here the monochord constitutes a key element, together with the Fluddean pyramids. With the help of the metaphor of the divine monochord, in fact, it is possible to better visualise and, as it were, hear the divine proportions the English philosopher is referring to. Fludd theorises an imaginary monochord extending from the Earth up to the highest region. This is the metaphorical instrument by means of which the noble cosmic harmony is played. The player of this celestial music is the *anima mundi* or *lux essentifica*; in other passages is God himself. In the same way the lowest note of the *musica instrumentalis* (*Γ* or gamma, i.e. the lower *g*) raises towards

[26] In the *Tractatus apologeticus* Fludd already introduced the principle of the two opposites (light/darkness, form/matter) mediated by the *sphæra æqualitatis* (see for instance pp. 154-155), but this was more like an introduction to the main tenets of Fludd's philosophy, upon which Fludd would work in the following years.

the highest part of the pentagram, the scale of the music of the cosmos begins with the Earth, which is then assigned to the *Γ*, raising towards the highest pitch. This contraposition between the lowest celestial note and the highest is metaphorically demonstrated by means of the human voice. In fact, one usually puts little effort in singing lower notes, while one requires increasingly more virtue (*maior animæ lucidæ virtus*) for singing higher pitches. Likewise, the more one gets closer to the Empyreum the more one perceives the effects of the divine light and heat, while at the same time the influence of the worldly spirit becomes progressively faint.

The number 4 is, in this theory of the composition of the world, particularly relevant. In fact, each of the three regions follows a four-part pattern in their constitution of light/darkness. In other words, the number of parts that constitute each region is always four: what changes is the quantity of each of the two opposing qualities compared with the other. Therefore, Earth is composed of four parts of matter; the pyramid of light does not reach inside it and, as a consequence, no spiritual fire enters into it. The Elemental region is occupied by three parts of the material pyramid and one of the formal, while the highest region, inhabited by the angelic hierarchies, is characterised by three parts of the formal pyramid and one of the material pyramid. The following plate helps to explain better the above-mentioned concepts.

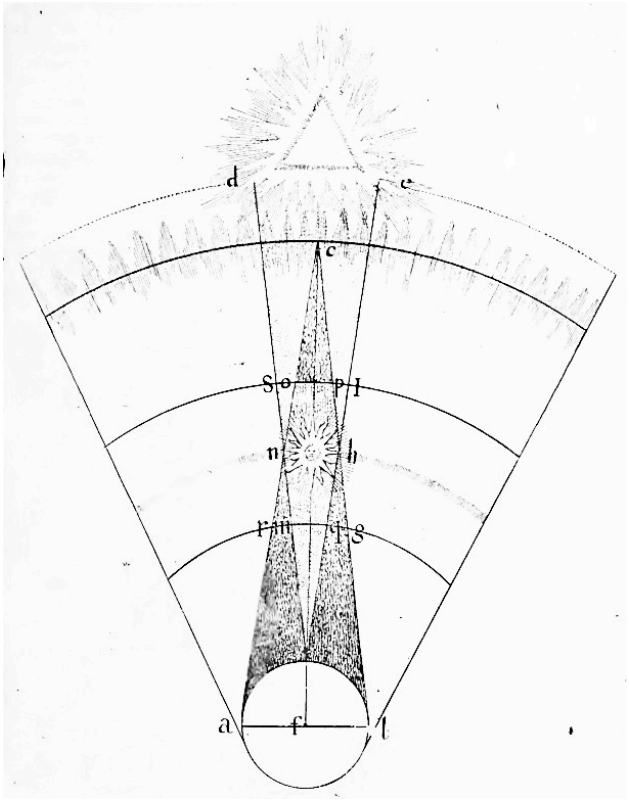

Figure 72 (*DUCH* I, i, p. 81)

The upward pyramid a-b-c represents the *pyramis formalis*, which has its origin in the ocean of darkness (*tenebrarum oceanus*), i.e. the Earth; it extends towards the Empyreum and it reaches, with the tip of its cone, the highest region of the heavens. On the other way round, the downward pyramid d-c-f represents the *pyramis formalis*, which originates from God, depicted as a triangle of light. In the middle region the two opposite qualities of form and matter are perfectly balanced: for this reason it is inhabited by the *sphæra æqualitatis*. This is where the Sun is, right in the middle (the octave) between the Earth and God.

According to Robert Fludd there is no *musica mundana* without mutual action of the two pyramids. As in our world the lyre remains silent unless someone plucks its strings, there would be no celestial symphony if the formal and the material pyramid did not interact one with the other. Continuing with this musical metaphor, Fludd states that the material pyramid is the place of the cosmic monochord's string, while the formal pyramid 'plays' the monochord: it is, in fact, the abode of the pulsating, or singing, soul (*anima pulsans vel canens*).[27] An increment of the formal substance makes the air lighter; as a consequence, it produces the most excellent cosmic symphonies. By contrary, its decrease makes the air heavier: in this case the celestial music will be of a lower pitch, in the same way as a relaxed string produces lower pitches compared to those produced by a tenser string.

The Empyreal region has a ratio between light and matter of 3:1, the Ethereal of 2:2 and the Elemental 1:3. God is pure light and divine fire: His ratio is therefore 4:0, whilst the Earth is pure matter and darkness, i.e. 0:4. From these ratios it is possible to work out the series of intervals which characterise this imaginary monochord of the world. In fact, from God (4) to the Empyreum (3) there is a proportion 4:3, which resonates as an interval of a perfect fourth (*diatessaron formale*). This is the 'formal' fourth, since it takes into account the amount of 'formality' that is present in each of the two contiguous regions. Likewise, between the Empyreum and the Æthereal regions there is a proportion of 3:2, a perfect fifth (*diapente formale*). Empyreal and Elemental regions are in a ratio, 'formally' speaking, of 2:1, namely the 'formal' octave (*diapason formale*).

In like manner, if one now focuses on the material side of the cosmos, one discovers that the proportion between the Earth, which has four parts of matter, and the Elemental region, which has three, is of 4:3, which represents the 'material' fourth

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[27] *DUCH* I, i, p. 85.

(*diatessaron materiale*). Between the Elemental region and the middle one there is, on the other hand, a ratio of 3:2, which generates the 'material' fifth (*diapente materiale*). Finally, if one considers the Ethereal region in comparison with the Empyreum, one obtains a proportion of 2:1, i.e. a 'material' octave (*diapason materiale*).

With the above method, Fludd obtains the musical intervals that can be found in *musica mundana*. It is noteworthy that the means by which this cosmic music is found are different from the ones pertaining to the tradition of the music of the spheres, and it is surprising that this point is sometimes overlooked. In fact, this harmony has nothing to do with the movement of the celestial bodies or the mere distance between them. In his *liber* on the *musica mundana* Fludd never mentions the movement of the planets, which, according to a long-established tradition beginning with Pythagoras, were each supposed to emit its characteristic note. In this respect, I would like to stress the originality of the synthesis of alchemical-Pythagorean concepts that Fludd achieves. These Fluddean musical intervals are calculated on the basis of the differences in the composition of the three heavens, according to the quantity of the light-fire/darkness-matter dichotomy each heaven has. To be sure, already Boethius had already suggested that the music of the spheres might have its origin from the different composition of the planets. Only Fludd, though, develops this hint to a great extent, reaching a unique synthesis. Robert Fludd himself is aware of his original perspective on the music of the cosmos. In fact, he writes:

> [t]his, therefore, is the harmony of the universal natural machine, which no one up to now, as far as I know, explained so succinctly and clearly.[28]

A more exhaustive plate goes into greater detail to show the remaining musical intervals. It is essentially based on the previous one, but with more specifics added.

[28] "Hæc itaque est machinæ universalis harmonia naturalis, quam nemo hactenus, quod sciam, ita succincte atque dilucide explicavit". *DUCH* I, i, p. 88.

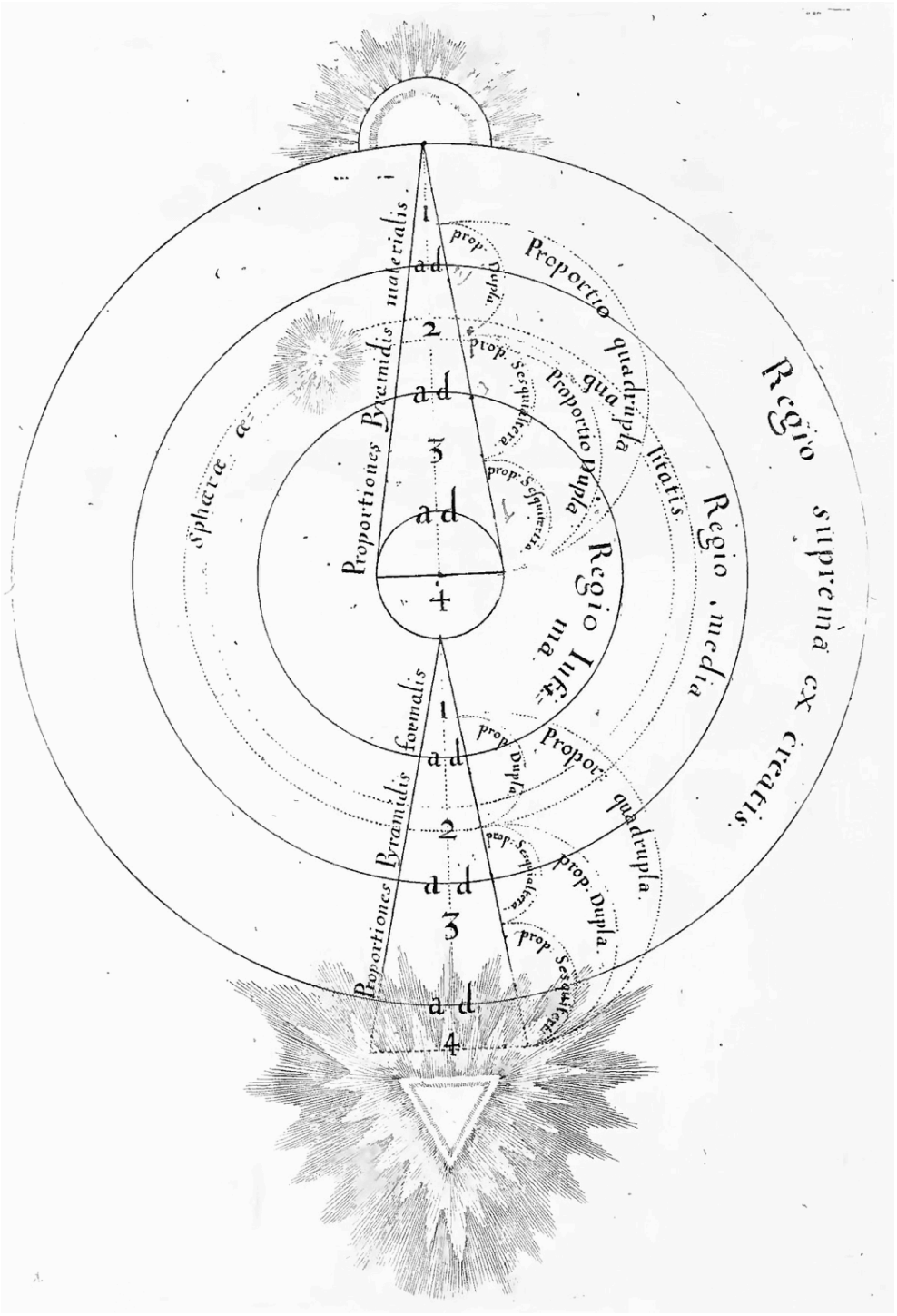

Figure 73 (*DUCH* I, i, p. 84)

Again, one can clearly recognise the two pyramids' embrace, as Fludd himself terms it (*amplexus*). But this time Fludd draws the picture in a different way: the pyramids are not superimposed one on the other. Here the formal pyramid is, so to speak, taken and circularly rotated and shifted down using the centre point as a pivot. This is perhaps to be regarded as a rudimental exploded-view drawing to which other scholars have failed to give adequate recognition; the magnificent *monochordum mundi*, presented a few pages later, outshone this equally elegant and no less elaborate image. Instead of clogging the plate with overlapping captions, in fact, Fludd

chose a different way to show the proportions of the two pyramids: they still are connected by means of the circles, so the beholder can still understand how they relate to each other. In the lower part is the formal pyramid, while in the upper part one finds the material pyramid. The three regions are clearly marked, and so are the proportions between their inner constitution: '4 ad 3', '3 ad 2', '2 ad 1'. Those proportions give rise to the three consonances.

Another plate, following the previous one, shows the two pyramids this time intermixed in the 'classical' Fluddean depiction.

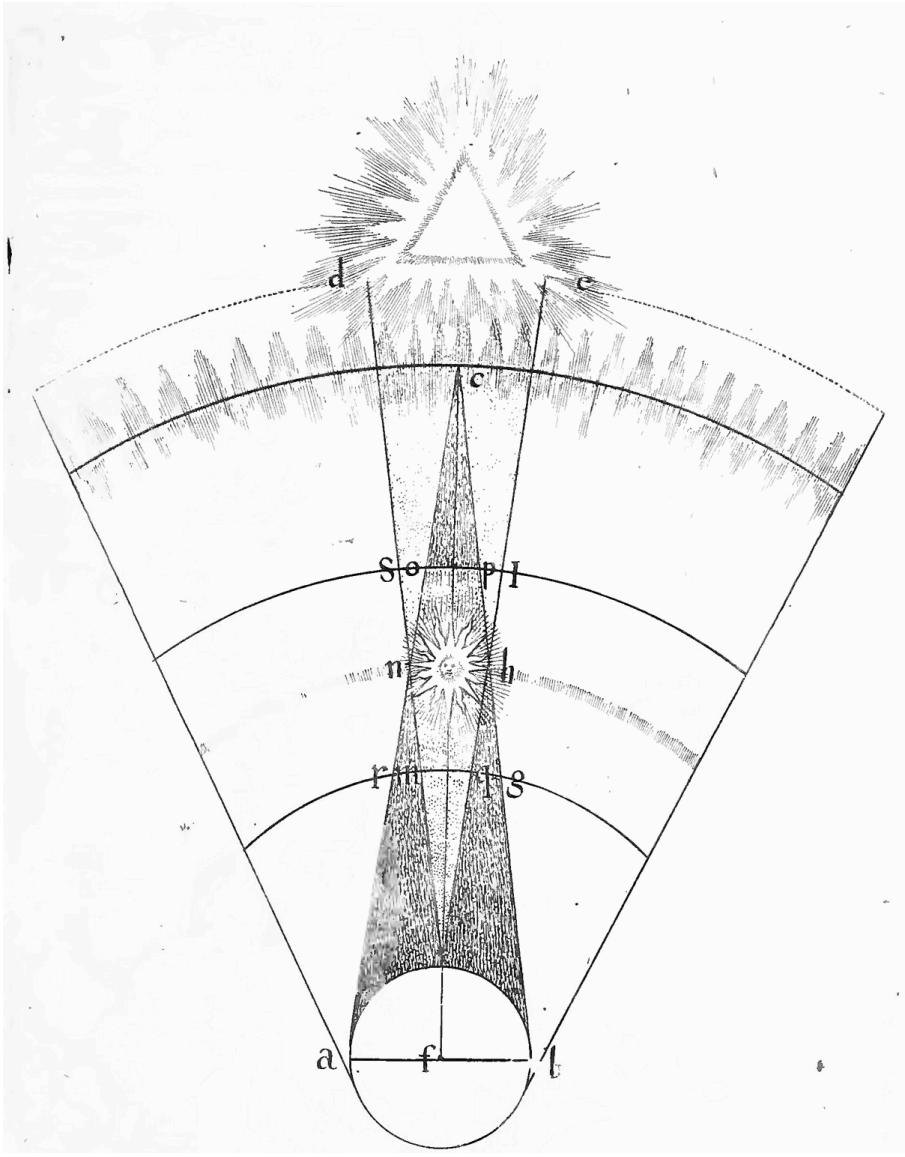

Figure 74 (*DUCH* I, i, p. 81)

In the lowest region, the Elemental one, Earth (*terra*) is the *terminus a quo* from which the formal proportions are calculated, and it is the base of the material pyramid that extends upwards. To it is assigned the note *Γ*, or lowest *g*, in music; the unit in arithmetic; and the dot in geometry. This is rather confusing, since in the vast

majority of other writings Fludd assigns the Earth the highest number, as opposed to the monad, God, the unity. But in this case this is so in order to fit the above plate, which is supposed to underline the balance and mirror-image, as far as the production of cosmic music is concerned, between the two pyramids. Water (*aqua*) has one whole tone, and so does the region of the air (*aer*). Fire (*ignis*) is represented by a minor semitone; this is the Pythagorean semitone, the *proportio superpartiens* which has a 256/243 ratio. The fact that this region is represented by a semitone while the two previous ones have a whole tone is because, as Fludd explains, the region of fire is simply the highest part of that of air, where the air is incandescent and lit by the divine fire ("summitas regionis aeris accensa"). As one can infer, the Elemental region thus comprises tone (water) + tone (air) + semitone (fire): a fourth, the less 'perfect' amongst the consonances.

From the material *sesquialtera* Fludd deduces the material fifth: this occurs between the Elemental region and the Ethereal one, and comprises four intervals. The Moon, Venus, and Mercury represent a whole tone each, whilst to the inferior part of the *sphæra equalitatis*, i.e. from the outside of the sphere of Mercury to the Sun, a minor semitone is assigned, thus completing the three tones and a half of the formal *diapente*. From Earth to the Sun, therefore, there is a perfect octave resonating; a material *diapason* comprising five whole tones and two minor semitones.

Proceeding upwards, one meets with the upper half of the *sphæra equalitatis* (the portion between the Sun and the low boundary of the sphere of Mars), which constitutes a minor semitone. The spheres of Mars, Jupiter and Saturn have each a tone assigned to them. The formal fifth, or *diapente*, is thus obtained: it extends from the Sun to Saturn, and with its internal pattern it mirrors the constitution of the material one: minor semitone, tone, tone, tone. It is not by chance that the two fifths, the material and the formal, are in the central heaven of the macrocosm. In fact, Fludd argues, this consonance is second only to the octave in purity and perfection: its place is therefore in the middle region, between the highest heaven and the grossest region. The fact that the interval of the fifth rules the Ethereal region is, according to Fludd, the reason why certain philosophers term the ether *quinta essentia*.[29]

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[29] "And this was the reason some philosophers gave it the name of quinta essentia, since its composition, with respect to the two extreme of Heaven, participates more with a consonance of a fifth". (Atque hæc unica fuit ratio, cur Philosophorum nonnulli substantiam eius nomine Quintæ essentiæ insigniverunt, quandoquidem ejus compositio respectu utriusque coeli extremi magis de consonantia Diapente participavit). *DUCH* I, i, p. 86.

Finally, the highest region is the Empyreal heaven. Here the proportion *sesquitertia* takes place, as I have shown above, and this results in the interval of fourth, the *diatessaron formalis*. The three hierarchies of angels are assigned to the three parts of the Empyreum: the lowest and the middle resonate at one whole tone, whereas the highest a minor semitone. This formal fourth, made up by tone, tone, and semitone, is thus obtained. The sum of the formal fifth and the formal fourth creates the resonating formal octave, which extends from the middle of the sphere of equality (i.e. the Sun) to God, who is above the Empyreal heaven and is pure form.

In so many passages Fludd is particularly keen to stress the likeness between the structure of the cosmos and the workings of a real monochord:

> [i]n fact, if a monochord is imaginatively extended from the apex of the Empyreal heaven to the base of this very Earth, thus representing the radius of each pyramid, we will see that this is divided into the parts of the constituting consonances; and the consonance diapason would resound if its middle part is pressed, just as the experience teaches that the same [consonance] occurs in the instrumental monochord.[30]

There is no doubt that this musical metaphor is a strong one for Fludd. From Pythagoras to Robert Fludd and beyond, the idea of a perfect musical cosmos ruled by simple mathematic laws received wide recognition and speculative thought; works relying upon this idea of music which Fludd held in high esteem were Cornelius Agrippa's *De occulta philosophia* (1533) and Francesco Zorzi Veneto's *De harmonia mundi totius* (1525), both heavily relying, in turn, by Pythagorean and Ficinian philosophy. It is with Fludd, however, that the depiction of the celestial monochord and its proportions reach such a degree of detail and synthesis at the same time; it allows him to elaborately and elegantly illustrate his theory of the two opposite qualities of the cosmos – light and darkness, matter and form – both visually and musically. Moreover, the same metaphorical instrument is perfectly applied to the microcosm too (see below). It is thus, in Fludd's hands, a powerful tool for the representation and investigation of the macro- and microcosmic structure. It epitomises and mirrors all the levels of the material part of the world and, consequently, of its spiritual counterpart:

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[30] "Etenim si monochordum a summitate cœli Empirei ad basin ipsius terræ imaginative extendatur, radium cuiuslibet pyramidis constituens, percipiemus ipsum in partes consonantias constituentes dividi, cuius dimidia pars si premeretur, consonantiam Diapason ederet quemadmodum etiam in monochordo instrumentali idem illud evenire docet experientia". Ibid., p. 85. A passage very similar to this is to be found in *De philosophia moysaica*, fol. 31[r].

> [h]ere, therefore, the degrees of all the material things are clearly seen as in a mirror; and successively it is made manifest the scale and order of the spiritual ones.[31]

The *monochordum mundi* is perhaps one of the most popular plates by Fludd; it dominates page 90 of *liber* iii of *tomus* I and magisterially synthesises the Fluddean musical theory of cosmic harmony. This monochord of the cosmos comprises two octaves; they proceed from the *proportio quadrupla* (1:4), thus forming and generating the *disdiapason*, or double octave. It must be noted that there is more than one inaccuracy: the succession of tones and semitones is, at least geometrically, completely wrong. In fact, the subdivisions seem to be almost specular in respect to the Sun: as the material octave has its base on the Earth, the formal octave seems to be based in God going towards the Sun. In this way it looks like the two monochords are one above the other, with their lower bridge at the two extremes. This is not what Fludd had meant:[32] for him, as the Earth is the basis of the material octave, the Sun is the base for the formal octave.[33] Moreover, the highest octave should occupy half the length of the monochord the lower one occupies. The highest note (*gg*) should be placed then exactly in the middle point of the formal *diapason*, more or less between the celestial *d* and *e*. Another issue concerns the material fifth: the *diapente materialis* should go from *C* to *G*, and not from *A* to *G* as erroneously depicted. Perhaps Fludd preferred the clarity of the inner meaning of the diagram and of the correspondences of the intervals to the levels of the material and spiritual world to the geometric precision.

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[31] "Hinc igitur gradus materialium omnium, tanquam in speculo conspiciuntur; atque inde etiam oculis intellectus scala et ordo spiritualis manifestatur". Ibid., p. 87.

[32] However, Fludd's leaning towards a mirroring between the upper and the lower octave of the monochord with the *sphæra æqualitatis* as 'point zero' is evident when he assigns to the sphere of equality two minor semitones, one below the Sun and one above. This, as I shall show in the following pages, poses a problem that I have partially solved with a new arrangement of the notes in the upper octave. Moreover, in his *De philosophia moysaica* Fludd clearly states that "[...] if any of the [two] halves of the string is struck, the octave will resonate to the whole [string]". ([...] si aliqua chordæ medietas per se pulsetur, sonabit Diapason ad totum). *De philosophia moysaica*, fol. 31^{r}. It is perhaps interesting to compare Fludd's 'mirroring of the octaves' with what the English musical theorist Thomas Salmon (1647-1706) wrote in 1672: "[t]hat an Octave is meerly a Note doubled, any Musitian will tell you, and a man easily satisfie himself, if he will but stop with his finger in the middle of a string; for he shall then find, that either of those two parts will be an Octave to the string open". T. Salmon, *An Essay to the Advancement of Musick*, 1672, p. 11; In T. Salmon, *Thomas Salmon: Writings on Music Volume I:* An Essay to the Advancement of Musick *and the Ensuing Controversy*, ed. by B. Wardhaugh, Farnham, 2013, p. 59.

[33] "In fact, Earth is the base of the material consonances fourth and fifth, which together make the material octave. And the solar sphere itself is the fundament above which the spiritual fourth, fifth, and octave are elevated". (Nam terra est basis consonantiarum diatessaron et diapente materialium, constituentium diapason materiale: at ipse orbis solaris est fundamentum, super quod diapente, diatessaron a diapason spirituali elevantur). *DUCH* I, i, p. 87. The original text reads "diapason spiritualia elevantur".

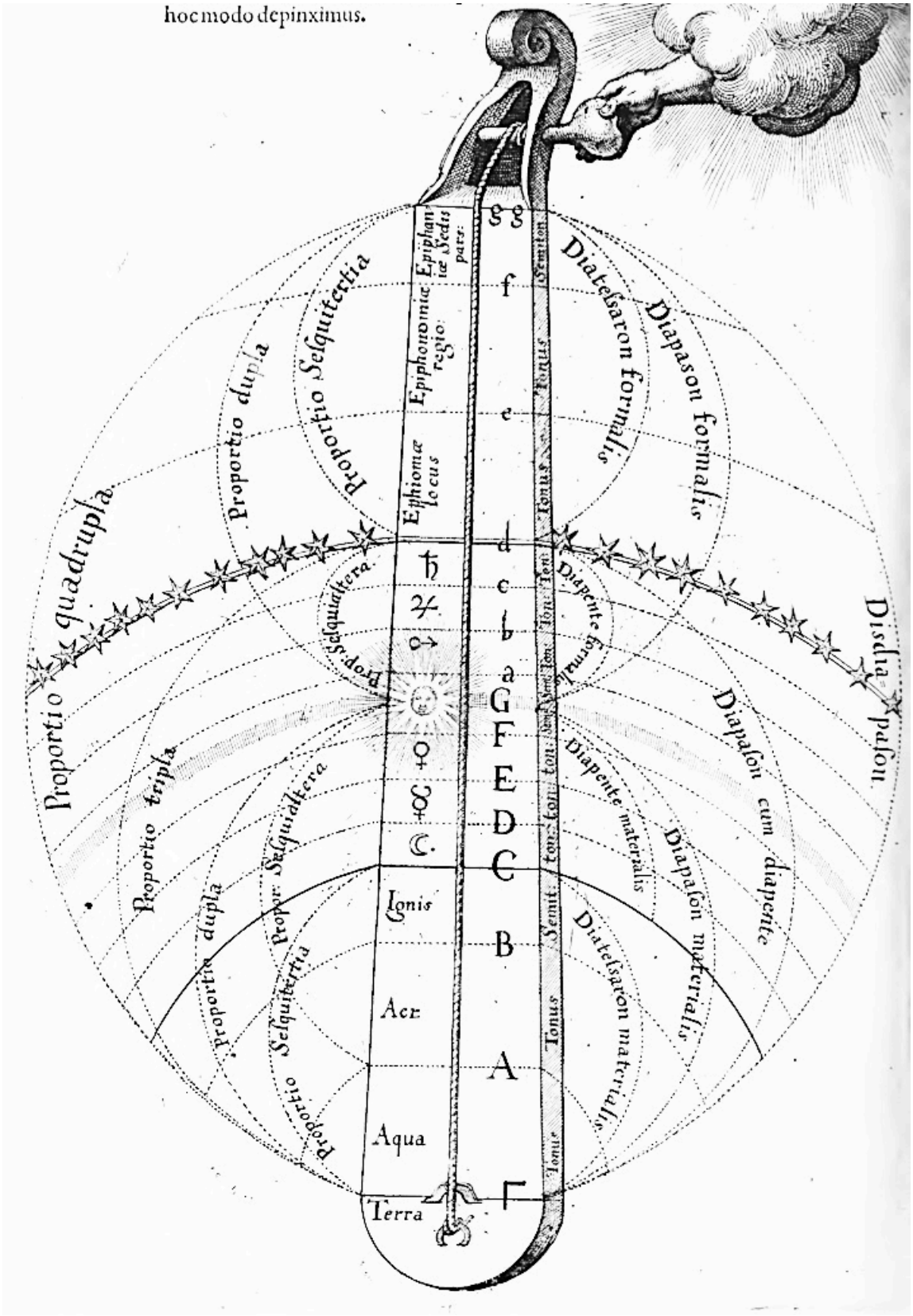

Figure 75 (*DUCH* I, i, p. 90)

I have found a virtually identical plate in the *Traité de l'harmonie universelle* (1627) by Marin Mersenne (figure 76). In this music treatise, amongst other speculations, Mersenne challenged the classic concept of *musica mundana*. Why, he asks, do we not hear any audible sound or noise of the spheres revolving around the Earth, since they should move air during their orbiting?[34] Perhaps we are accustomed to it since when we were in the womb of our mother, or maybe we are too far away to grasp it; these were possible explanations already given by Aristotle and Cicero. Finally, if there really is something like a celestial music, it must depend on the qualities of the material that compose the celestial body. On the other hand, Fludd's *musica mundana* – and here Mersenne joins Kepler in his criticism of the Englishman – is only poetry, an imaginary and symbolic construction; it does not take into account the observation of real celestial bodies like Kepler's *musica mundana* did, but just symbolic numbers.[35] It should be said that Mersenne did not reject the idea of a cosmic harmony *a priori*: what he was calling for was a more solid and 'realistic' foundation for it. At any rate, the battle between Mersenne and Fludd was largely on religious terms. The Roman Catholic friar Mersenne could simply not tolerate the combination, in the Anglican Fludd's philosophy, between Christian, Cabalistic, Rosicrucian and Paracelsian themes.

The same plate is included in Mersenne's *Harmonicorum instrumentorum libri IV* (1636), this time with very little commentary; one only finds a very general – and rather 'neutral' – description, which refers the reader to the *Harmonia Universalis Gallica*, i.e. the above-mentioned *Traité de l'harmonie universelle*. Notably, Mersenne did not seem to take into consideration the second Fluddean monochord with its (limited) mathematical and geometrical improvements, while he stuck with the first *monochordum mundi* that Fludd had proposed almost twenty years before.

There is one aspect that, to my awareness, has so far escaped scholarly attention; this may be due to the fact that a comparison between these two celestial monochords would appear to be absent from Fludd scholarship. Curiously, in fact, not even Fludd's arch-enemy Mersenne, when replicating Fludd's *monochordum mundi*, corrects the *f*s and the *b*s in, respectively, sharp and natural; this happens in both the 1626 and the 1636 plates. Nevertheless, he put the material fifth in the right position, i.e. between *G* and *C*, while in the Fluddean monochord, as I have already observed, it is wrongly assigned to the interval *G*-*A*. This might lead to the conclusion that,

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[34] M. Mersenne, *Traité de l'harmonie universelle*, Paris, 1627, pp. 414-454.
[35] On Kepler's musical conception see Pesic, *Music and the Making of Modern Science*, pp. 73-88.

according to the praxis of that time, the sharps and naturals were implied. If one follows this reasoning, Fludd's (and Mersenne's) omission of sharps and naturals in the *monochordum mundi* might not be considered an error as such.[36]

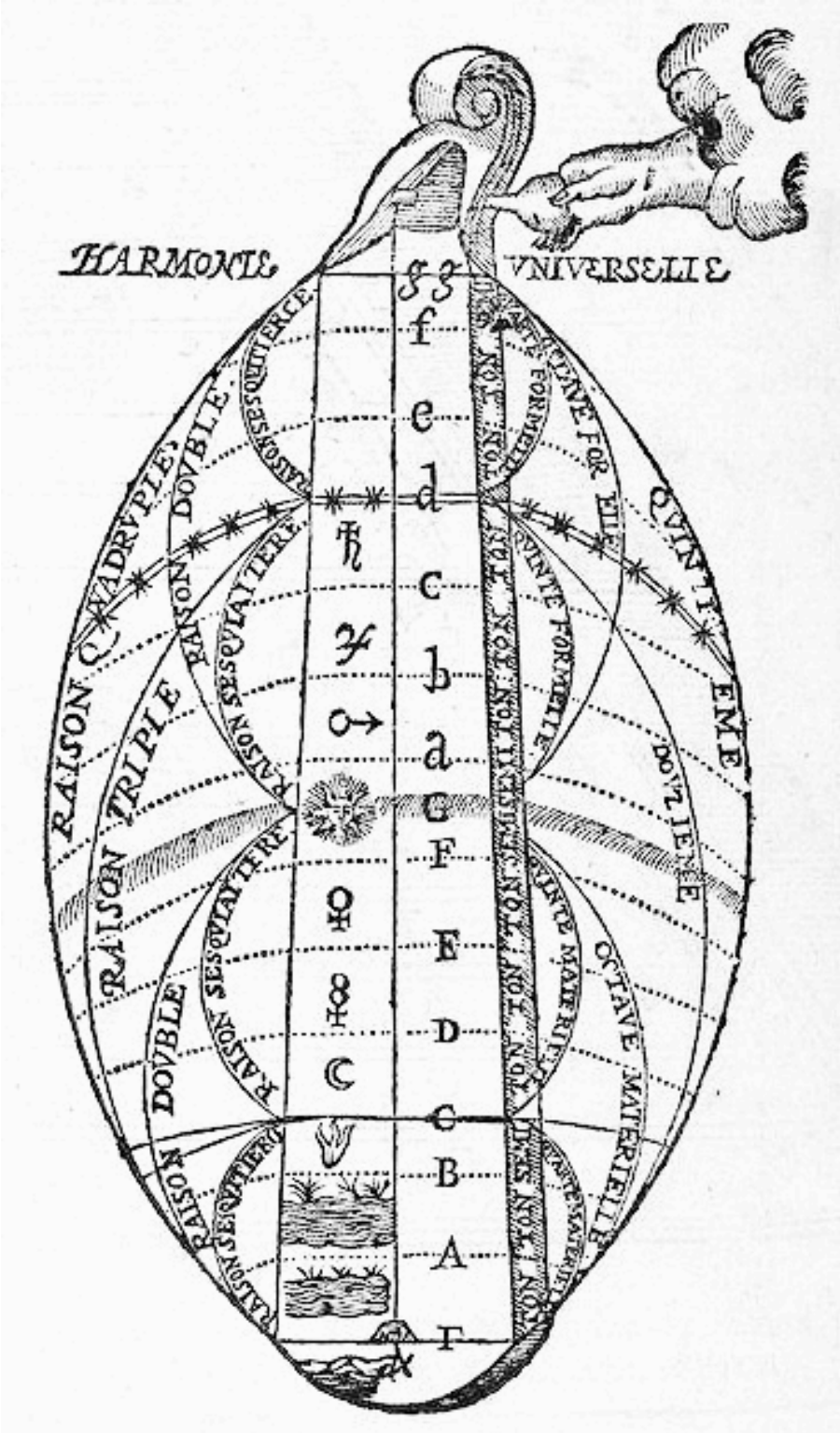

Figure 76 (M. Mersenne, *Traité de l'harmonie universelle*, p. 443; and *Harmonicorum instrumentorum libri IV*, p. 72)

[36] For a recent account on musical speculation in Mersenne see Pesic, *Music and the Making of Modern Science*, pp. 103-120.

After this little digression on Mersenne's reception of Fludd's celestial monochord, I now return to the *monochordum mundi* itself. Thanks to it, one can easily grasp Robert Fludd's *musica mundana* with a single, powerful image. It is clear that it is not a precise account of how a monochord actually works in real life; and this was not the aim Fludd was pursuing anyway. As Penelope Gouk has stressed,

> Fludd's schemata are not intended as correct depictions of reality, but rather as metaphors for the harmonious relationships between different levels of being. They contrast with Kepler's representation of the cosmic scale where the musical ratios he found in the motions of the planets were derived from empirical data.[37]

Benjamin Wardhaugh has recently reminded us of both the problems of the mirroring of the two halves and of the geometrically incorrect division of the string:

> [t]he note names for the bottom half of the string appear in (roughly) their correct places, but those for the top half clearly do not: they merely mirror those of the bottom half of the string. They certainly do not become more and more densely packed towards one end, as the frets do on a real stringed instrument.[38]

The 'solution' to both these issues is the above-mentioned symbolic value of the Fluddean *monochordum mundi*, as Wardhaugh himself suggests. Moreover, it should be said that the second celestial monochord, which Fludd published in 1622 in reply to Kepler's criticism, approximately resolves the geometrical issue, thus getting closer to how a real string behaves.

The three regions of the macrocosm are recognisable: in the lower part one finds the four Aristotelian elements, with Earth at the very bottom. In the middle, there is the etheric heaven with its planets and the *orbis solaris* in its midmost. The sphere of the fixed stars follows: it only represents the separation between the middle heaven and the highest one; there is no tone or semitone assigned to it. Finally, the Empyreal heaven, seat of the purest air and the most excellent pitches, is in the top area of the monochord. The hand of God tunes the string from outside the cosmos, setting into it the true music, without which the cosmos itself would cease to exist. The transcription of the intervals as they appear in the *monochordum mundi*, i.e. according the tone-semitone pattern marked along the neck, is the following:

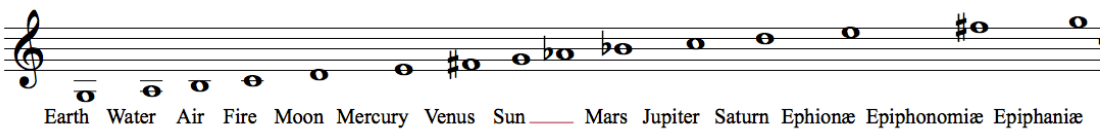

Figure 77: pitches of the Fluddean *monochordum mundi*

[37] Gouk, *Music, Science and Natural Magic*, p. 148.
[38] Wardhaugh, *Music, Experiment and Mathematics*, p. 32.

In order to follow Fludd's depiction of the succession of tones and semitones to the right of the monochord the *f*s need to be sharp, while both the *a* and the *b* in the 'formal' octave, the upper one, have to be flat. This is a solution already proposed by Luis Robledo.[39] The various elements, planets and Empyreal regions are, as it were, the frets of the monochord, and they do not have, strictly speaking, a note assigned to them.[40] Rather, it is the change of proportion of the qualities between them that marks the shift from one pitch to another.

After showing the *monochordum mundi*, Fludd presents the reader with two musical instruments able to demonstrate and represent his *musica mundana*. The first one resembles a harp with fifteen strings; the lowest string plays a *Γ*, the highest a *gg*, two octaves above. This mirrors the disposition of the intervals in the monochord of the world, as can be seen in the plate below.

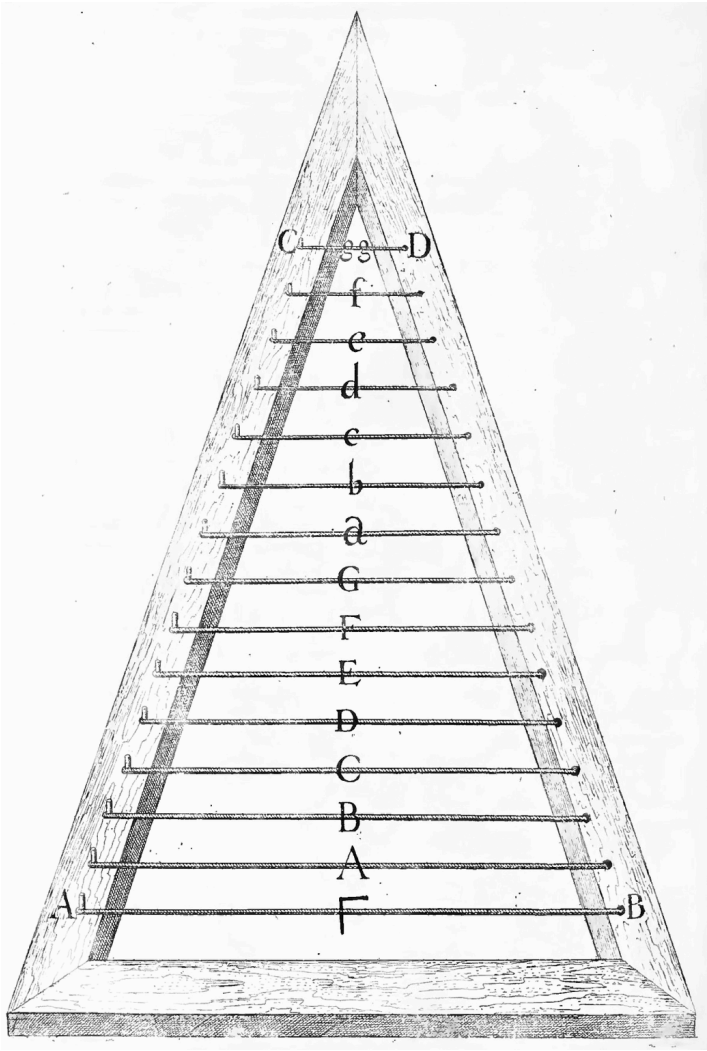

Figure 78 (*DUCH* I, i, p. 92)

[39] Robledo, *Robert Fludd*, p. 67. Joscelyn Godwin also observed that the *f*s need to be sharp in his *Robert Fludd*, p. 44.

[40] As happens, for example, in Cicero, where the sound of a sphere is caused by its movement.

For Fludd, the sound is not created by the strings themselves, but by their soul, thanks to the vibration introduced (*immissa*) into the air and communicated to them; in the same way, the human voice is produced by the air surrounding the vital soul, and not by the trachea itself.[41] The stronger the movements of our vital soul, the greater the vibration of the trachea, and thus the higher will be the note produced. In fact, air can almost be considered the real instrument, thanks to which music can resound.

One can easily note, Fludd claims, that smaller instruments, since they contain a small amount of air inside them, will produce higher-pitched notes, while bigger instruments will generate lower notes. In *caput* six of *liber* iii, after having portrayed the above 'lyre', Fludd describes another instrument which is apt to metaphorically demonstrate the truth of *musica mundana*: this is the *fistula*, or recorder, and, as Joscelyn Godwin notes, it is "intriguing to see this possibly unique treatment of it".[42]

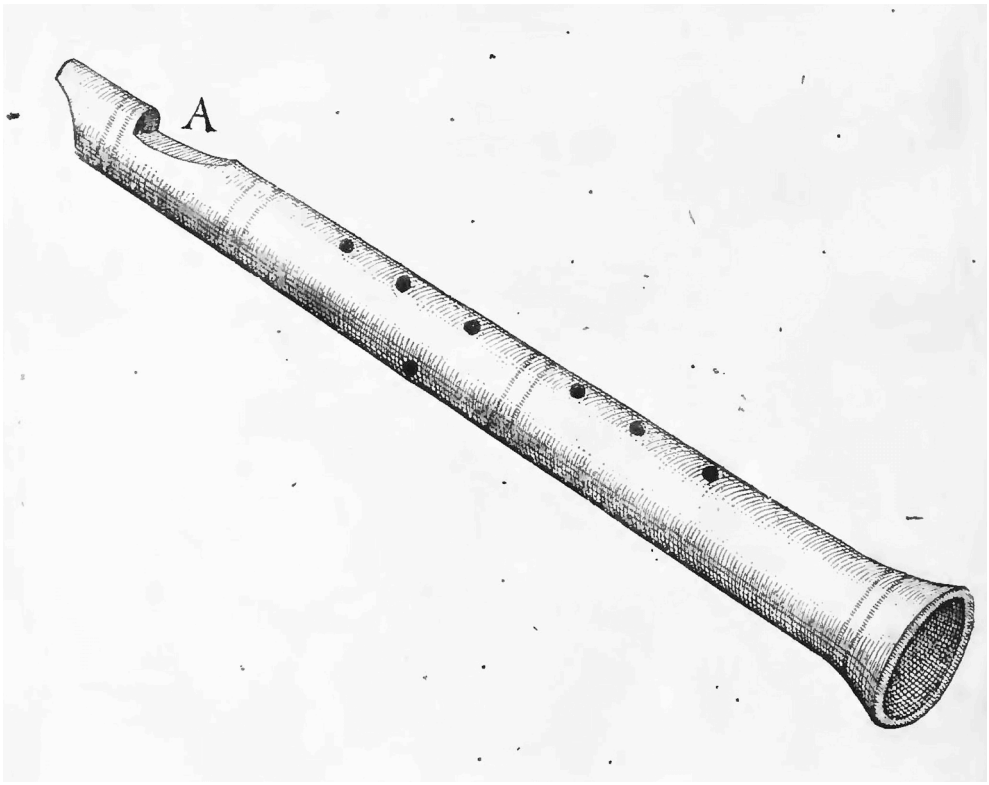

Figure 79 (*DUCH* I, i, p. 94)

[41] "It is not the string, but its soul, which being introduced into the medium [the air], or instrument, produces the sound. Likewise, it is not in the trachea that the principle virtue of the sounds consists, but in the vital soul which sets into motion the nearby air". (Non igitur est chorda, sed ejus anima, a vibratione chordæ in medium seu instrumentum immissa, quæ sonos edit, nec in trachea arteria consistit sonorum principalis virtus, sed in anima vitali aerem circumstantem impellente). *DUCH* I, i, p. 92.

[42] J. Godwin, 'Robert Fludd's Symbolic Recorder', *American Recorder*, 14, 1973, p. 17.

As happens with many common (*vulgaris*) things, there are hidden meanings and qualities that escape the superficial observation. In this particular case, the inventor of the flute himself could not perceive the secret meaning of this wind instrument. Indeed, the flute comprehends in itself the proportions of the cosmos, being divided into three regions. The two lower ones have both three holes,[43] respectively denoting the beginning, the middle, and the end of the corresponding heavenly region. In the third region of the flute there is one single big hole, representing the *natura supercœlestis cœli* (nature of the Empyreum). This instrument could not sound by itself nor has it any virtue without the *anima movens*. The more the player plays the holes which are closer to the 'higher region' of the instrument, the higher the pitches will be, and *vice versa*. Likewise, neither the cosmos nor any part of it could move or act without the action of the *mens summa*. From the outside of the Empyreal region God, in fact, sustains His music through playing low notes in the inferior regions and higher ones as the limit of the highest heaven approaches.[44]

As I have anticipated above, Fludd enclosed in his *musica mundana* a detailed survey on the music of the elements. In other words, he focused on the Elemental region and applied the musical metaphor, i.e. the monochord, to the four Aristotelian elements. This happens in the fifth *capitulum* of *liber* iii: here the principle of the two intersecting pyramids is applied to the region where the elements earth, water, air and fire reside. The name of the pyramid extending upwards is this time *pyramis corporalis* (corporeal pyramid), while the pyramid pointing downwards is the *pyramis ignea* (pyramid of fire). Water has a matter:form ratio of 3:1 and air 3:2. This setting of the microcosmical pyramids recalls that of the macrocosmical ones. There is, nevertheless, a significant difference: the corporeal pyramid only touches the region of the elemental fire, thus leaving it with four parts of fire and none of matter; in the pyramidal representation of the macrocosm, on the other hand, the material pyramid actually reaches the core of the heavenly fire, thus leaving just the highest part of it with a 0:4 matter:form ratio. The perfect balance between the corporeal and the fiery cone takes once again place in the *sphæra æqualitatis*, where the ratio is 2:2.

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[43] Here Fludd glosses over the fact that the flute's 'middle region' has actually four holes.
[44] *DUCH* I, i, p. 95.

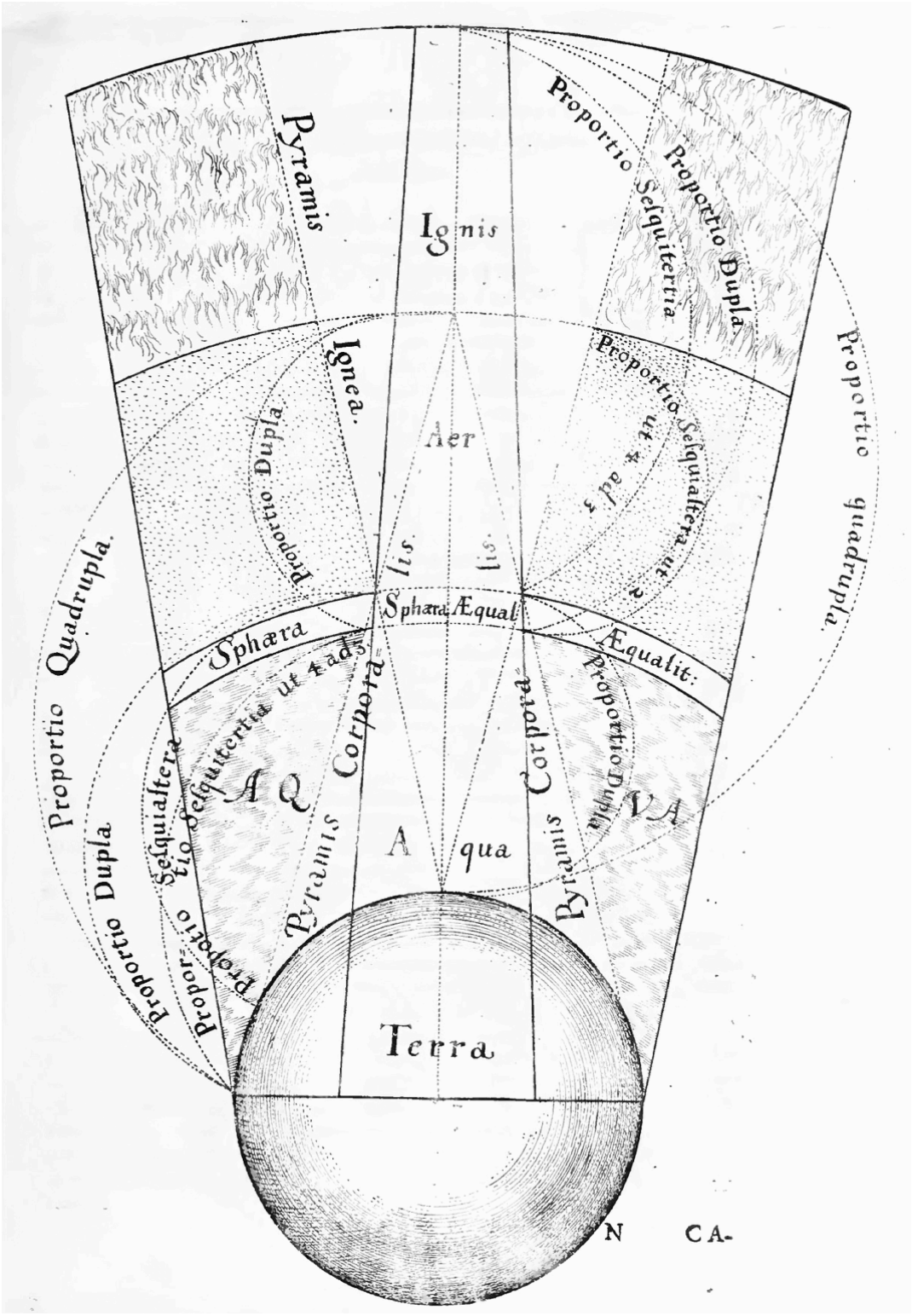

Figure 80 (*DUCH* I, i, p. 97)

From these ratios Fludd extrapolates the intervals occurring from one region to the other and applies them to the monochord. The musical interval that rules the Elemental region is the fourth, the less perfect amongst the consonances, because this region is the less perfect one. Fludd divides each of the four Elemental subregions into three subdivisions. There is a clear resemblance between the celestial and this elemental monochord: they both span two octaves, with the first octave coinciding

with the sphere of equality. At the top of the last fiery region, a line of 'Moons' signal that the next sphere is that of the Moon. Remarkably, the Sun itself here tunes the sublunary region: this is nonetheless consistent with the Fluddean philosophy, by which the Sun is the mirror of the divine mind, the means through which God blesses the Elemental sphere.

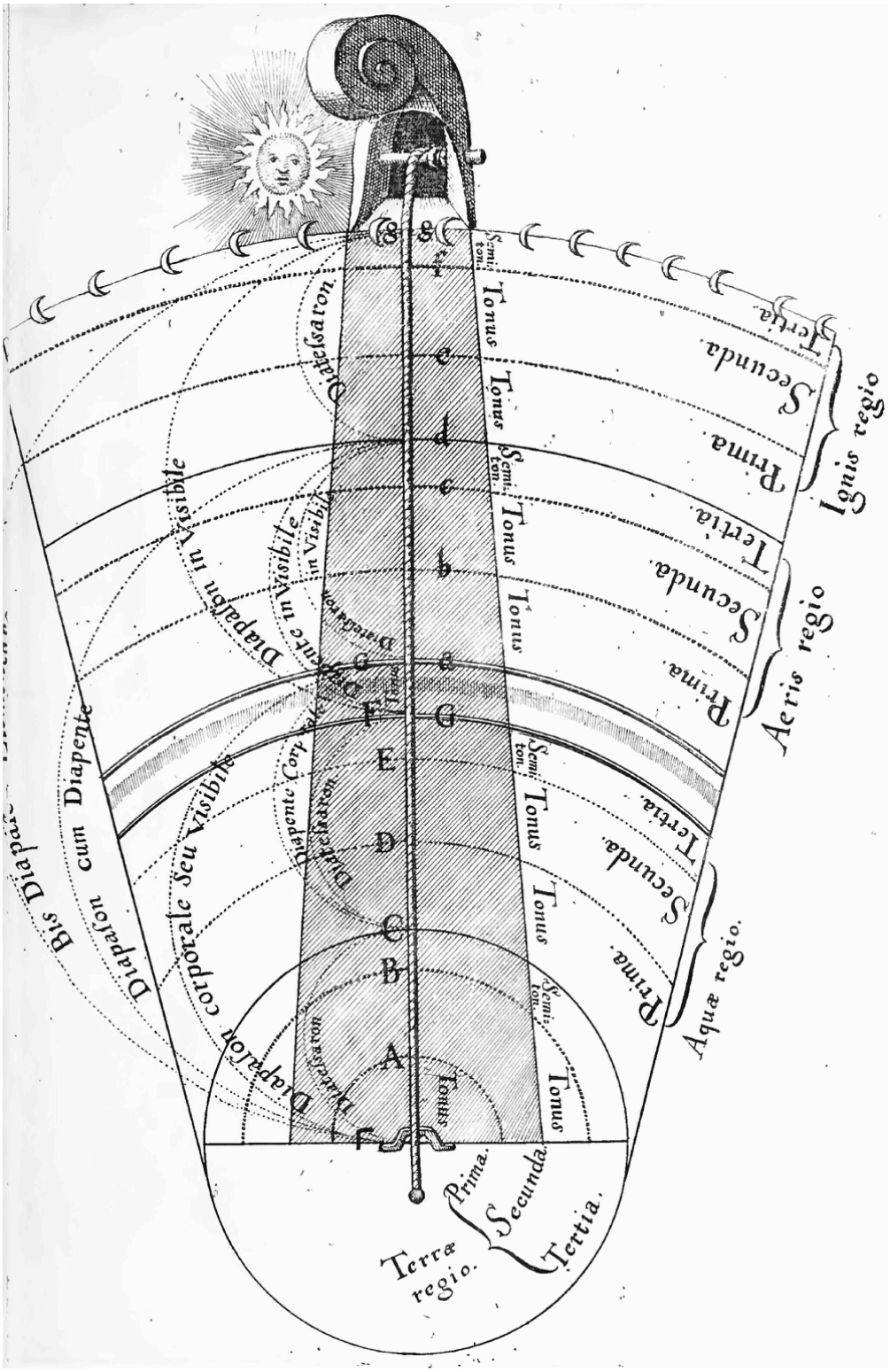

Figure 81 (*DUCH* I, i, p. 97)

As happens in the *monochordum mundi*, here too there are some imprecisions. The width of tones and semitones does not have any equivalence with what can be found in a real monochord. And the length of the second octave should, again, be half of the previous ones.

The application of the Fluddean pyramidal *scientia* to the elemental music, and the fact that Fludd indeed builds up a metaphorical elemental monochord, makes this account of the proportions between the elements rather original. In fact, already Timæus of Locri (V century B.C.)[45] and Plato in his *Timæus* described the connection between the elements by assigning to them precise geometric figures. To earth they assigned the hexahedron (or cube, with 6 faces); to water, the icosahedron (20 faces); to air, the octahedron (8 faces) and, finally, the tetrahedron (or pyramid, with 4 faces) to fire. Francesco Zorzi Veneto explained the relation between the four elements and their geometric representation in musical terms.[46] Air and fire, if one puts both the number of faces in proportion one with the other, are in a ratio 8:4; their plain corners are again in *proportio dupla* (24:16), i.e. 1:2 or diapason; if one takes the solid corners into account, however, they are in a ratio 6:4, i.e. 3:2 or *sesquialtera*, the proportion of the perfect fifth. The same logic is applied to the other elements. This is why, apparently inconsistently, in the above figure of the intersecting 'elemental' pyramids one can see both the double octave and the fifth applied to the fire-air interval at the same time.[47] Depending on which aspects of the Platonic solids are put in proportion, be it the faces or the corners, different ratios – and therefore musical intervals – can be obtained.[48]

The *sphæra æqualitatis* of this elemental monochord poses a problem. In fact, while in the celestial monochord the sphere of equality is divided into two minor semitones, in this monochord its lower and upper delimitation are assigned to *F-G* and *G-a* at the same time. The result is that some intervals involving the *sphæra æqualitatis* (the two fifths and the octaves) overlap one another. I have found a passage in Francesco Zorzi's *De harmonia mundi totius cantica tria* that might provide a resolution to this impasse.

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[45] In the *De natura animæ et mundi*; this treatise appeared for the first time probably in the last century B.C. or the first A.C., and enjoyed several editions and reprints. It is a paraphrase of the Platonian *Timæus*' account on the proportional bonds between the four elements.

[46] Zorzi, *De harmonia mundi*, *canticum* I, *tonus* iii, *capitulum* xvii.

[47] To be sure, the *proportio dupla* includes the whole tone of the *sphæra æqualitatis*, unlike the *sesquialtera*, which does not include it.

[48] See also *Monochordum mundi symphoniacum* (1622), p. 324.

> The consonance and the proportion between fire and water, and between air and earth, are slightly lacking that proportion which contiguous elements have, inasmuch between these elements there is an absolute contrariety as far as their qualities are considered. If one considers the proportion which takes place between the elements put in the correct order, two elements always converge in this [proportion] only by means of a middle term, which participates to the nature of both [elements], as the experts can calculate.[49]

The whole tone of the sphere of equality, thus, might well be the 'common term', which participates in both the 'visible' octave, i.e. the octave of the two visible elements earth+water, and the 'invisible' octave air+fire. Between the two visible elements, earth and water, there are only four tones and two semitones, i.e. a minor seventh; the same concept applies to the two invisible elements, air and fire. Thus, they both need a whole tone in order to complete their octave: this is supplied indeed by the *sphæra æqualitatis*, thanks to which the visible elements are linked to the invisible ones. Without this mediator the harmony of the elements could not take place. I suggest another possible explanation for the 'missing tone': in fact, two overlapping scales seem to recall a *deductio* of the Guidonian system of hexachords. But this is a more technical solution, which loses strength in this symbolic context; nevertheless, I do not exclude that hexachordal patterns might play a part in the elemental monochord, and further research in this respect might solve the question. At any rate, as Fludd himself concludes,

> [...] the true method of connecting together the proportions of the opposing elements in the composition is the sphere of equality, and its tone is the interval that fills that natural bond between the upper invisible elements and the visible lower ones, without which in no way could the four elements participate in any natural composition.[50]

Fludd divides the terraqueous region into three subregions: the one of air at the centre, to which is assigned an interval of a whole tone; the one of water between the sphere of air and that of earth, consisting of another tone; and the sphere of fire, to which is assigned a semitone. From all this the musical consonance of the fourth is originated. Moreover, these three subregions have been further subdivided into three parts resounding an interval of a fourth each, following a pattern of tone+tone+semitone. This might be confusing, considering that in the *monochordum*

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[49] "Deficit tamen aliquantulum consonantia, et proportio ignis ad aquam, et aeris ad terram, quibus inest plena in qualitatibus contrarietas, ab ea proportione, quam habent elementa suo ordine collocata, et ubi duo semper conveniunt per intermedium, quod de utroque participat, ut supputare possunt experti". Ibid., p. 55. This passage is quoted by Edward Herbert in his *De religione gentilium* (Amsterdam, 1663), p. 66.

[50] "[...] verus modus connectens ad invicem in compositione proportiones elementorum contrariorum est sphæra æqualitatis, tonumque ejus intervallum implentem esse naturale illud superiorum et invisibilium elementorum cum inferioribus et visibilibus ligamentum, sine quo nullo modo possunt 4. elementa ad compositionem aliquam naturalem concurrere". *DUCH* I, i, p. 99.

mundi the whole terraqueous region consists of a fourth, while now Fludd is saying that it actually consists of three intervals of fourth. The English philosopher is, however, referring to two different monochords, the first one being the *monochordum mundi*, and the second being the *monochordum elementorum*.

How does Fludd demonstrate the 'truth' of his music of the elements? The 'practical' demonstration is carried out thanks to astrology. I have just shown that there is a *sesquialtera ratio* between the element earth and the Moon: in fact, water, air and the sphere of the Moon give one tone each, whilst a semitone is given by fire. Thus, the Moon resonates with the earth with a *diapente*, or perfect fifth; but it resonates at a fourth with the sphere of the water. From this, Fludd explains, one can easily understand that the Moon has a stronger influence on the Earth. Likewise, the sphere of Mercury resonates at a *diapente* with that of water. Floods, seaquakes and the like are, then, under the control of this planet, which jointly with the Moon has power over the tides. The sphere of Venus plays at a fifth with the sphere of the air; in fact, they both have similar qualities (heat and wetness); these are very agreeable with the life of animals and plants. The lower half of the sphere of the Sun resounds a fifth with the sphere of the fire: this reflects on beneficial influxes on plants, encouraging their growth and reproduction.

Between Earth and the *sphæra æqualitatis*, where the Sun is, resounds the most excellent interval, the octave. Thanks to it, life on Earth is guaranteed and corporeal matter can perpetuate its circle of life. Mars, on the other hand, resounding an octave with the sphere of water, is unfavourable for the living beings of the lower regions, since in nature is contrary to that of water. But the sphere of Jupiter plays a *diapason* with that of air and, together with the sphere of Venus, has beneficial effects thanks to its hot and wet nature. Finally, the sphere of Saturn resounds in *proportio dupla* (perfect octave) with the sphere of fire; the quality of these two spheres are opposite to one another, and therefore Saturn has bad effects on life, its coldness fighting against the hotness of fire. All this proves to be very important, since, thanks to it, some of the imprecisions of the *monochordum mundi* can hopefully be solved. In fact, by taking into account the musical intervals Fludd has just described, I have worked out this revision of the celestial monochord.

♄	W	A	F	☾	♀	☿	☉	♂	♃	♄	?	A1	A2	A3	G
Γ	A	B	C	D	E	F#	G	a	b	c	d	e	f#	gg	

I assumed that there is an error in the division of the sphere or equality. Fludd in fact, in his love for mirror-images, subdivides it into two minor semitones with the Sun between them; but this complicates the celestial musical scale, with the 'ethereal' *a* and *b*, which need to be flat in order to preserve the *tonus-semitonus* pattern of the celestial monochord. However, this contradicts Fludd's statement that Mars plays an octave with the sphere of water and Jupiter with that of air. By assuming, therefore, that the *sphæra æqualitatis* is made up of just half a tone, the following musical intervals described in *capitulum* 7 of Fludd's treatise on *musica mundana* correspond. This leads to another error that, to my knowledge, has remained hitherto unnoticed, i.e. the naming of the notes in the second octave. In fact, the upper limit of the sphere of Mars should mark the note *a* and not *b* as one sees in the *monochordum mundi*; consequently, the upper limit of the sphere of Jupiter should be assigned to *b*, and that of Saturn's sphere to *c*. In this way, the planetary intervals Fludd described match with the succession of notes in the musical scale.

But yet another problem arises: we have reached the *c* and there are only three spheres left, i.e. the ones corresponding to the three hierarchies of angels. If we want to complete the double octave, we would need another 'fret'. This is easily fixed with the introduction of a whole tone within the sphere of the fixed stars. Thus, finally, the correct subdivision of the monochord is restored, and the upper limit of the highest sphere correctly marks the reaching of God's double octave (*Γ-gg*).

After proving the truth of his music of the elements by means of astrology and having added an in-depth description of all the musical relations between the elements and their qualities,[51] Fludd ends his *liber* iii on the *musica mundana* with an account of the *discordiæ mundanæ*, or celestial dissonances. In truth, these dissonances are not musical intervals that are not consonant, as one would expect. Rather, here Fludd repeats the astrological theory he already accounted for in the previous pages of the *liber*, according to which some mixtures between the elements, and some influences of certain planets (mainly Mars and Saturn), are more noxious than others.

[51] Here Fludd gives only a summary explanation of his astrology, while a lengthy account on this *scientia* is given in other parts of the *DUCH* (see the previous chapter of this dissertation).

IV.iv The temple of music (1618)

The second *tractatus* of the first *tomus* of the *DUCH* was published in 1618, one year after the publication of the first *tractatus*. Its aim is to cover the *artes* and *scientiæ* of the macrocosm and, as already shown in the previous chapter, it is divided into eleven *partes*, each dealing with one *ars* or *scientia*. The second *pars* is focused on practical music and gives an interesting overview of the musical theory in England at the beginning of the seventeenth century as seen by an amateur. In fact, as Peter Hauge has rightly observed,

> [...] the largest number of music treatises of the late sixteenth and the seventeenth century dealt with the rudiments of music, avoiding intricate music theoretical issues such as modal theory which – if included – would be relegated to appendices. There was simply no market for publications of the same comprehensive quality as for example Zarlino's *Istitutioni harmoniche* or his *Dimostrationi harmoniche*. [...] Compared with continental Europe, the production of music publications in England is indeed small; however, in connection with the Society's activities around the mid-to-late seventeenth century, a growing number of treatises are concerned with music as a science. The majority of authors were not professional musicians or composers, but natural philosophers with a keen interest in music [...].[52]

Fludd's treatise, Hauge argues, is the first to reflect this change of focus, since it describes practical music as a mere "expression of numbers and proportions".[53] In his *Sylva sylvarum*, Francis Bacon demonstrates to be well aware of the growing gap between the practice and knowledge of music.[54] Curiously, the German encyclopaedist Johann Heinrich Alsted included in his *Encyclopædia septem tomis distincta* (1630) a treatise on music that bears the title *Templum musicum*,[55] which includes more up-to-date musical information.[56] Alsted's treatise on music was then translated into English by the music theorist John Birchensha (*c*. 1605-1681) and published in London in 1664.[57]

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[52] P. Hauge, ''The Battel Fought last Friday': Discussions of Ancient and Modern Theories of Key Between Musicians and Natural Philosophers at the Royal Society of London in the Seventeenth Century', in O. Kongsted et al. (eds), *A due. Musical Essays in Honour of John D. Bergsagel & Heinrich W. Schwab*, Copenhagen, 2008, pp. 195-208 (197).
[53] Ibid., p. 198.
[54] Ibid.
[55] J. H. Alsted, *Encyclopædia septem tomis distincta*, *liber* xx, pp. 1195-1211.
[56] Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, p. 3.
[57] J. Birchensha, *Templum Musicum: Or the Musical Synopsis, of Alstedius*, London, 1664. Its dedicatory epistle and preface are reprinted and commented in J. Birchensha, *John Birchensha: Writings on Music*, ed. by C. D. S. Field and B. Wardhaugh, Farnham, 2010, pp. 75-84.

Up until Hauge's work, the *De templo musicæ* had received very little consideration from musicological studies.[58] This is partially understandable because Fludd's treatise on *musica practica*, and in general the whole second *tractatus* of *DUCH* I, is a collection of material Fludd put together for his tutoring lessons during the trip throughout Europe. In addition, the overall context of which the treatise is part, i.e. the *historia* of the macrocosm, amongst speculations on a variety of more or less obscure subjects, together with the use of the Latin language, did not help.

The temple of music is presented at the beginning of the *pars*, and is surprising in its suave complexity.

[58] Haar, 'Musica mundana', pp. 489-495; Lillian M. Ruff, 'The Seventeenth-Century English Music Theorists', Ph.D. dissertation, Nottingham University, 1962, pp. 16-17; Mitchell, 'Musical Conceptions', pp. 130-131; Herissone, *Music Theory*, pp. 1-2; Ammann, 'The Musical Theory', p. 206.

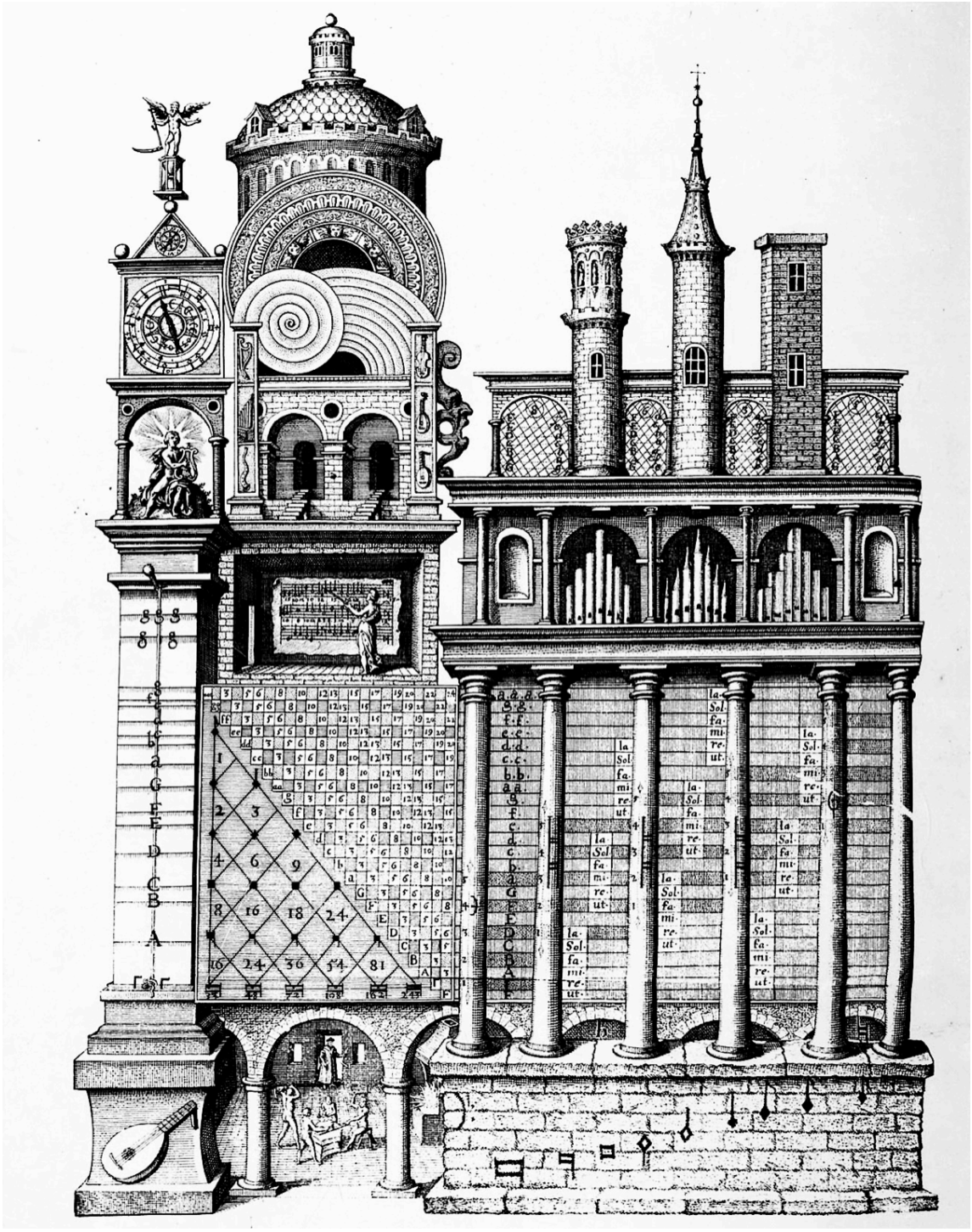

Figure 82 (*DUCH* I, ii, p. 161)

This is a complex mnemonic device, probably one of Fludd's most powerful plates. Every section of this virtual edifice is dealt with in the course of the first six *libri* of the treatise while the seventh, as I shall show, does not form part of this plate. The Fluddean tract on *musica instrumentalis* can be considered to be divided into two halves: the first (*libri* i, ii, iii and iv), which rely heavily upon medieval treatises,[59] and

[59] As Peter Hauge has stressed, already John Hawkins, in his *A General History of The Science And Practice of Music* (1776), mentions that Fludd used medieval sources for his *De templo musicæ*. Hauge discusses this in detail in his 'Robert Fludd and De templo musicae', *Danish Yearbook of Musicology*, 27,

the second (*libri* v, vi and vii), which include a more up-to-date account. The main manuscript Fludd is very likely to have used for the medieval part is a collection of tracts held by the library of Trinity College, Cambridge. It is the Western MS 1441, which groups together the *Quatuor principalia musicæ*, commonly attributed to the Oxonian John of Tewkesbury and quoted by English music theorists such as Morley and Ravenscroft;[60] the *Proportiones musice mensurabilis Fratris Roberti Brunham* (actually John Torksey's *Trianguli et scuti declaratio*); the *Micrologus* by Guido of Arezzo; and the *Dialogus de musica* by Odo of Arezzo.

Liber i concerns the definition of music, its etymology and its classifications. Music, Fludd writes,

> [...] is defined as a divine science by which all things in the universe are connected by an unbroken chain and by which – in each single matter – a pair is related to a pair in equal proportion. This definition of music is suitable for *musica mundana*, *humana*, and *instrumentalis*.[61]

Fludd follows the classic Boethian subdivision and organises the divine *scientia* of music into three parts: *mundana*, *humana* and *instrumentalis*. The *De templo musicæ* deals indeed with this last one, while the first kind of *musica* has been surveyed in *liber* iii of *tractatus* i (see above). *Musica humana* will be surveyed in later publications, as I shall later show in this chapter.

As far as its etymology is concerned, music derives either from 'moys', "which is 'water' in Latin",[62] or from the Muses; its inventors are Moses and Jubal according to the Bible, and Pythagoras according to the Greeks.[63] At the bottom of the temple, in fact, one can see the depiction of the mythical moment in which Pythagoras, walking into a blacksmith's workshop and hearing the sound of the hammers striking the

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pp. 9-30, and in Fludd, *'The Temple of Music'*, ed. and tr. by Hauge. In addition, see L. Guariento, *Il De templo musicæ di Robert Fludd: traduzione, introduzione e note*, MA dissertation, Università di Bologna, 2007.

[60] A copy of the *Quatuor principalia musicæ* was also owned by Thomas Tallis (Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, pp. 7-8).

[61] "[...] scientia divina, qua omnia mundana inviolato vinculo connectuntur, et qua, in re unaquaque par æquali proportione pari refertur. Hæc musices definitio mundanæ, humanæ et instrumentali convenit". *DUCH* I, ii, p. 164. Translation in Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, p. 39.

[62] For an account on how music came to be associated with Moses, see N. Swerdlow, 'Musica Dicitur A Moys, Quod Est Aqua', *Journal of the American Musicological Society*, 20, 1, 1967, pp. 3-9.

[63] The notion of the biblical foundation of music, and in particular that Jubal was the inventor of music, is still present many years after Fludd's death. For instance, in 1672 Salmon would write: "[...] Holy Writ [...] vouchsafes to mention Jubal, the Musical Father of those who handle the Harp and Organ". Salmon, *An Essay to the Advancement of Musik*, pp. 3-4; in T. Salmon, *Writings on Music Volume I*, ed. by B. Wardhaugh, p. 56. The reference to Jubal is in Genesis 4:21 (see Ibid., p. 99, n. 13).

anvils, had the illumination about the link between numbers and musical consonances.[64]

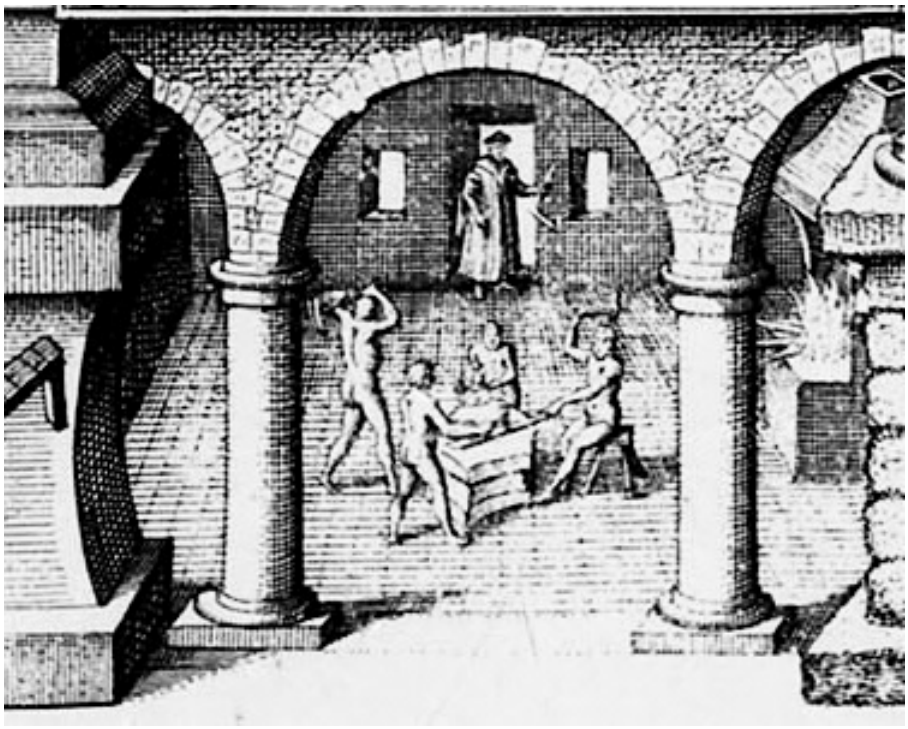

Figure 83 (*DUCH* I, ii, p. 161; detail)

After Pythagoras, Fludd continues, Boethius, Guido of Arezzo and Franchinus Gaffurius wrote significantly on this subject and introduced important innovations. In this first *liber* the effects of music in the human body are accounted for too. Fludd extrapolates short quotations from Plato's *Republic*, Guido of Arezzo and Marsilio Ficino's works: music "penetrates the interiors of the soul", "affects the senses by emotion", "moves the body" and "excites the spirit".[65]

The definition of the *musicus* follows: here Boethius is the main source. There are two kinds of 'musician': the imperfect one only knows how to sing or play an instrument, compose a piece of music or dance; but the perfect *musicus* masters all these practical skills and, in addition, has a knowledge of natural philosophy, arithmetic, geometry, astronomy (so that he/she can understand the *musica mundana*), and metaphysics, which provides the understanding of *musica humana*. *Liber* i ends with an account of the subject of music, which is sound:

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[64] J. B. Craven interpreted the plate incorrectly, and wrote that "[t]he lower part of the mystic building is occupied by those who make the instruments. A number of naked artificers are occupied in making a rod. Near by is a furnace for their use". Craven, *Doctor Robert Fludd*, pp. 80-81.
[65] *DUCH* I, ii, pp. 166-167.

> [sound] is an undissolved percussion of air and a violent vibration of the same both in low and high pitches. With its spiralling and spinning motion to and fro in the air, by the slanting ascension aiming upwards (according to the disposition of the medium) and finally through the enforced revolution of its mean, it penetrates the ears and invades the inner senses.[66]

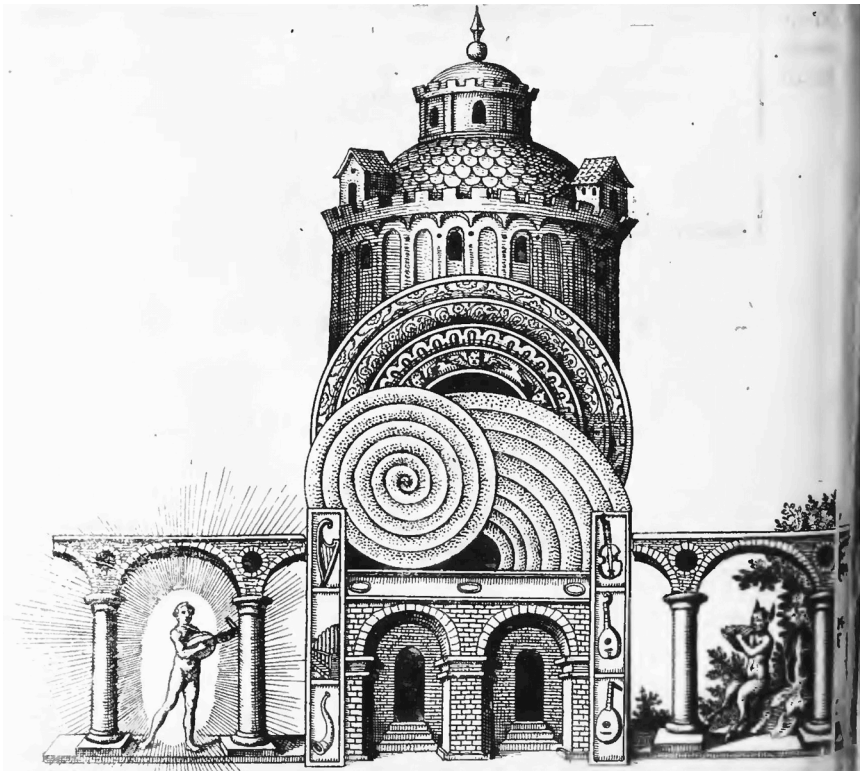

Figure 84 (*DUCH* I, ii, p. 168)

Sound is represented as a spiral of air set in motion by itself entering the two doors (the ears) of the palace; without the sense of hearing, in fact, one cannot gain entrance to the temple. The second *liber* surveys the *systema musicum*, i.e. the musical system. This, Fludd explains,

> [...] is nothing else but that topic arranged in lines and keys, of which the theory of sounds and the melody of a composition consists, and without the examination of the square's surface and steps it will be impossible to enter through the door of this temple.[67]

The focus is now in the right-hand section of the temple of music. Here one can find depicted the three hexachords, i.e. the mnemonic musical scales attributed to Guido of Arezzo.

---

[66] "[Sonus] est indissoluta aeris percussio, violentaque eiusdem vibratio in gravibus et acutis, quæ spirali et volubili suo motu in aere huc atque illuc ascensione obliqua sursum tendendo (secundum medii dispositionem) per coactam denique eiusdem medii revolutionem aures penetrat, sensusque interiores invadit". Ibid, p. 168. Translation in Fludd, '*The Temple of Music*', ed. and tr. by Hauge, p. 49.

[67] "[...] nihil aliud est, nisi subiectum illud lineis et clavibus constitutum, in quo sonorum ratio et cantus melodia consistit, sine cuius superficiei quadratæ cognitione et gradibus, templi huius ianuam ingredi erit impossibile". *DUCH* I, ii, p. 171. Translation in Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, p. 51.

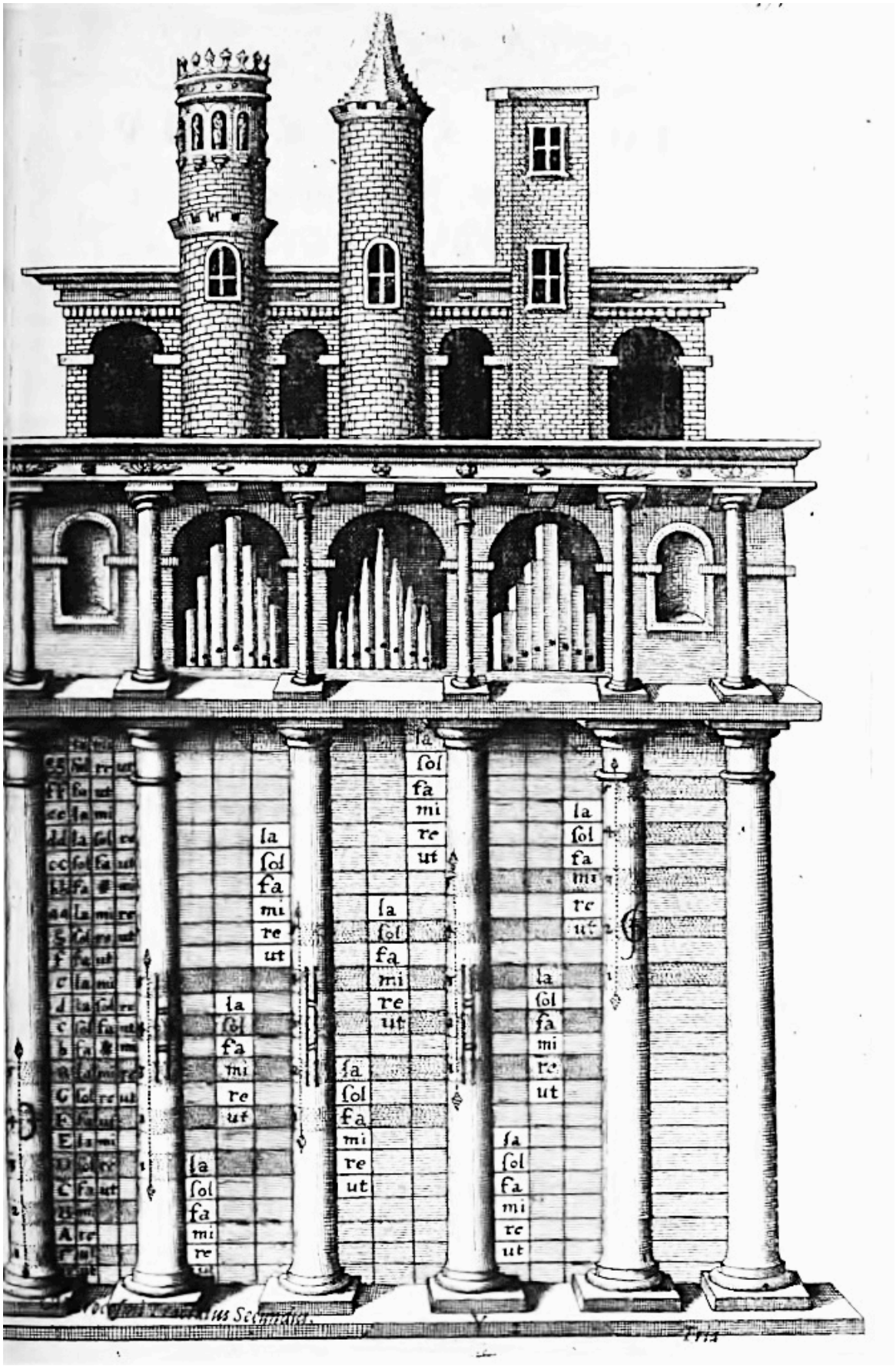

Figure 85 (*DUCH* I, ii, p. 171)

On the left-hand side are represented the keys and pitches of the *cantus mollis*; this is associated with the round tower and the round organ pipes, as its sound is rounded and soft. The tower at the centre designates the natural hexachord; what is interesting is that Fludd links it with the highest tower rising upwards. This is so, the English polymath explains, because the philosophers consider fire to have an ascending quality.[68] Finally, on the right-hand side it is possible to admire the tower corresponding to the hard hexachord; this, together with the corresponding organ's pipes, is squared, because it produces harsh sounds. Fludd is here mainly relying upon medieval theory and practice even though, as Peter Hauge has already noted, he takes various elements from Beurhusius' *Erotematum* (1580) as well.[69]

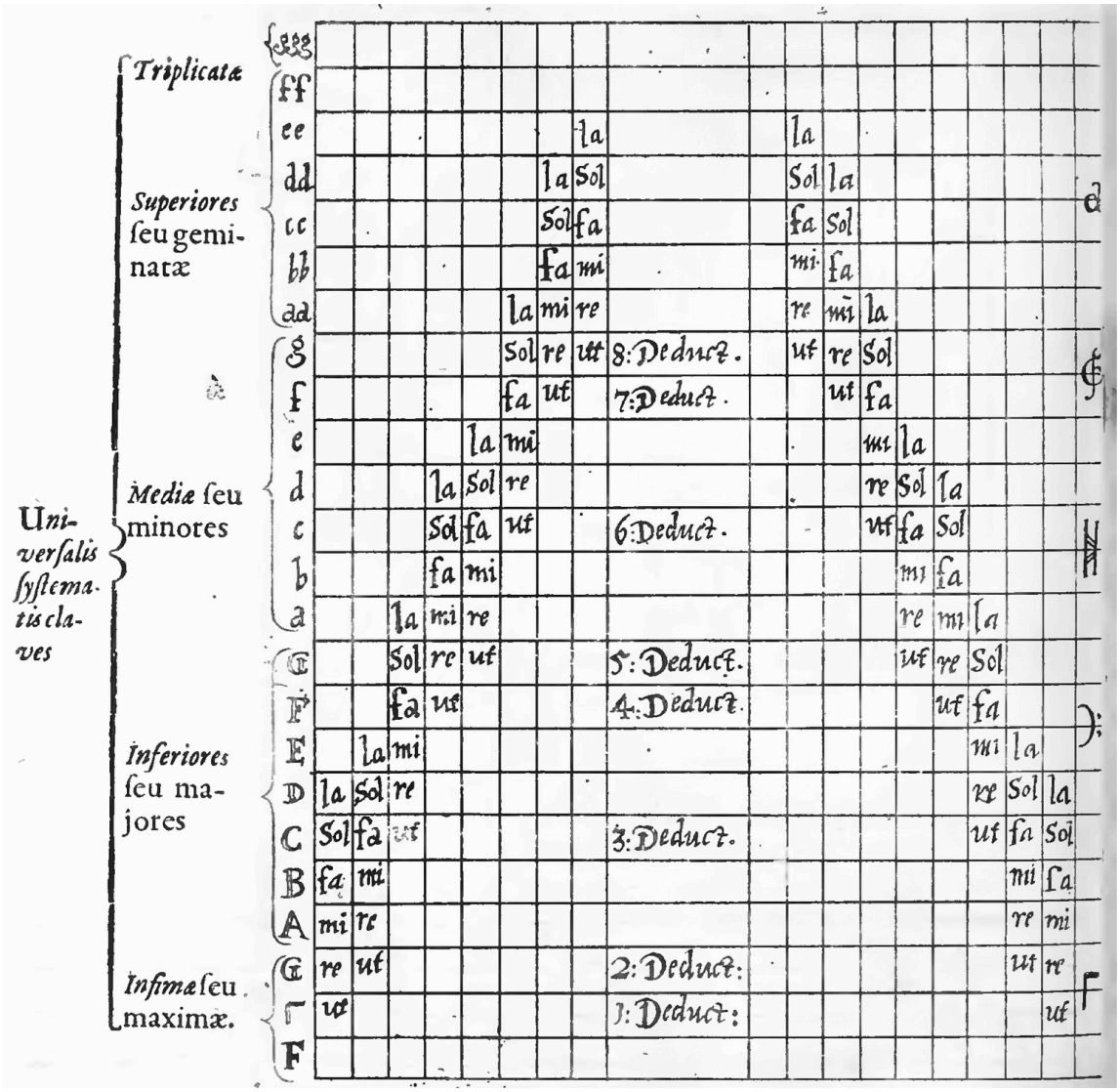

Figure 86 (*DUCH* I, ii, p. 176)[70]

[68] As opposed to the natures of earth and water, which go downwards.

[69] This treatise was consulted by Morley and Ravenscroft too. See Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, p. 8.

[70] There is an error here: the row corresponding to the *F* should be deleted and *Γ* should be substituted with *F*.

A plate to be found a few pages later (figure 86) illustrates the whole hexachordal system with its *deductiones* and the keys to the right.[71] This 'device' is also present in Morley's *A Plaine and Easie Introduction* and in other music treatises published around Fludd's time.[72]

Liber iii is dedicated to the monochord, which constitutes the main column of the left-hand side of the temple. In particular, here the reader finds its divisions into tones and semitones and how it is possible to extrapolate the musical consonances thanks to its aid. Notably, in the monochords Fludd is depicting in this *liber* the octaves following the first one are geometrically halved while in the *monochordum mundi* the second octave is represented as having the same length as the first.[73] In this third *liber* the consonances are surveyed in detail and Boethius is the main source, along with the *Quatuor principalia musicæ*. On the chapter on the 'small proportions on the monochord', Fludd embraces the Pythagorean tuning, and states that the whole tone is not divided into two equal parts, but into a major and a minor semitone.[74] This leads us again to the problem of the *sphæra æqualitatis* in the celestial monochord, whose whole tone consists of two minor semitones, and confirms my supposition that the error is likely to be due to the mirroring between the lower and the higher octave.

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[71] In order to sing a melody whose extension exceeded that of a single hexachord, the musician needs to begin a new hexachord whose *ut* actually corresponded to an *f* (soft hexachord, with *b* flat) or to a *g* (hard hexachord, with *b* natural).

[72] For a thoroughly survey of the hexachordal system in seventeenth-century English music treatises, see Herissone, *Music Theory*, pp. 74-86.

[73] The monochords pictured in the *pars* preceding the *De templo musicæ*, which deals with arithmetic, are also geometrically correct. This reinforces the supposition according to which Fludd's metaphorical monochords have a symbolic function which goes beyond geometric correctness.

[74] "[...] the whole tone is not divided into two equal parts, but into a major and minor interval [...]". ([...] tonus non dividitur in duas partes æquales, sed in spatium maius et minus [...]); and "[t]wo major semitones exceed the whole tone by one comma. Likewise, two minor semitones are smaller than a whole tone by one comma". ([d]uo semitonia maiora excedunt tonum uno comate; similiter duo semitonia minora sunt minora tono uno comate). Both passages are in *DUCH* I, ii, p. 185.

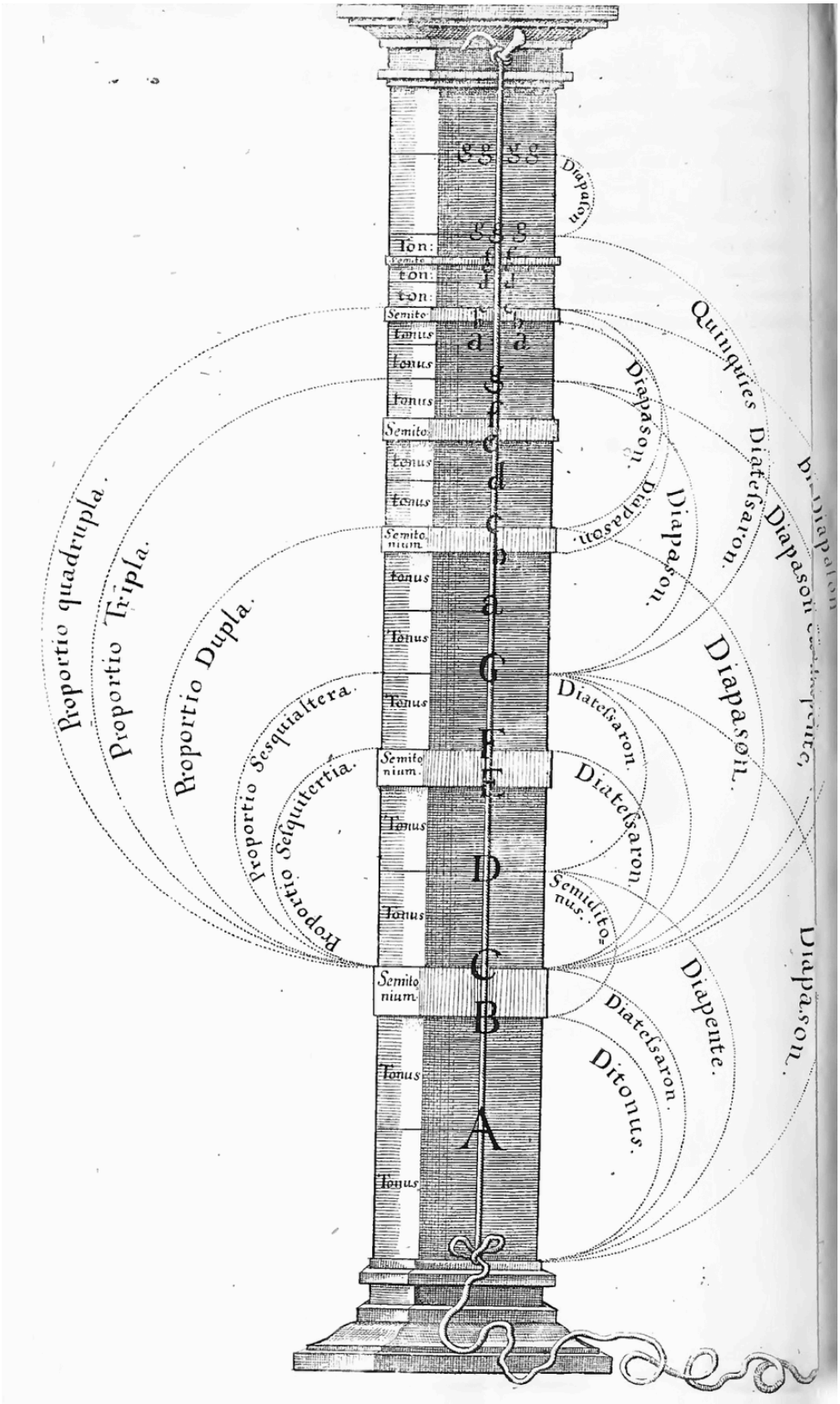

Figure 87 (*DUCH* I, ii, p. 184)

In the following *capitulum* one finds a survey of the rhythmic aspect of practical music. This is done by relying upon the clock in the main tower of the temple of music.

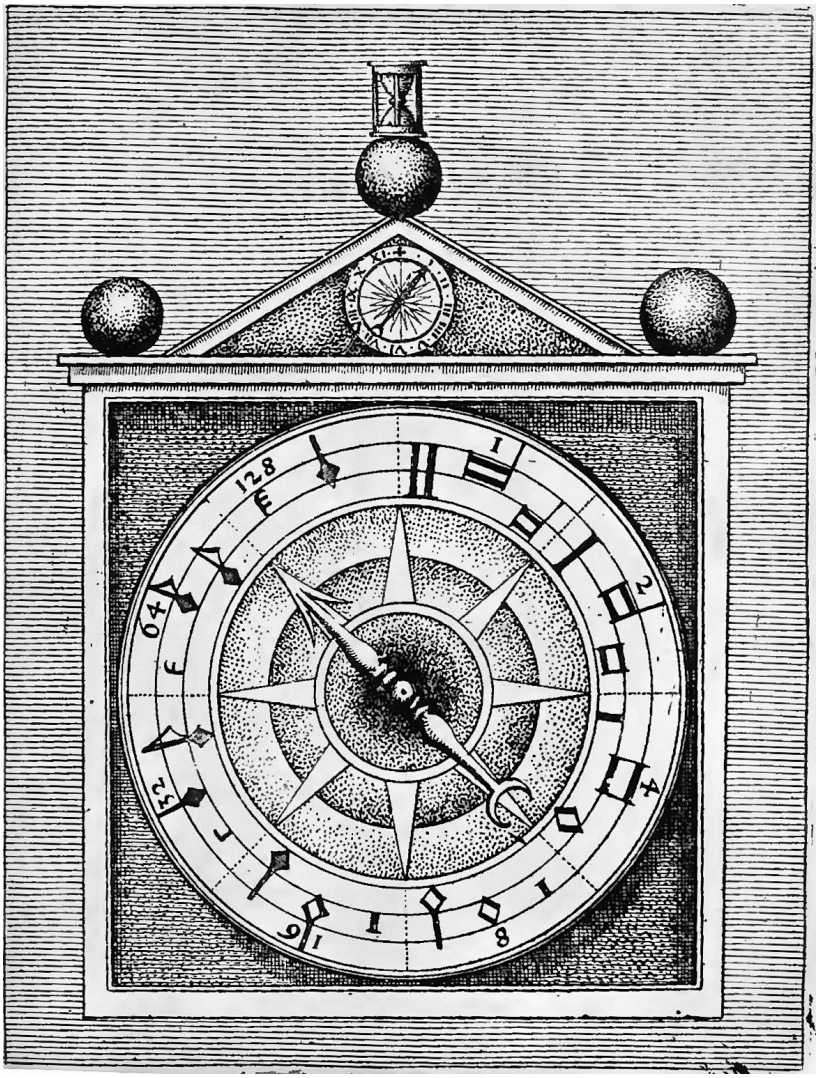

Figure 88 (*DUCH* I, ii, p. 191)

After having listed the definitions of the names of the notes (*larga*, *longa*, *brevis*, *semibrevis*, *minima*, *semiminima*, *fusa*) and other terms related to rhythm (*tactus*, *mensura*, etc.), Fludd explains that the ancients did not consider the minim to be divisible but, rather, the beginning of measurable music.[75] Recent authors, though, allowed the divisibility of the minim and introduced smaller durations like the *semiminima* and the *fusa*; Fludd refers to Philip de Vitriaco, who in music is said to be the flower of the entire world ("musica flos dictus est totius mundi"). Others after him, Fludd continues, have introduced even smaller durations like the quaver and the semiquaver.

[75] Ibid., p. 192.

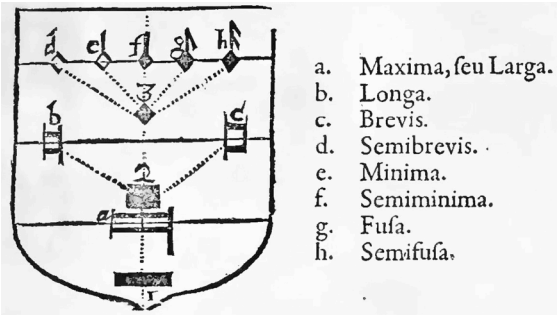

Figure 89 (*DUCH* I, ii, p. 192)

The dissertation on the rules for the ligatures taken from the *Erotematum* follows, and after that there is a lengthy section on perfection, imperfection and *prolatio*, and the proportional values of measurable music, which can be either *simplex* or *multiplex*, with many subdivisions. In order to grasp the complexity of this system, I shall give just a couple of examples: within the genre of the *simplex* one can find the *superbipartiens tertias* (5:3) and the *supertripartiens septimas* (10:7); within the genre of the *multiplex*, the *superparticularis tripla sesquialtera* (7:2) and the *quadrupla superbipartiens tertias* (14:3). Fludd's source in this case is the *Proportiones practicabiles secundum Gaffurium* (Practical proportions according to Gaffurius; 1540) by John Dygon.[76] Nevertheless, Fludd seems to be aware that this discussion has little relevance for the modern musician:

> [b]ut because infinite temporal ratios of music of this kind can be listed, a multitude of them would possibly bring a great confusion to a more modern musician. Therefore, we shall guide you to those more familiar and usual ratios of durational music described in the triangular figure [...].[77]

In this Fludd does not differ much from Thomas Morley, who in his *A Plaine and Easie Introduction* wrote that

> [...] for *Sesquitertia*, *sesquiquarta* and such like, it were folly to make many wordes of them, seeing they be altogether out of use, and it is a matter almost impossible to make sweet musicke in that kind. [...] *superparticulars* and *superpartiens* carry great difficultie, and have crept into musick I know not how, but it shold seeme, that it was by meanes of the *Descanters*, who striving to sing harder waies upon a plainsong then their

[76] John Dygon (1482-1566?), Benedectine monk and composer, based his music treatise on the fourth book of Gaffurius' *Practica musicæ* which was at that time among the most influential music treatises. Dygon's music treatise (GB-CtC Western MS 1210) is particularly relevant for an assessment of how Continental theories were received and adapted to the English soil.

[77] "Sed quia infinitæ recenseri possent huiusmodi Temporalis Musicæ proportiones, earum fortasse multitudo magnam confusionem musico recentiori afferet: Nos igitur ad magis familiares et usitatas illas Musicæ temporalis proportiones figura triangulari descriptas vos deducemus". *DUCH* I, ii, p. 204. "Temporales musicæ" emended to "Temporalis Musicæ". Translation based on Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, p. 123.

> fellowes, brought in that which neither could please the eares of other men, nor could be themselves be defended by reason.[78]

The rhythmic ratios between the notes are summarised thus more plainly by the Fluddean triangle in the façade of the temple of music, just above the blacksmith's.[79]

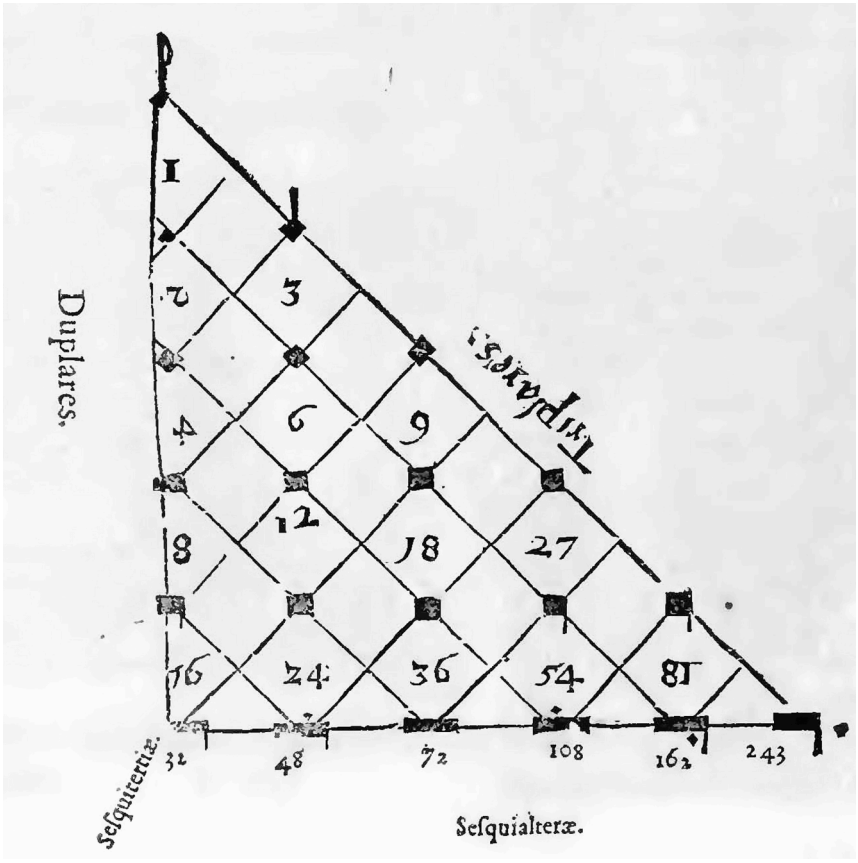

Figure 90 (*DUCH* I, ii, p. 204)

At the bottom of the triangle there is the largest durations (*largæ*) and, as one proceeds upwards, one finds increasingly smaller musical figures. The triangle should be read in this way: the vertical direction contributes to illustrate the double proportion. For instance, 32 *largæ* are twice 16 *longæ*, and 16 *longæ* are twice 8 *breves*. The horizontal direction proves the *sesquialtera* (3:2) proportion, which makes each note equal to the next one plus its half; for example, 24 *longæ* are one and a half times 16 *longæ*. The oblique direction from right to left illustrates the triple proportion, according to which the durations are in a 3:1 ratio; in fact, 81 *longæ* are

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[78] T. Morley, *A plaine and easie introduction to practicall musicke set downe in forme of a dialogue*, London, 1597, fols 4^{r}-4^{v}.

[79] This is actually the 'Torkesey triangle', which is to be found in the Lansdowne 763, British Library (a manuscript owned by Thomas Tallis, mentioned by Thomas Morley and perhaps possessed by William Byrd), the *Bury St Edmunds* manuscript (belonged to the Cotton library, which Fludd had access to), and the manuscript Western MS 1441 in the Trinity Library, Cambridge. See P. Hauge, 'Robert Fludd and De templo musicae (1618)', *Danish Yearbook of Musicology*, 27, 1999, p. 19.

thrice 27 *breves*, and so on. Lastly, the numbers slanting from left to right denote the *sesquitertia proportio*, i.e. the ratio 4:3, where each lower note equals the one next to it plus its third; for instance, 12 *breves* are 9 semibreves plus one third of this last duration (i.e. 3 semibreves).

Liber v begins an undeclared 'second section' of the *De templo musicæ*: a more up-to-date one. In fact, as Todd Barton already noticed, if Fludd were to continue with the trend of the first four *libri* he would probably have written about the ecclesiastical modes. But he does not, and turns instead towards more contemporary topics.[80] In fact, the fifth *liber* concerns the composition of pleasing music. The interesting trait of this section of the *De templo musicæ* is that here Fludd clearly underlines the importance of the bass over the other parts; it is the "fundament above which the other parts of a harmonised melody are accustomed to be built".[81] Peter Hauge already stressed the importance of this aspect; in fact, he writes that

> Fludd's ideas regarding the function of the bass are strikingly similar to those of his contemporaries, Campion and Coprario. [...] However, it seems just as likely that the new way of thinking was inherent in English music practice around 1610, and that Fludd was merely reflecting common knowledge; or in other words: Fludd's ideas were most likely instigated by what he experienced as being practiced among contemporary musicians and composers.[82]

Fludd was not particularly skilled in the *musica practica*. His aim was not that of providing a technically-accurate treatise for those willing to pursue a career in music; rather, he regarded music as one of the liberal arts, and as such it had to be learned by who was interested in becoming a 'round' learned gentleman. Some of Fludd's depictions and descriptions of monochords prefer symbolical meaning to technical accuracy; and one can trace errors in the *De templo musicæ*.[83] Moreover, if one assumes the musical compositions attributed to a Dr Fludd to be his own work, it is evident that musical composition was not his strongest skill (see Appendix). Nevertheless, Fludd was interestingly one of the first to postulate, in England, a bass-derived method of composition.[84]

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[80] D. T. Barton, *Robert Fludd's Temple of Music: A Description and Commentary*, MA dissertation, University of Oregon, p. 104.

[81] "[...] fundamentum, super quod cæteræ melodiæ symphoniacæ partes solent ædificari". *DUCH* I, ii, p. 212.

[82] P. Hauge, 'Robert Fludd (1574-1637): A Musical Charlatan? A Contextual Study of His "Temple of Music" (1617-18)', *International Review of the Aesthetics and Sociology of Music*, 39, 1, pp. 3-29 (22).

[83] Peter Hauge has carefully annotated all the errors and technical inaccuracies of the *De templo musicæ* in his edition *'The Temple of Music'*.

[84] Peter Hauge goes as far as suggesting that the first advocate of a bass-driven composition in England could have been Robert Fludd, and not Thomas Campion with his *A New Way of Making Fowre Parts in*

This *liber* is associated with the other triangle one can find in the façade of the temple of music. It is the triangle of the consonances, of the sort which one finds in Morley's *A Plaine and Easie Introduction*.[85] This triangle, together with some of the rules Fludd provided, has been later copied by both the British physician and anatomist Nathaniel Highmore (1613-1685) and Athanasius Kircher.[86] The white squares denote the melodic consonances useful for the homophonic composition; the black, on the other hand, are dissonant intervals that only the expert composer should use. On the right one can distinguish the *F*, the three *C* and the *G* clefs, each with their extension in the pentagram. The intervals are calculated starting from the bass, so one has, for instance, a '3' denoting a third between *G* and *B* (there is no graphic differentiation between major and minor thirds), a '5' for the *G-D* interval, and so on.

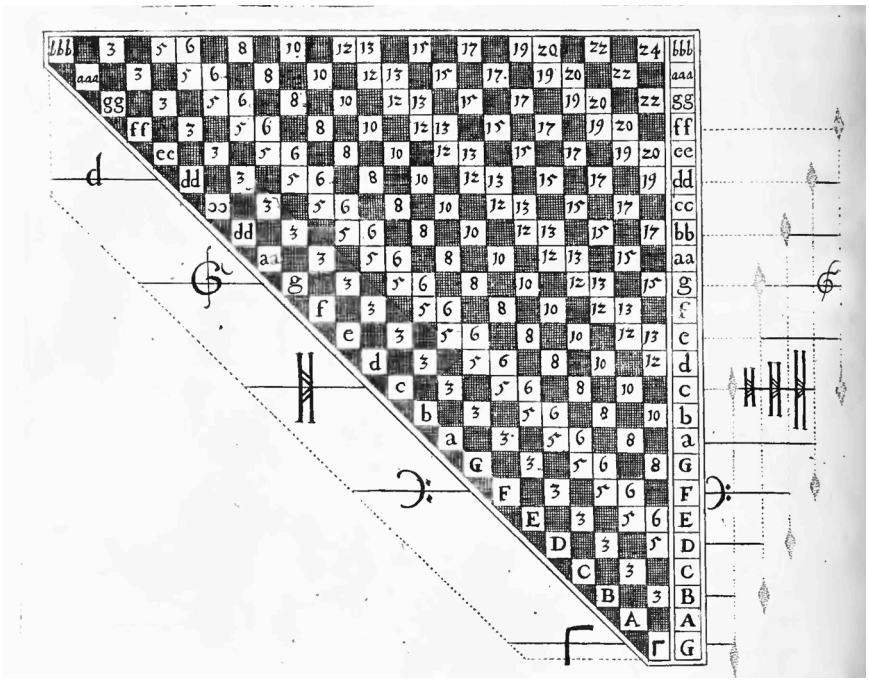

Figure 91 (*DUCH* I, ii, p. 217)

As Fludd explains, the concords are six, namely: unison, minor third, major third, fifth, major sixth, and octave. Of these, the unison cannot also be considered a consonance, since it is not an interval of two dissimilar pitches.[87] The remaining five concords

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Counterpoint By a Most Familiar and Infallible Rule, 1615. See Hauge, 'Robert Fludd (1574-1637): A Musical Charlatan?', p. 22.

[85] Morley, *A plaine and Easie Introduction*, pp. 129-132. Morley, following the traditional practice, used the tenor line as the point of reference for the computing of the intervals and not the bass, as Fludd does.

[86] N. Highmore: London, British Library, MS Sloane 581, fols 1^{r}, 26^{v}-27^{r} ('Notes Relating to Music'); A. Kircher: Karlsruhe, The Baden State Library, MS St. Blasien 67 ('Institutiones mathematicæ de Aritmetica Comptuu ecclesiast. Geometria Aliisq. scientijs'). See Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, p. 16, n. 60.

[87] *DUCH* I, ii, p. 210.

(which are also consonances)[88] are included in the white squares contained in the triangle. In the following pages, Fludd describes the rules for four- or five-part counterpoint, and not two-part, contrary to the compositional practice of the Renaissance. This is another trait he has in common with Campion and Coprario, which demonstrates that Fludd's *musica practica*, in spite of its many medieval elements, presents some up-to-date traits.[89]

Towards the end of *liber* v one finds a depiction of the windows of the temple. The four windows represent the two perfect consonances, i.e. octave and fifth, and the two imperfect ones, i.e. sixth and third (figure 92). With the help of this image Fludd conducts two 'experiments' consisting of short musical compositions (figure 93). According to which consonances one wants to achieve, the windows of the temple are 'entered' or 'exited'.

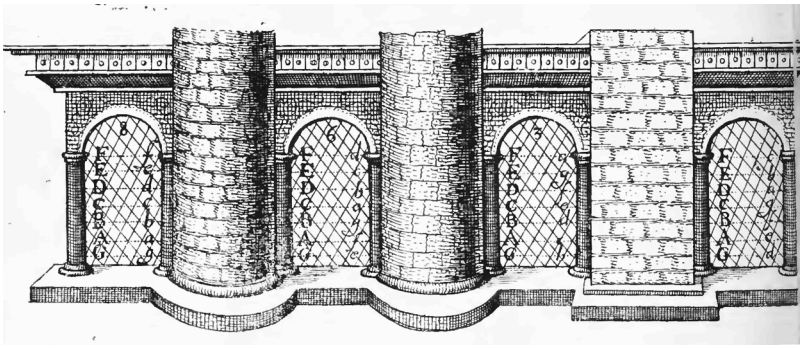

Figure 92 (*DUCH* I, ii, p. 222)

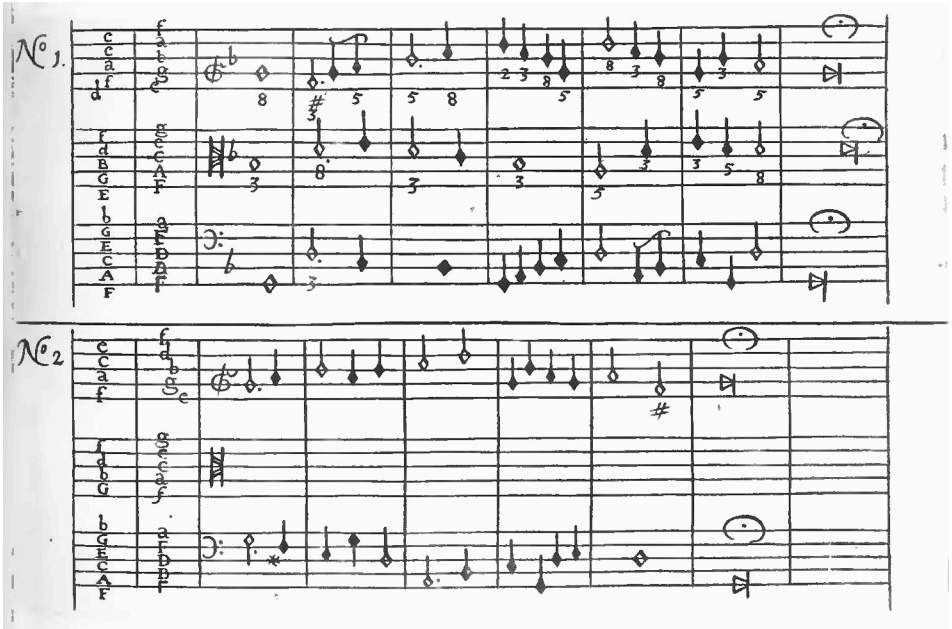

Figure 93 (*DUCH* I, ii, p. 223)[90]

[88] Note the differentiation between concordance (*concordantia*) and consonance (*consonantia*). See Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, p. 273, n. 6, and p. 274, n. 9.
[89] Ibid., p. 278, n. 46.
[90] These musical examples have been transcribed, and their errors amended, in Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, pp. 168-169.

The *De templo musicæ* includes a *liber* on organology too: this is the sixth one, and it is titled *De instrumentis musicis vulgariter notis* (On the commonly known musical instruments).[91] The prince of the instruments is the lute (or *barbiton*); this is clear from the left tower of the *templum musicæ* where, below the monochord, there is a representation of that great instrument, reproduced in a slightly different form in the first page of the *liber*. This is the instrument that is surveyed in greater detail, with accounts of both French and Italian tablature.

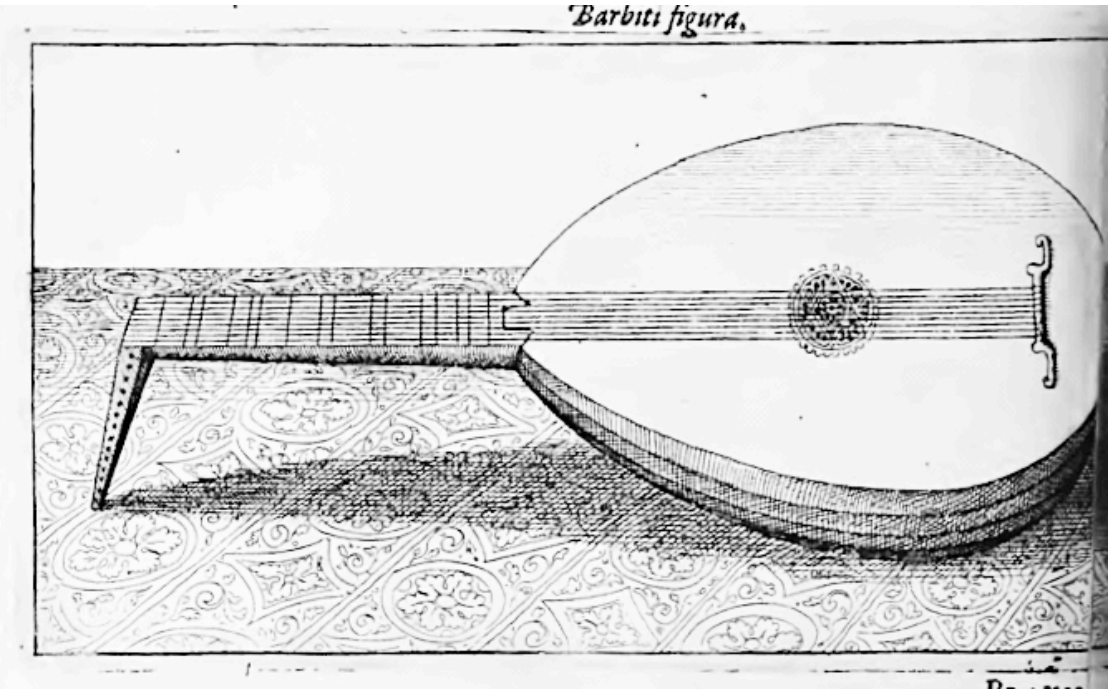

Figure 94 (*DUCH* I, ii, p. 226)

An interesting *capitulum* is about the transposition into different scales. Fludd employs a visual device that is actually a circle with all the details for the performer who wants to play a melody on all the steps of a scale.

[91] For a survey of this *liber* in particular see, together with the work by P. Hauge, J. Godwin, 'Instruments in Robert Fludd's Utriusque Cosmi... Historia', *The Galpin Society Journal*, 26, pp. 2-14 and, by the same author, 'Robert Fludd on the lute and pandora', *Lute Society Journal*, 15, 1973, pp. 11-19.

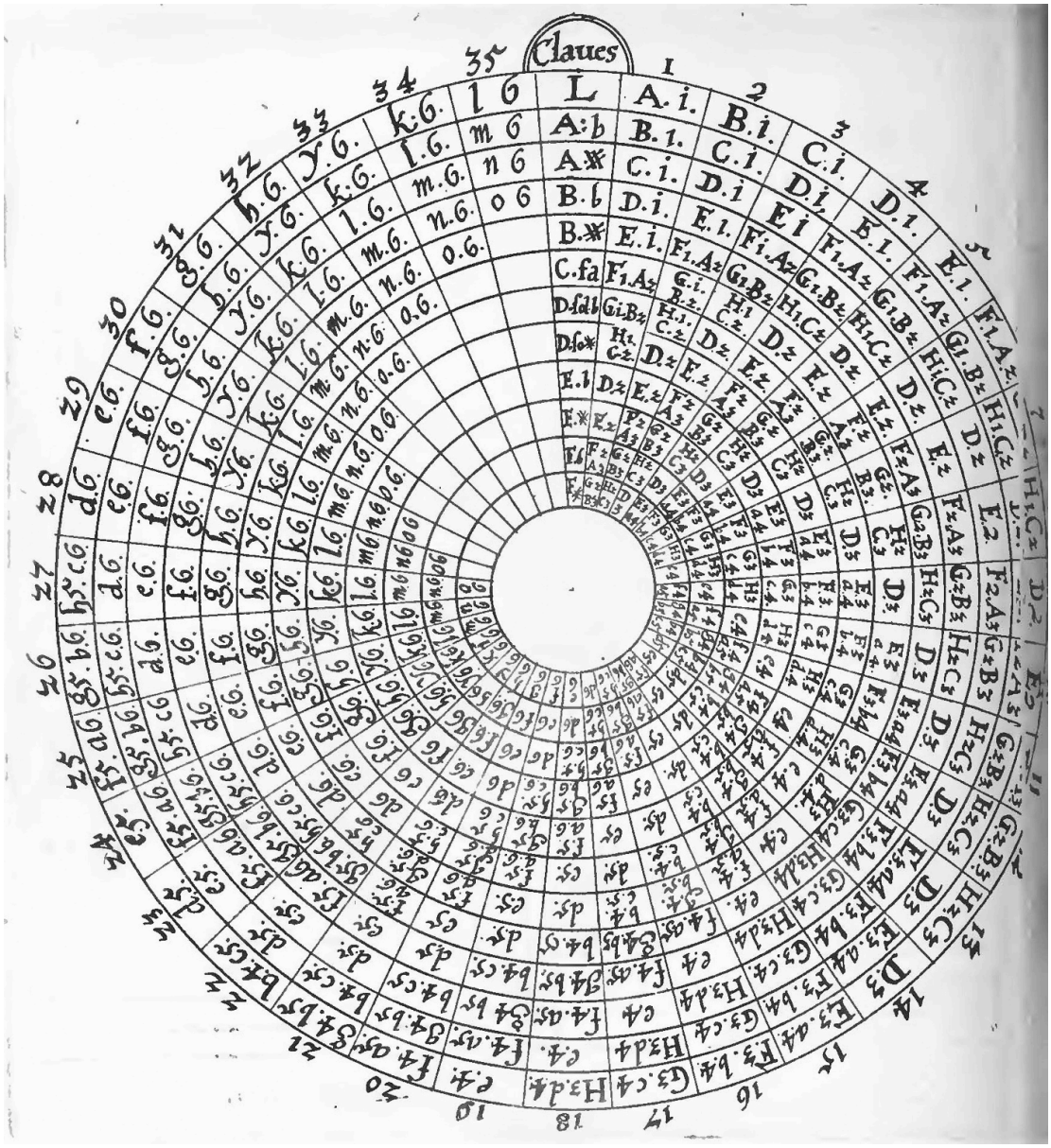

Figure 95 (*DUCH* I, ii, p. 232)

The depiction of this scheme is rather original for that time, even though Fludd might have been inspired, as Hauge suggests, by Joan Carles i Amat's *Guitarra española*, published in 1596, which presents a plate arranged in a way similar to the Fluddean one.

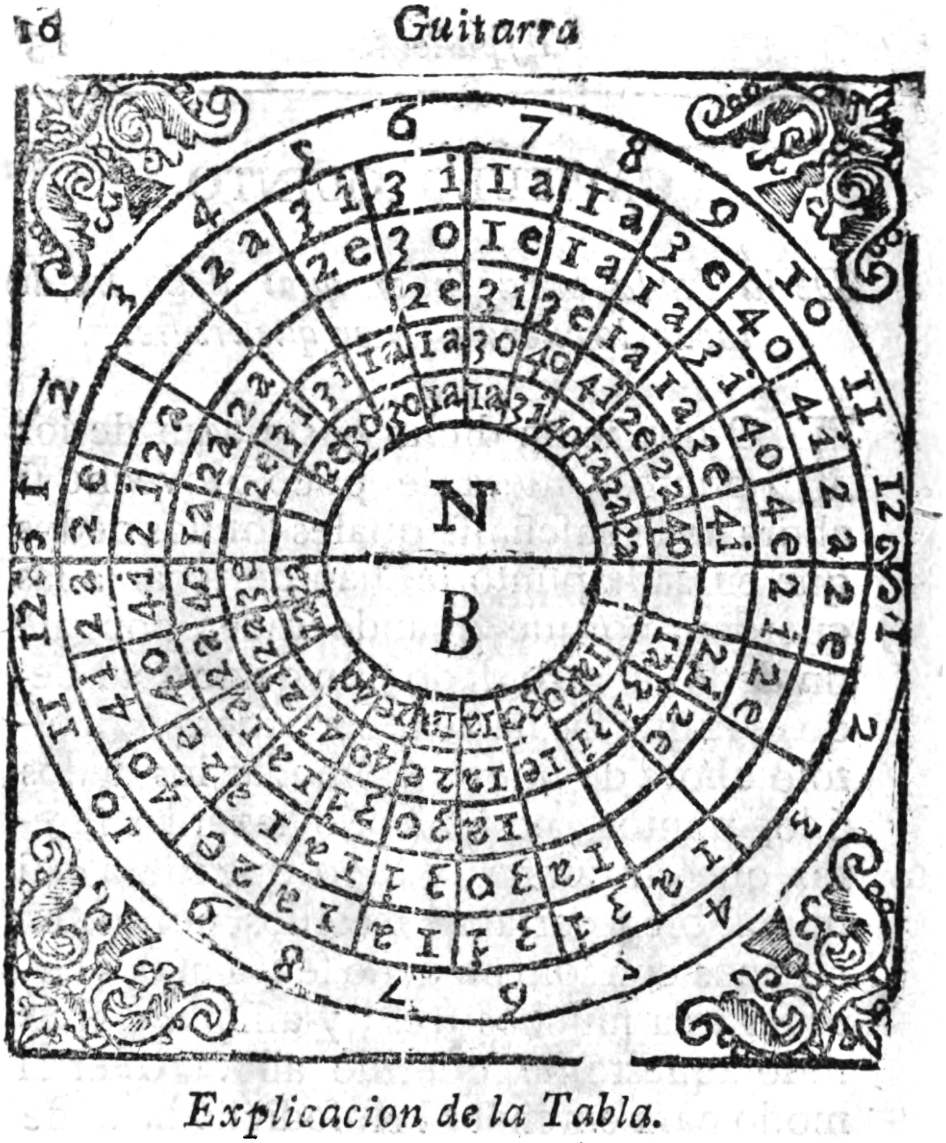

Figure 96 (J. C. i Amat, *Guitarra española*, p. 16)

Other instruments Fludd surveys in much less detail are the orpharion, the pandora,[92] the viol, and the cittern, while a few wind instruments are simply depicted and described very briefly. This *liber* ends with a section that, in a way, leads to the following and last *liber*. In fact, the last *capitulum* describes two instruments that have been recently invented. The first one is a xylophone built according to Pythagorean doctrine placing some dry wood-sticks in proportion with other ones. The second one is an invention by Fludd himself: a cylindrical tube with small bells differing in sound placed upon it, gradually descending thanks to the movement of the sand underneath it.

[92] As Joscelyn Godwin noticed, "Fludd is apparently unique in showing the Orpharion with frets at right-angles to the strings; and only he and William Barley show the Pandora constructed thus". See J. Godwin, 'Instruments in Robert Fludd's Utriusque Cosmi... Historia', *The Galpin Society Journal*, 26, 1973, pp. 2-14 (3).

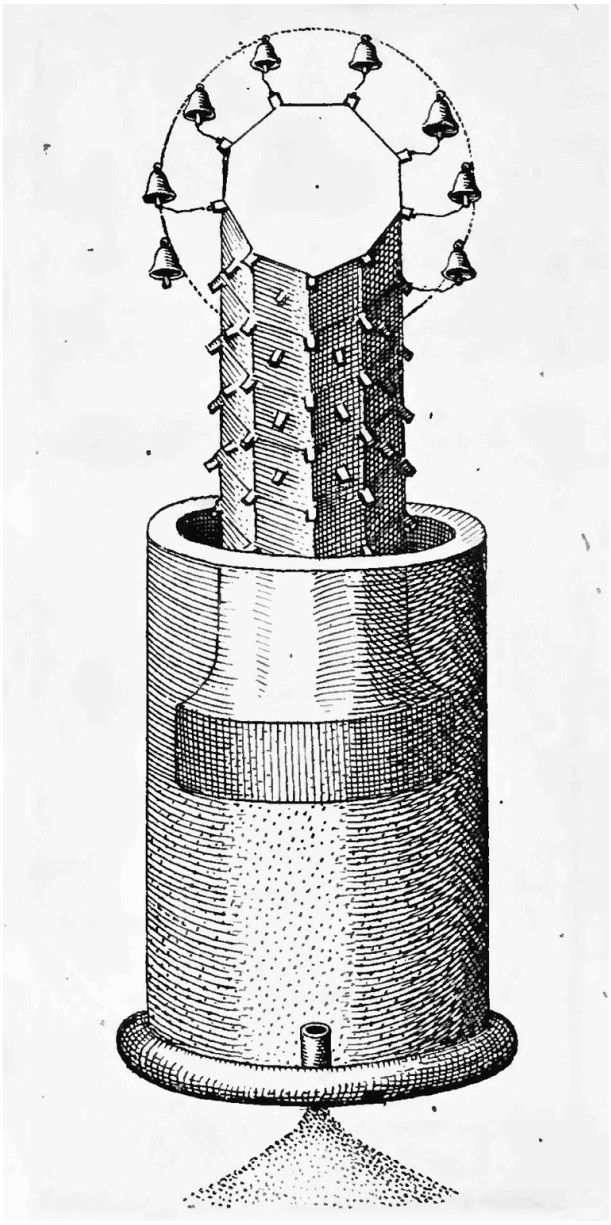

Figure 97 (*DUCH* I, ii, p. 244)

Fludd adds that the same principle might be used to build a clock which would play at a certain time of the day or the night.[93] But the greatest of the instruments, Fludd concludes, is the 'instrumentum nostrum magnum', his great instrument, which is described in detail in the following *liber*.

The most original *liber* of the *De templo musicæ* is surely its last; it is entirely dedicated to a brand new Fluddean invention and it is the only *liber* not represented in the façade of the edifice.[94] This is an automaton, a mechanical psaltery that allows one to play musical pieces without the aid of any human performer:

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[93] In *DUCH* I, ii, *pars* viii, *liber* iii (*De machina nostra horologica*), pp. 521-527, Fludd indeed describes a very similar clock invented by him, but this time moved by water and not by sand.

[94] Fludd devised many automated musical instruments, which he describes in *DUCH* I, ii, *pars* vii, *liber* iii (*De motu ex quatuor elementorum naturi generato*), pp. 469-491. On automata in Fludd's time, see A.

> [t]herefore, it will seem elegant and also quite pleasing and wonderful, to those dining or being present at a party, to hear unexpected music in a corner of the dining room without the presence of any moving living being, and through the greater part of the dinner or lunch to perceive a music piece composed of many symphonic parts and indeed sounding at the will of the master.[95]

This musical machine is structured as follows. To begin with, its sounding structure (*corporis sonantis structura*) is a psaltery, or harp, with two rectangular holes marked **A** and **B**.

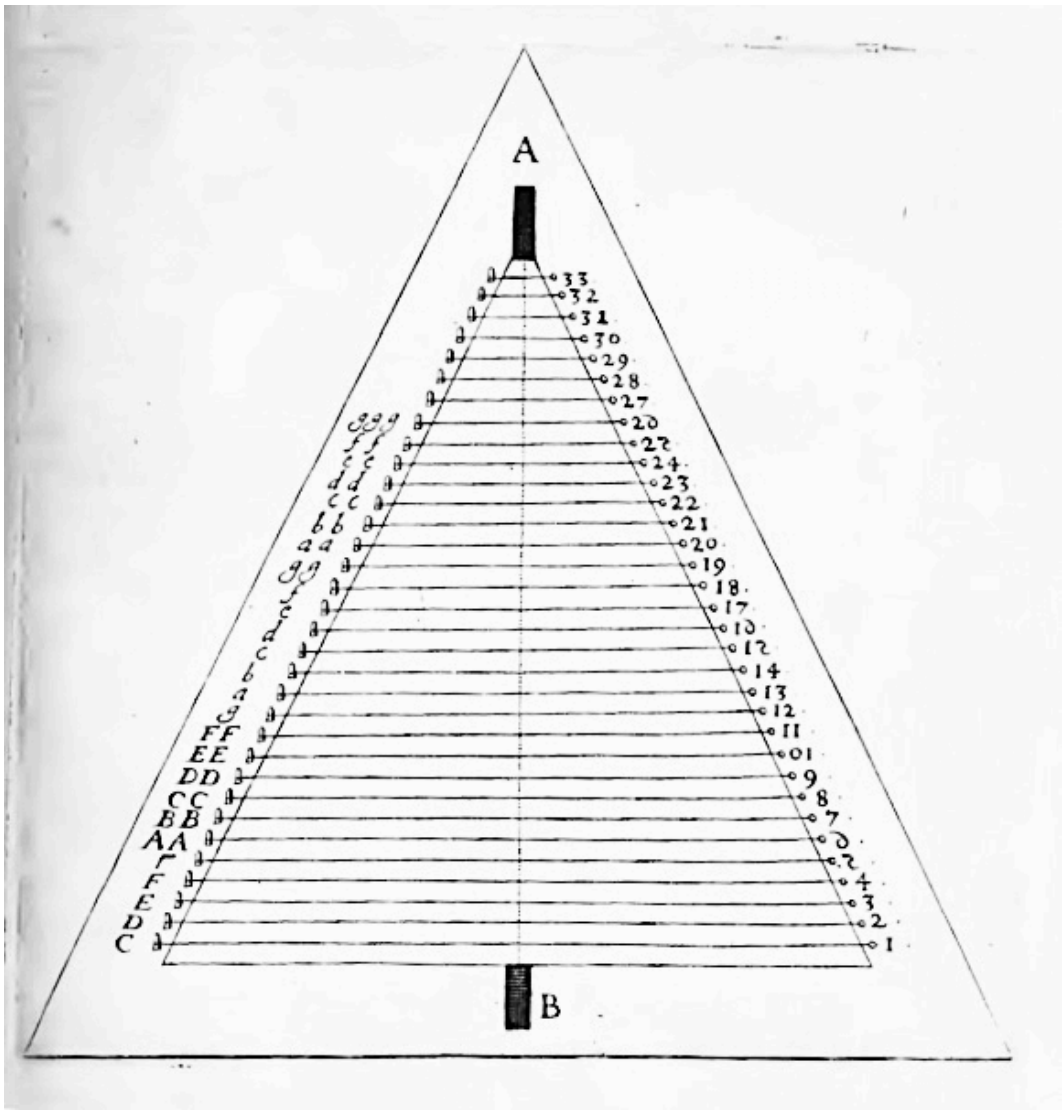

Figure 98 (*DUCH* I, ii, p. 247)

Marr, '*Gentille curiosité*: Wonder-working and the Culture of Automata in the Late Renaissance', in Evans and Marr (eds), *Curiosity and Wonder*, pp. 149-170.

[95] "Lautum igitur atque satis gratium et mirabile videbitur epulantibus, aut in convivio præsentibus, musicam inexpectatam sine præsentia alicuius animalis moventis in quodam triclinii angulo audire, et per majorem cœnæ aut prandii partem cantilenam ex multis partibus symphonicis conflatam, et quidem pro voluntate domini sonantem percipere". *DUCH* I, ii, p. 245. Translation in Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, p. 217.

The two narrow passages **A** and **B** need to be arranged in such a way as to let the second part of the instrument slide into them; this is the *fabrica cursoria*, a rectangular framework filled with a system of plectra arranged in precise pattern through its wooden sticks. These, thanks to the movement of the frame, will pluck the strings, thus allowing the psaltery to play the 'score' that has been 'written' on the sticks with the positioning of the plectra.

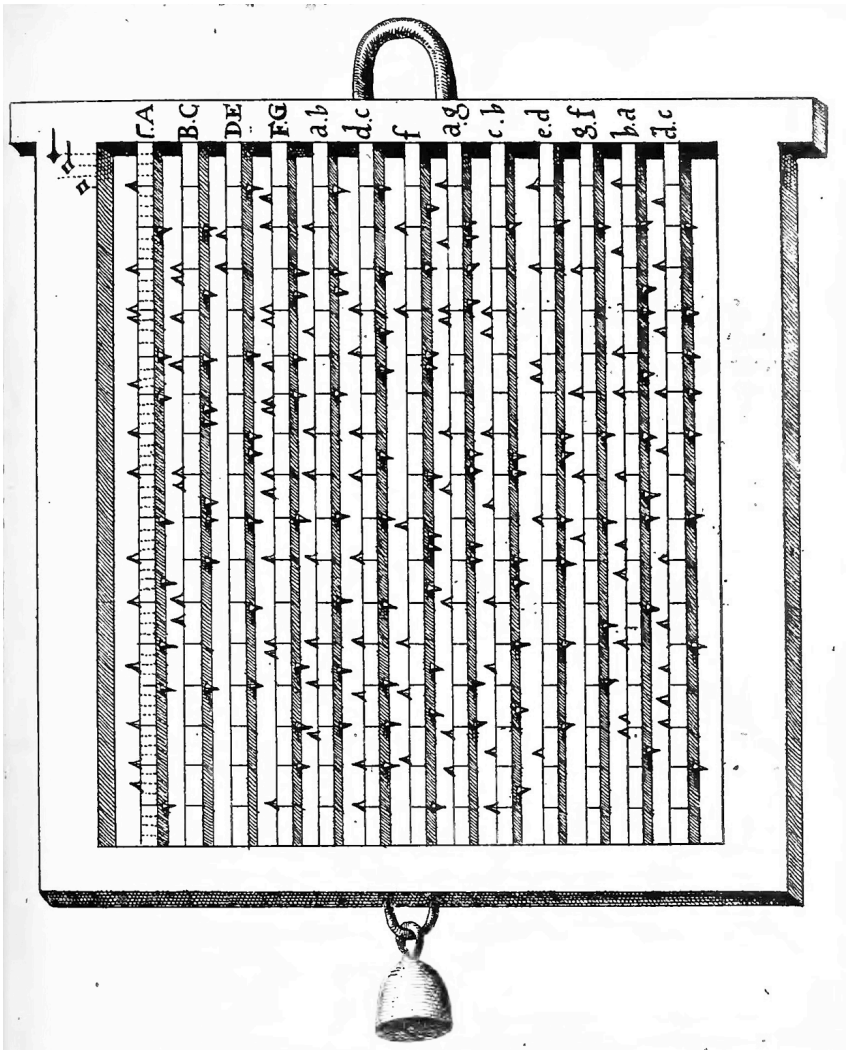

Figure 99 (*DUCH* I, ii, p. 249)[96]

Lastly, the third part of the great instrument is the mover of the running structure. This is a system of gears, which allows the rope attached to the *fabrica cursoria* to go up and down. The overall instrument, then, looks like this:

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[96] I have transcribed into modern notation part of the piece of music that is supposed to be 'written' in this fretted frame; it apparently does not make much musical sense. Caroline Wilkins has composed a piece of music, entitled *Instrumentum magnum*, which includes a transcription of this music. Nevertheless, Wilkins' work presents a few inaccuracies; for instance, she interprets the first note from the left-hand side as an *F*, while it is actually a *Γ*, i.e. the lower *G*; and her 'graphic reduction' follows only loosely the position of the plectra in Fludd's plate. See C. Wilkins, 'Instrumentum magnum', *Contemporary Music Review*, 19, 4, 2000, pp. 129-138.

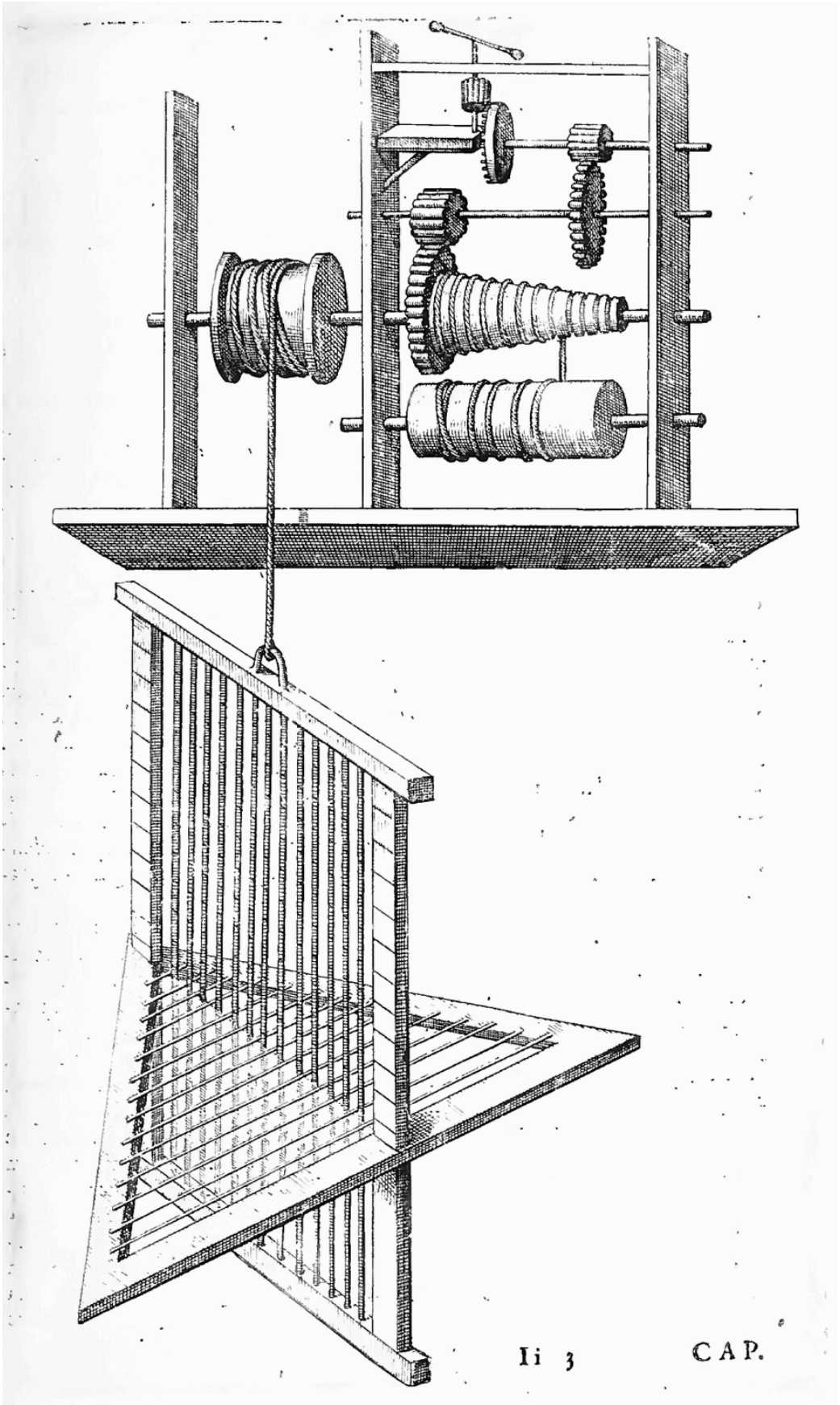

Figure 100 (*DUCH* I, ii, p. 253)

The last part of the dissertation on this *instrumentum magnum* gives instruction on how to adapt different musical compositions to this instrument and

how to arrange the plectra accordingly onto the sticks of the *fabrica cursoria* for the bass, the tenor, the countertenor and the *discantus*. In a typical Renaissance fashion, Fludd dedicates a *capitulum* on giving instructions about how to hide this instrument from the eyes of the listeners, in order to generate marvel and a sense of wonder. This element is to be found for instance in G. Battista Aleotti's *Gli artifitiosi et curiosi moti spirituali di Herrone* (1589) and *Les raisons des forces mouvantes* (1615) by Salomon de Caus.[97]

The *De templo musicæ* is the one and only tractate Fludd dedicates to the *musica instrumentalis*. As I have shown in the previous chapter, it is a treatise that is part of the *tractatus* on the liberal arts and *scientiæ*. For Fludd, the real natural philosopher must master all of them, including the *musica instrumentalis*, since it is the shadow of the much greater *musica mundana*.[98]

IV.v The harmony of body, spirit, and soul (1619)

If it is true that Fludd respects the Boethian tripartite division of music, it is also true that he rarely refers to the *musica humana* as such. Moreover, if he has dedicated two separate treatises on the *mundana* and the *instrumentalis*,[99] the survey of the *humana* spans over more than one publication and it is not brought together into a single defined book.

As already seen in the previous chapter, *tractatus* i of *tomus* II is dedicated to the *integra microcosmi harmonia* (the complete harmony of the microcosm). I here give an account of its last two *libri*, which better represent Fludd's *musica humana*. The pyramidal *scientia* is, once again, the key to knowledge. This, combined with the

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[97] See Fludd, *'The Temple of Music'*, ed. and tr. by Hauge, p. 291, n. 36; and R. Strong, *The Renaissance Garden in England*, Thames & Hudson, London, 1984. On Aleotti's *De la musica*, a treatise on self-playing automatic organs, see K. M. Parke, *Engineering Music: A Critical Inquiry into Giambattista Aleotti's "De la musica"*, Ph.D. dissertation, University of California, Berkley, 2006.

[98] "I share them all with you, my friend reader, with pleasure and willingly, hoping that you shall accept my work with a cheerful and serene expression, for no perfect knowledge can be learnt or provided without the acquiring of knowledge of the liberal arts". (Hæc omnia [...] amice Lector, lubens volensque communico, sperans, te istum laborem meum hilari serenaque fronte accepturum esse, cum nullam perfectam scientiam sine artium leberalium cognitione acquiri aut comparari posse nemo non sciat). *DUCH* I, ii, p. 4.

[99] *DUCH* I, i, pp. 78-187 and *DUCH* I, ii, pp. 159-259.

Pythagorean knowledge of the mystical numbers, allows the metaphor of music to resound not only for the macrocosm, but for man himself.[100]

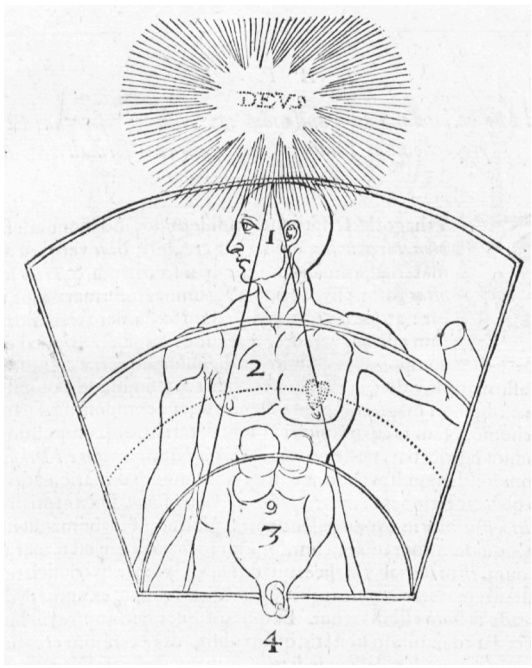

Figure 101 (*DUCH* II, i, *sectio* i, p. 240)

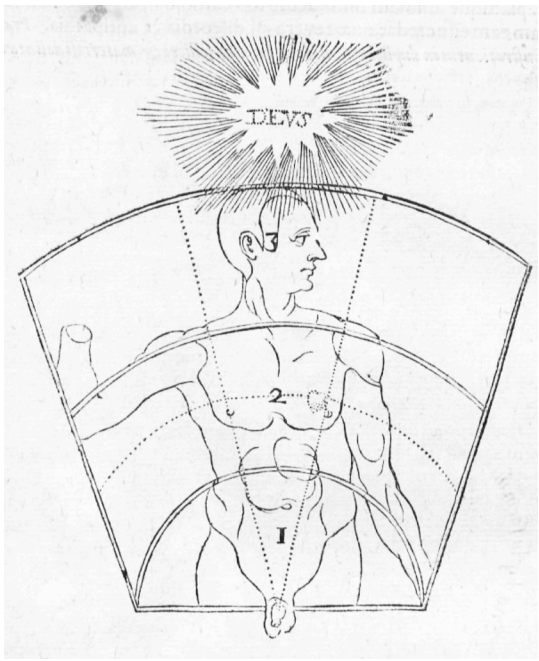

Figure 102 (*DUCH* II, i, *sectio* i, p. 241)

The plate on the left-hand side represents the ascension of the spiritual pyramid of the matter. Four parts of matter inhabit the pudenda, three the lower region, two the sphere of the heart and one the region of the head. There is then an interval of perfect octave between the top of the head and the sphere of the heart. In fact, the vital spirit of the heart is in double proportion (2:1) to the spirit in the mind. The vital spirit, in turn, generates a *proportio sesquialtera* (3:2) with the lower region, thus playing a *diapente*, or perfect fifth. The base of the material pyramid is in *proportio sesquitertia* (4:3) with the lower region: this means that a fourth resounds between these two parts.[101]

On the right-hand side one finds the opposite scenario: the numbers indicate the parts of formal light by which each region is characterised. God is pure form and therefore has 4 parts, the head has 3 parts, the heart 2 and the lower regions 1. The 'formal music' will therefore constitute a formal octave between the lower region and the sphere of the heart, a fifth between this last and the region of the head, and a

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[100] "We deduct, from the careful observation of the material and the formal pyramid that are found in man, this music". (Nos etiam ex diligenti pyramidum formalis et materialis inspectione, quæ in homine reperiuntur musicam invenimus talem). *DUCH* II, i, *sectio* i, p. 240.

[101] As I have already shown, given that the interval of a fourth is the less-perfect consonance, it is associated with things material and the lowest faculties; here Fludd makes no exception to this rule.

fourth between the head and the basis of the formal pyramid.[102] The end result is clear with the following plate, where the proportions between form and matter are presented together with the intervals between the regions of the microcosm.[103]

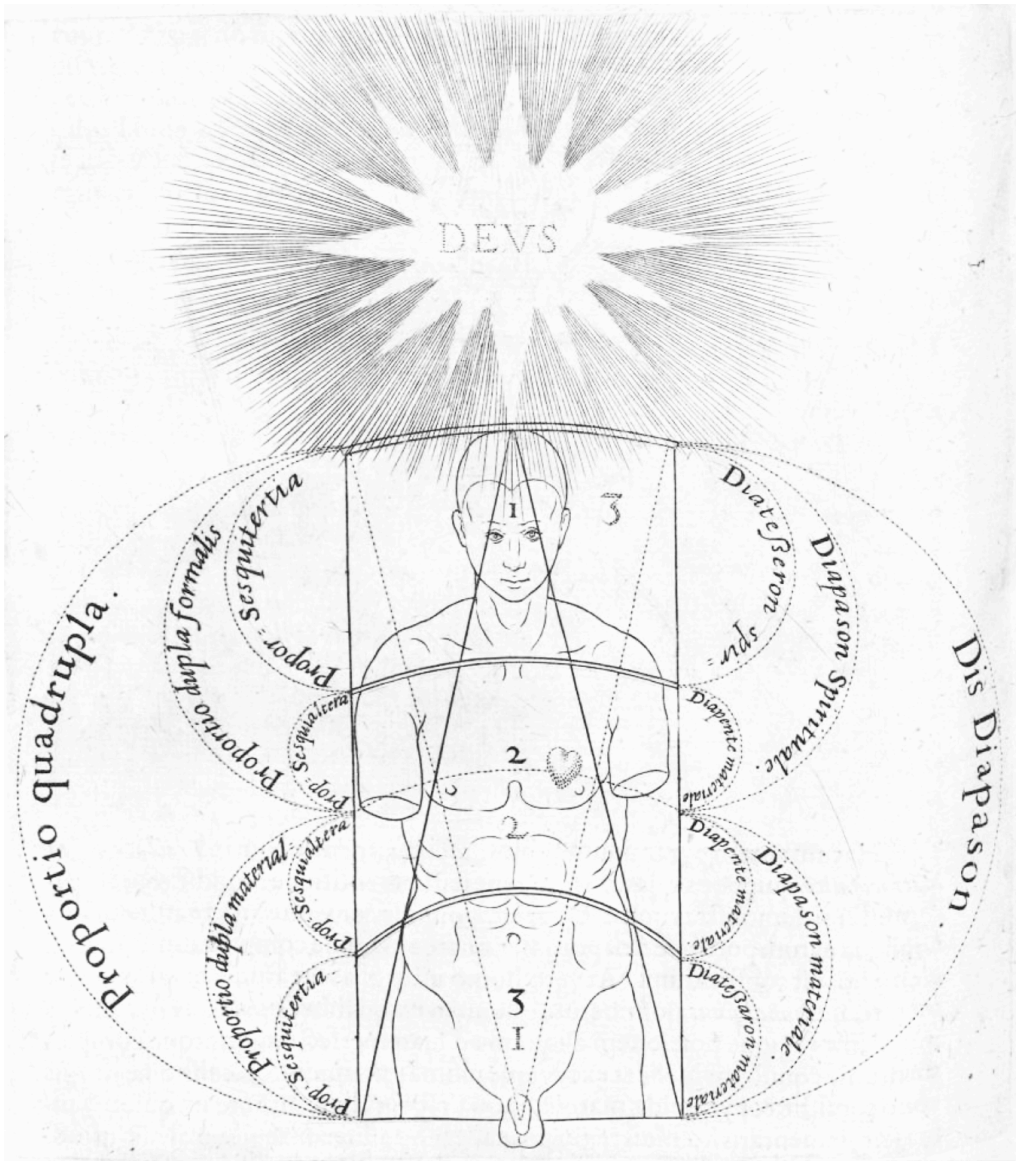

Figure 103 (*DUCH* II, i, *sectio* i, p. 242)

Now, if the succession of consonances one finds in the above plate is compared with that of the *monochordum mundi*, one can see that the pattern is still the same, thus presenting again the problem of the 'mirror in the middle', i.e. the succession, from the bottom, of fourth-fifth | fifth-fourth, and not fourth-fifth | fourth-fifth as one would expect. But, as I suggested above, this springs from Fludd's need to superimpose his pyramidal philosophy on the musical metaphor.

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[102] Ibid., pp. 240-241.

[103] The fifth between the heart and the upper chest should be termed *diapente spirituale* and not *diapente materiale*.

The similarity between the musical patterns of the above plate and the celestial monochord has a precise aim: showing that the musical structure of the microcosm is identical to that of the macrocosm. To understand one is to comprehend the other, and *vice versa*. When resounding with the material *diapason*, the soul moves towards all things material and evil; on the other hand, when resounding with the formal *diapason*, it moves towards things spiritual and pure.

Fludd is apparently not consistent in applying his *harmonia humana* to the human body. In fact, what I have just described is just the first of the two Fluddean *musicæ humanæ*, which is presented in the first *capitulum* of *liber* xii. In the remaining pages of the *liber*, Fludd describes a different musical structure of the microcosm: this is specifically labelled as 'musical melody between soul, spirit and body' (*symphoniaca inter animam, spiritum et corpus melodia*).[104] This time, the microcosm is divided into three octaves, each respectively corresponding with the abdomen, the chest, and the head. To the lower region is assigned the lower scale *Γ A B C D E F* (*bassus cantus*). The following octave *g a b c d e f* (*medius cantus*) pertains to the middle region. Lastly, the highest scale *gg aa bb cc dd ee ff* (*altus cantus*) relates to the highest region. Here again one finds the claim that the bass is the fundament of all the melodies build upon it.

> The main origin of this music is in the lowest region of the microcosm, even though its effect spreads throughout the whole structure of the human body. It has to be observed that this music puts in relation the natural harmony with the highest regions, in the same way as it happens in the common music, where we hear the bass indifferently resounding with the middle and high parts [...].[105]

In order to demonstrate his musical theory of the microcosm, Fludd uses four *demonstrationes*. The first one sees three pyramids employed, and not the usual two. The one at the centre, descending from the divine light, is the formal pyramid, corresponding to the soul. On the left is the pyramid of the body, and on the right the pyramid of the spirit. It is worth pointing out the distinction between soul and spirit of Ficinian memory, where the human body and spirit at one side are intermediated by the soul at the other.

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[104] Ibid., p. 243.

[105] "Atque huius Musices origo principalis est in infima Microcosmi regione; sed tamen harmoniæ eius effectus per universam fabricam humanam dispergitur atque disseminatur, et cum superioribus harmoniam naturalem non aliter movere observatur, quam in Musica communi sonus Bassi cantus cum sonis Medii atque Alti indifferenter resonare auditur [...]". Ibid., p. 244.

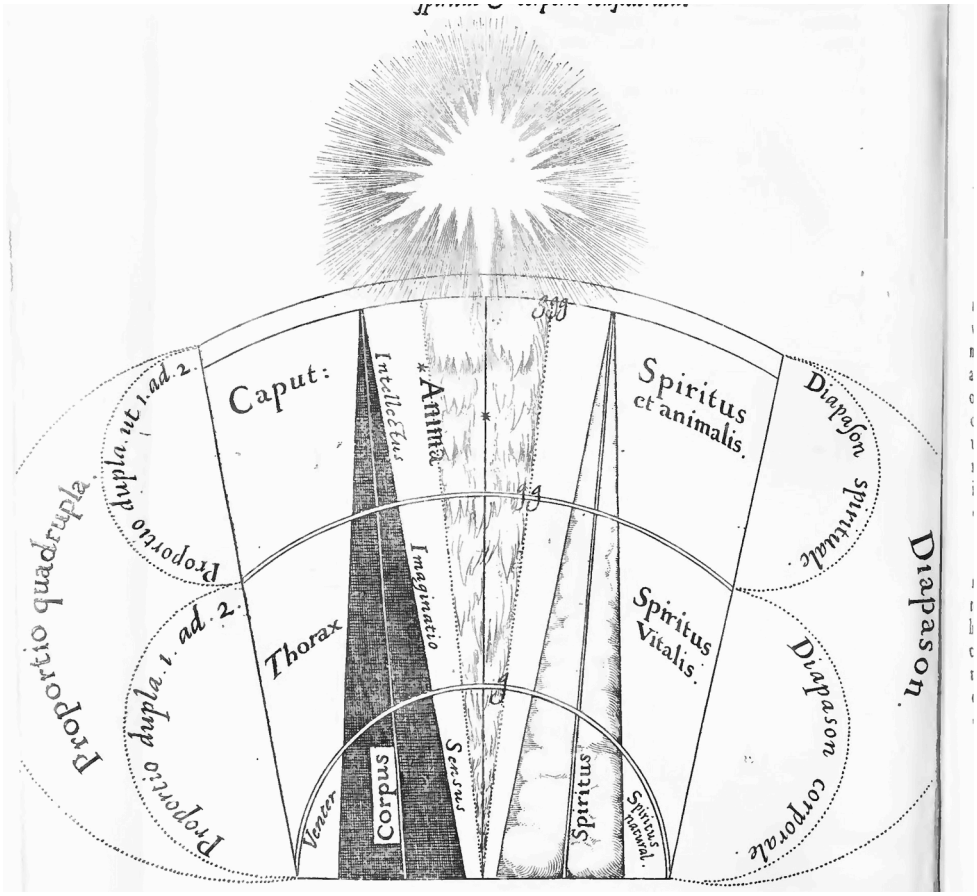

Figure 104 (*DUCH* II, i, *sectio* i, p. 248)

As I have already pointed out, Fludd's *musica humana* is not entirely consistent, being constituted of two octaves and three octaves at the same time. One can clearly see it here: whereas the spiritual octave shown in figure 103 runs from the heart to the top of the head, in this second *demonstratio* it sounds from the scalp to the top of the chest, and corresponds to the intellectual faculty (*rationalis*), as opposed to the *imaginatio* (*vitalis*), linked with the *diapason corporalis*,[106] and the *sensus*, the lowest octave. The first octave acts in the preservation of the flesh and the vegetative functions of the body; the second, in its vivification and movement; the third, in its conduct and direction (*directione*). These three 'melodies' constitute the Fluddean *musica humana*.[107]

In the second *demonstratio* Fludd compares the human body to a cube, since this is the geometric figure with three dimensions, thus the densest; the spirit to the square, which is two-dimensional; and the soul to the line.

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[106] This octave (i.e. *diapason materialis*), was the lower one of the two in figure 103, from the heart to the pudenda.

[107] "Thus, the whole music is made of three different melodies". (Atque ita musica completa ex tribus melodiis diversis constituta). Ibid., p. 244.

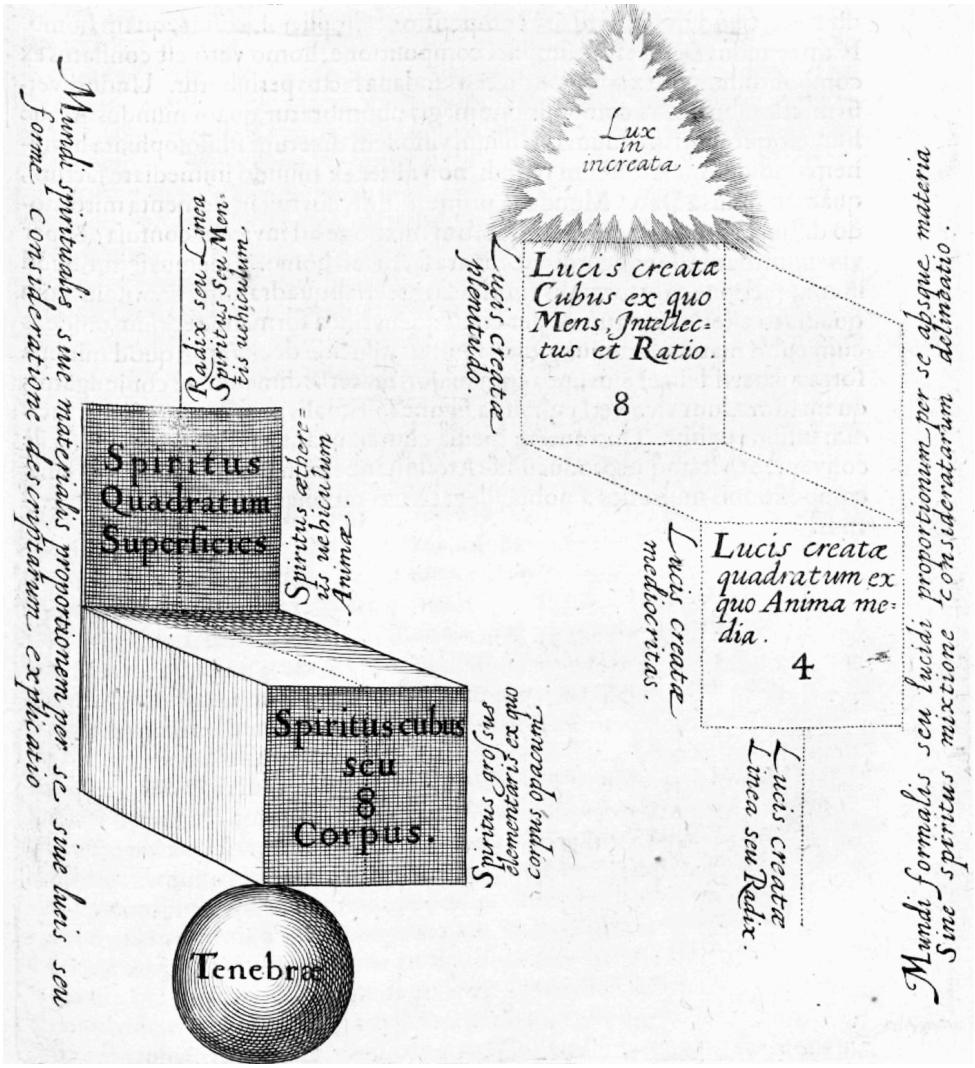

Figure 105 (*DUCH* II, i, *sectio* i, p. 251)

The proportion between the dot and the line is 1:2; likewise, between the line and the square there is a 2:4 proportion; finally, there is a 4:8 proportion between the square and the cube. All three proportions, when simplified, give the same ratio 1:2, i.e. the octave. This is applied, in the above plate, both to the psychic (*anima*) and the corporeal realms of the microcosm.[108]

If the first *demonstratio* entails the ternary number and the second the quaternary number, in the third Fludd proves that the harmony of the cosmos can be inscribed into the human body by means of the septenary. If in the macrocosm the note *Γ* corresponds to the Earth, which is the base of everything, in the microcosm the same note is linked to the intestines. If in the macrocosm *A* is assigned to the salted water of the sea, in the microcosm it corresponds to the urine. *B*, which in the macrocosm denotes the water descending from the mountains and running through rivers towards the sea, is associated with the *pituita*, which runs from the 'mountains

[108] Note, again, the grouping of spirit and body together as opposed to the soul.

of the microcosm' down towards the bladder. The complete associations between the musical notes and the macro- and microcosmic subregions are exemplified in the following plate.[109]

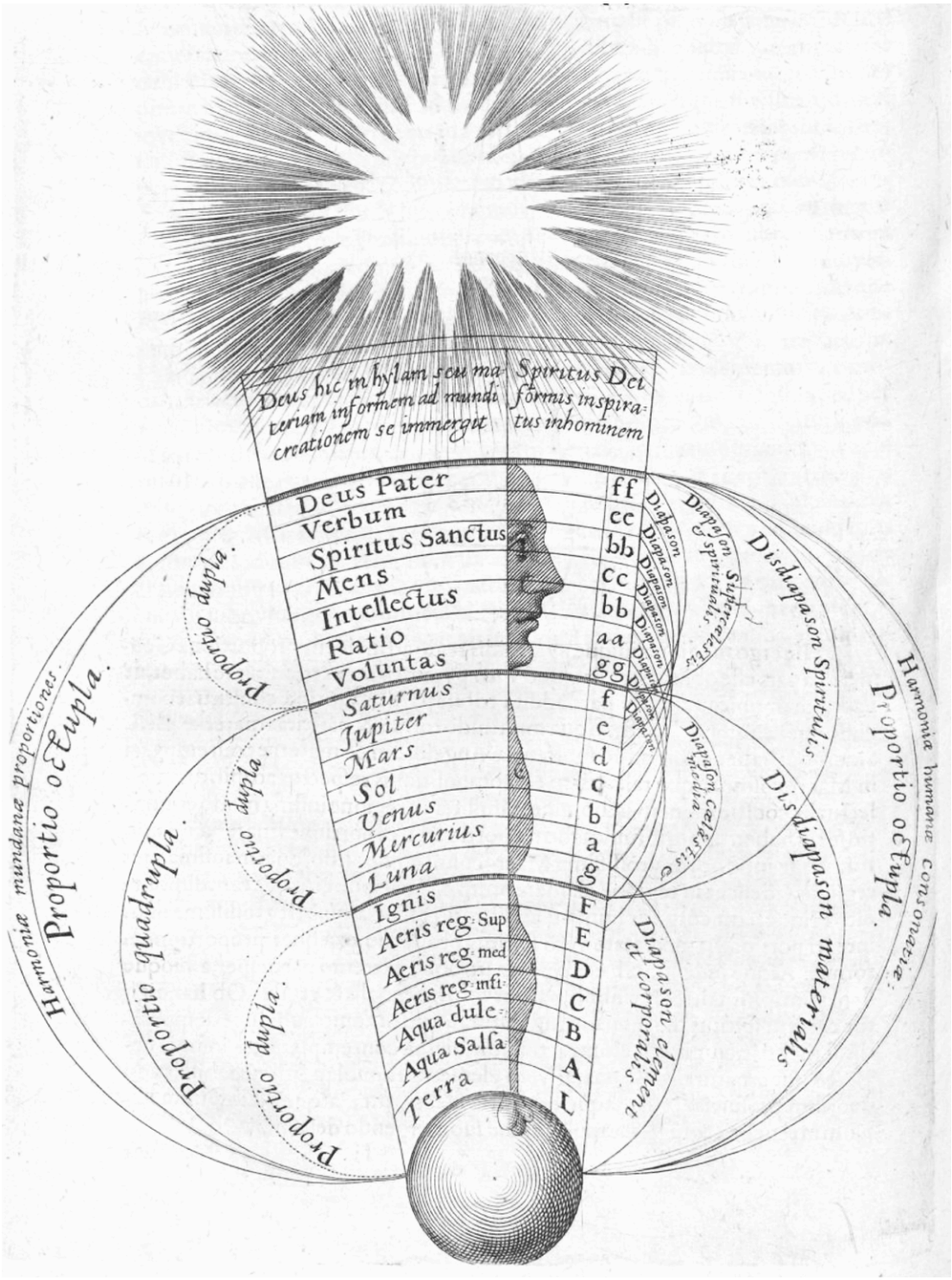

Figure 106 (*DUCH* II, i, *sectio* i, p. 254)

[109] The *diapason elementaris et corporalis*, in the lower right, comprehends a tone in excess; it should end at the separation between *Ignis* and *Luna*. Moreover, the lower note *L* should be *Γ*.

The *g*, which in the *monochordum mundi* was connected to the Sun, is now assigned to the Moon, while the Sun is the *c*. Indeed, it can be noticed the little *c* clef inscribed into the middle region, where the heart-Sun is. This new arrangement changes the internal intervals between the planets and the elements I have shown above regarding the celestial monochord. There, for instance, the Earth and Moon play a fourth; here, an octave; there, Earth and Sun play an octave; here, an octave plus a fourth; and so on. Mars, Fludd writes, plays an octave with the middle region of air, *D-d*; but in the description of the celestial monochord Fludd writes that this planet resounds an octave with the sphere of the water, which has opposite qualities to it.[110] This new musical pattern seems therefore to bring about a few issues to the Fluddean arrangement of the macrocosm, if not to that of the microcosm itself.

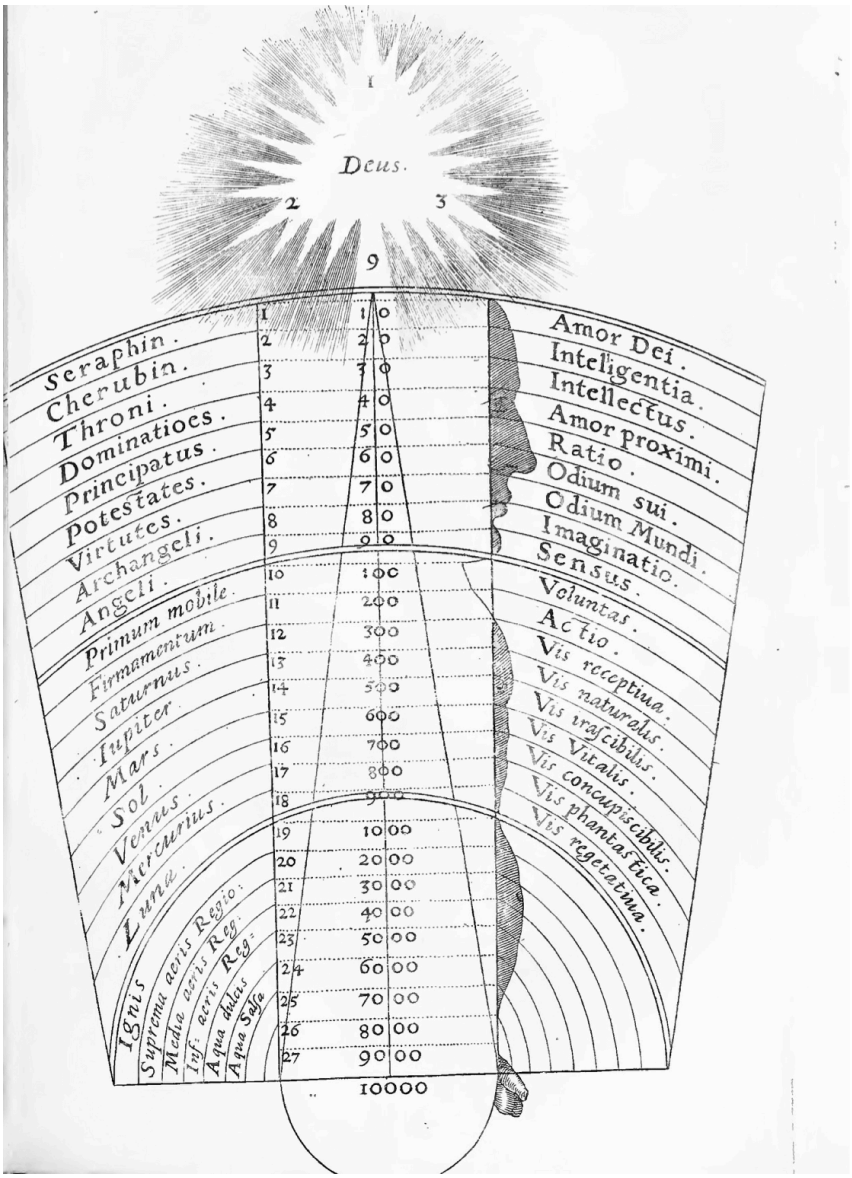

Figure 107 (*DUCH* II, i, *sectio* i, p. 259)

[110] *DUCH* I, i, p. 102.

The fourth *demonstratio*, finally, concerns the *nonary* system (figure 107). In fact, the octave is formed by a fourth (four *soni*) plus a fifth (five *soni*); therefore, their sum is nine. The three regions are this time subdivided into nine subregions. I have explained this numerology in the previous chapter of this dissertation. This plate is indeed very similar to that found in figure 16, with the difference that here Fludd connects it to the microcosmical realm, too. The numbers with two figures from 10 to 90 inhabit thus the region of the head; with three figures (100 to 900), the region of the chest; with four figures, the lower region. This plate shows the direct influence of the planets on some of the *facultates* in man. Thus, for instance, the Moon has power over the lowest impulses, and in fact corresponds to the Earth in the *cœlum elementare*. Mercury controls the imagination and genius; and so on.

With these four 'demonstrations' Fludd has surveyed his *musica humana* which hence becomes subdivided, as it were, into four subcategories: the ternary one, which pertains only to the soul; and the quaternary, septenary and nonary ones, which put in relation body, soul, and spirit with the macrocosmical regions. At the very end of *liber* xiii, and indeed of the whole *sectio* i of *tractatus* i of *tomus* I, one finds the synthesis of Fludd's *musica humana*. It is another monochord, which one could term *monochordum humanum*, and which resembles the *monochorum mundanum*, as Fludd himself wants it to be:

> [i]n fact, the semidiameter A-C of this string measures the tones and the semitones of the monochord, and generates proportions and symphonies similar to those found in the harmony of the cosmos.[111]

In the superior region of the microcosm the light of the first heaven, i.e. that of the mind enlightened by the divine light, always shines. In the middle region, the heart is full of solar light. And in the lower region, the liver is filled with fiery and aerial hotness.

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[111] "Cæterum huius chordæ semidiameter A. C. commensurat monochordi tonos cum semitoniis, proportionesque musicas reddit similes illis, quæ habentur in harmonia mundana". *DUCH* II, i, *sectio* i, p. 276.

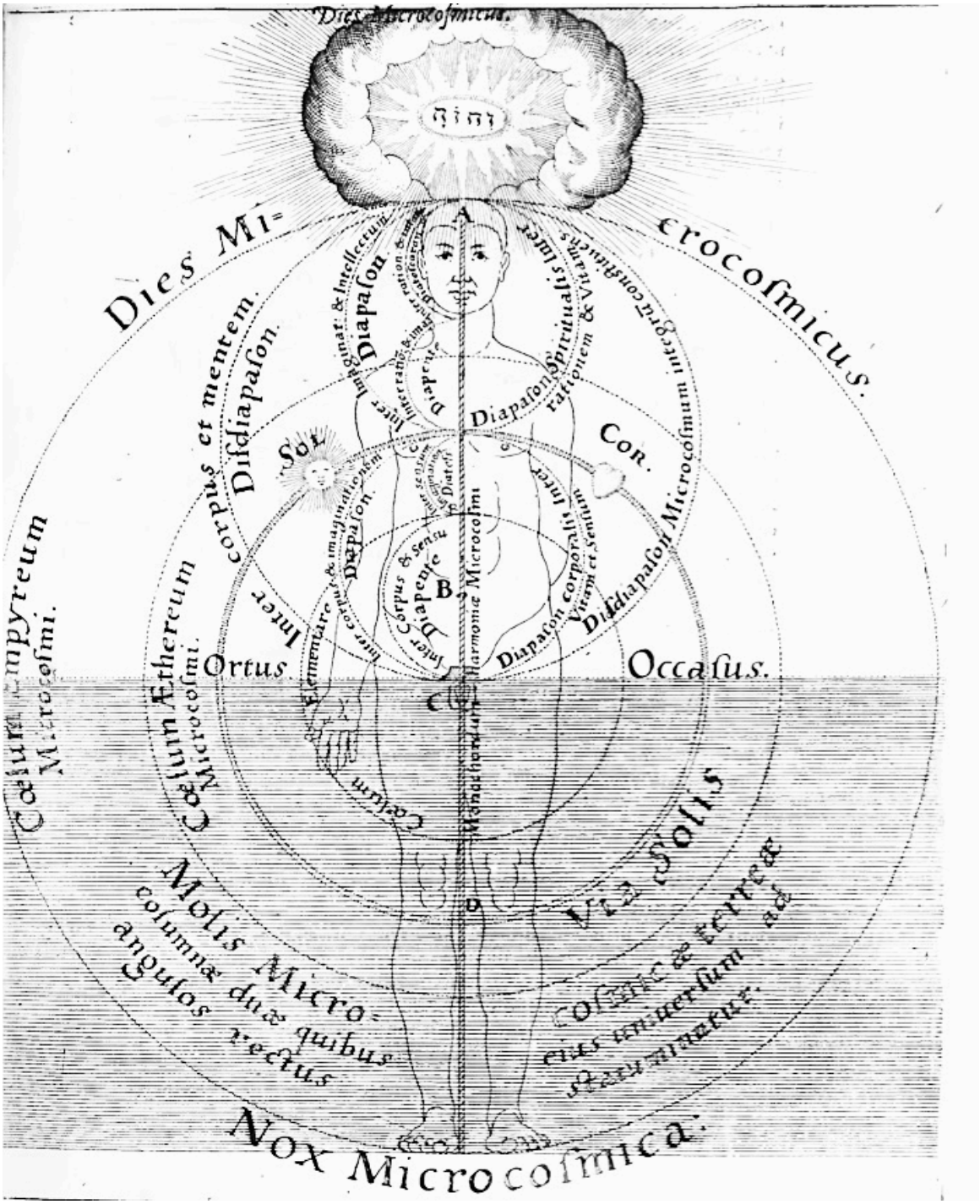

Figure 108 (*DUCH* II, i, *portio* i, p. 275)

The monochord, which the reader has previously encountered as associated with the *musica humana* and the *musica instrumentalis*, is lastly employed as a musical metaphor for the *musica humana* too, and makes it possible almost to *see* this universal music. As Fludd explains,

> [i]n this picture we see the miraculous harmony in which the two extremes, the most admirable and the meanest, are chained together and are in harmony; we see how the intermediary world spirit, the vehicle of the soul, is the tie which links the two extremes in harmonious peace and symphony and we see how God is the blower of *musica humana*, or the plucker of the string of the monochord, the inner principle which, from the centre of the whole, creates the consonant effects of life in the microcosm. The string which by its vibration spreads the luminous effects of the Inspirer through the macrocosm and microcosm as rhythms and sounds of love, as it were, is the luminous spirit which participates in the two extremes and which joins them together. This string equally denotes the system of notation, or staff, in man by which the soul descends from the higher spheres and reascends towards them after death, when the ties of the body, the meanest of all places, have been dissolved.[112]

IV.vi The music of the cosmos revised (1622)

As already mentioned in chapter I, Robert Fludd and Johannes Kepler gave rise to a controversy: in fact, though the concept of music of the spheres arranged by an almighty God was shared by both of them, they did not agree on how to use mathematics in order to prove it. Fludd was fond of his mystical-cabalistic numerology, since in his opinion it could better penetrate the real secrets of Nature. On the other hand, for Kepler the Fluddean speculations were nonsense, a poetical construction at best, and only a mathematical investigation based on the pure quantities could lead to a realistic picture of the cosmos.

In his second reply to Kepler, Fludd carefully revised his *monochordum mundi* and presented a redesigned plate for it. This second monochord has, unfortunately, received much less scholarly attention, and this is to a certain extent understandable, given its complexity and its being perhaps aesthetically less alluring. Nevertheless, it shows a Fludd accepting the challenge of discussing his ideas with one of the most eminent minds of all times. On the other hand, it sees no less a figure than Kepler carefully analysing and reacting to Fludd's musical theories. Ever a 'conservative' mystical alchemist, Fludd takes time and pains to make his musical theory of the

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[112] "Ex hisce igitur oculis quasi apertis contueri possumus admirabilem illam harmoniam, qua duo illa extrema, pretiossissimum scilicet et vilissimum ad invicem concatenantur, et sibi invicem consonant, et quod spiritus mundi intermedius, animæ vehiculum, sit nexus retinendi ipsa in concordi pace atque symphonia, et quod Deus sit musicæ humanæ sufflator, seu chordæ monochordii pulsator, seu principium internum, a centro quasi totius consonantes motus et vitæ effectus in Microcosmo producens. Chorda vero sua vibratione lucidos inspiratoris effectus, tanquam amoris accentus et sonos, per Macrocosmum et Microcosmum dispergens, est spiritus limpidus, qui naturaliter secundum suum situm et positionem participat de utroque extremo et utrumque extremum ad invicem connectit, similiterque systematis humani gradus seu claves delineat, quibus deorsum a superis in corpus sit descensus animæ, et e converso quoque eius ascensus ad superiora seu locum nobilissimum, post corporis interitum et vinculorum vitæ a corpore, loco nempe vilissimo, dissolutionem". Ibid., p. 275.

cosmoses clearer. The main output of this endeavour is a brand new celestial monochord, based on the same Fluddean philosophical and theosophical concepts but with the pretension to be – and to a certain extent it actually is – more precise and correct.

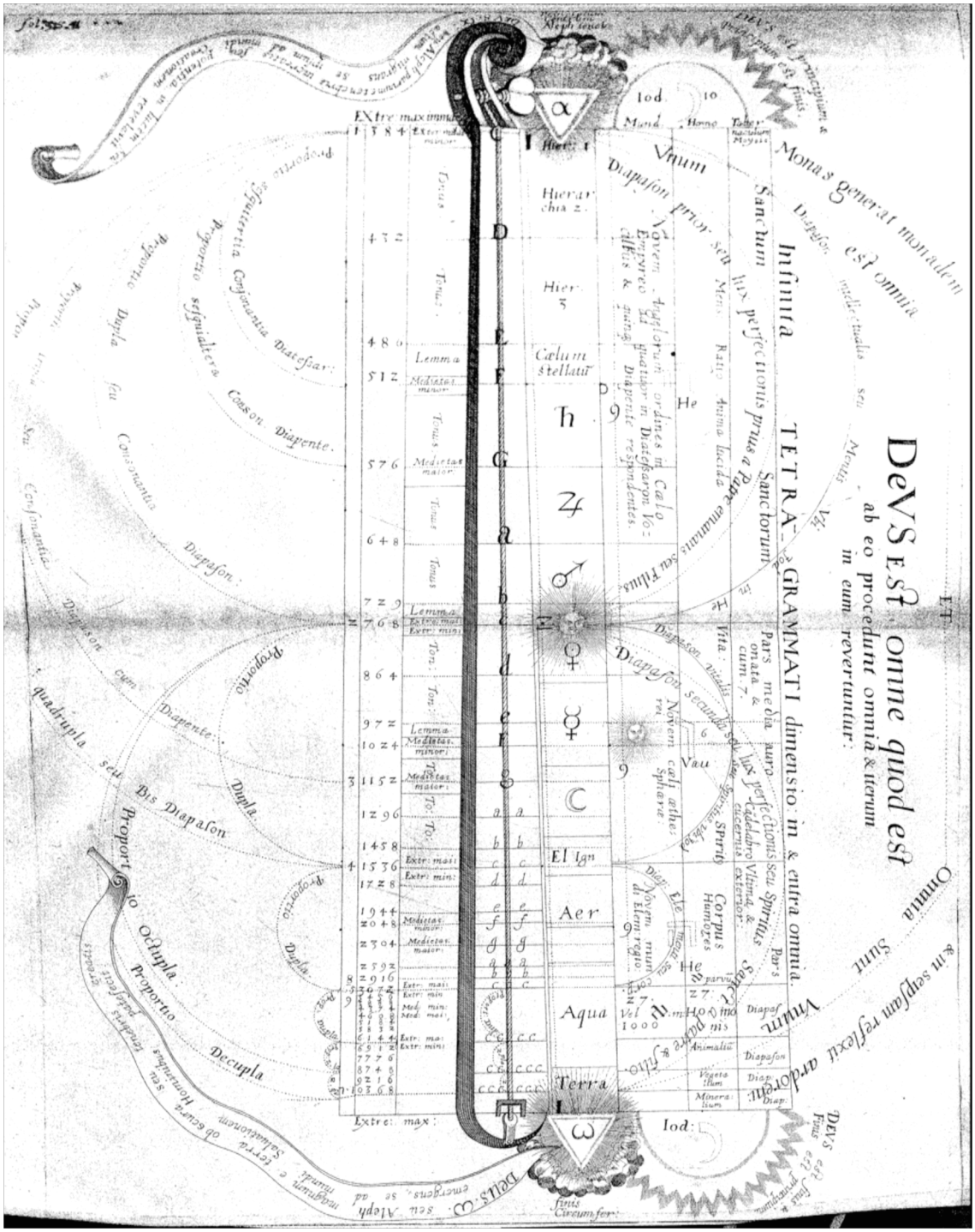

Figure 109: (*Monochordum mundi symphoniacum*, p. 315)

The main change that one can notice is the geometrically correct division of the octaves following the lowest one. In fact, as shown above, in the first celestial monochord the two octaves were of exactly the same length, which is not what

happens in a real monochord. Here, on the other hand, the second octave is half the length of the first, and the third octave is half of the second, and so on so forth. The explanation for this is, for Fludd, metaphysical rather than geometrical. In fact, the closer one gets to God, the purer and rarefied the air is, and consequently the length of the octave is bigger. *Vice versa*, the closer to Earth one gets, the shorter the length of the octave is, due to the increasing condensation of the matter and the lack of pure form. What an imaginative workaround Fludd managed to find in order to harmonise geometrical correctness with his metaphysical beliefs!

It should be noted that in this second celestial monochord the computing of the intervals begins from God, which now corresponds to the lowest note, and not from the Earth. Moreover, the musical scale is now rooted in *C* and not in *Γ*. It now follows a continuous sequence, thus without the mirroring at its centre which characterised the previous monochord and made it seem like two separate octaves each starting from the two extremities and ending in the Sun.

To the left of the string one can see the division of the monochord into tones and semitones. Next to them, the numbers with which Proclus integrated Plato's heptachord (1, 2, 3, 4, 8, 9, 27) in order to further subdivide it without using fractions.[113] The musical scale Proclus obtained, and which Fludd adopts, is the following:[114]

432:384 = 9:8	Tonus
486:432 = 9:8	Tonus
512:486 = 256:243	Semitonium seu Lemma
576:512 = 9:8	Tonus
648:576 = 9:8	Tonus
729:648 = 9:8	Tonus

The Platonic number 1 is equalled by Proclus to number 384, placed at the top of the second Fluddean celestial monochord, in order to mark the origin of the scale. The following octave, coinciding with the Sun, is marked with the Platonic number 2 and the 768, which is the double of 384, and so on.

On the right-hand side of the string are labelled the angelical hierarchies, the planets, and the elements. The first two regions (Empyreal and Ethereal) correspond to two octaves, while the Elemental region comprehends more than one octave. Three columns of a table extending from the top to the bottom of the monochord denote

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[113] Proclus, *In Platonis Timæon commentariorum Procli libri quinque*, Basileae, 1534.
[114] *Monochordum mundi symphoniacum*, p. 314.

respectively the correspondence between the musical notes and the macrocosm, the microcosm, and the tabernacle of Moses, sanctuary of God.

The whole monochord is based on the number 9. In fact, beginning with God, in the first column of the above-mentioned table one finds the first octave of the nine hierarchies of angels: this consists of the four notes of the fourth plus the five notes of the fifth. But, as one can notice, the octave comprehends under itself the sphere of the fixed stars, of Saturn, of Jupiter, of Mars, and the upper half of Sun's sphere. The second octave is labelled, macrocosmically speaking, as 'the nine spheres of the Ethereal heaven' (*novem cœli etherei sphæræ*); but this *diapason* actually encompasses the upper half of the sphere of fire, the Moon, Venus, Mercury, and the lower half of the Sun's sphere. Finally, in the Elemental region there are four octaves, the first of which resounds between the lower part of the fire's sphere and air, while the second and the third ones are both assigned to the water; finally, the fourth octave is allocated to the element earth.

In the second column of the table, the one concerning the microcosm, one finds the human faculties corresponding to the notes on the monochord. These are taken from Fludd's second *harmonia humana*, which I have explained above. Mind, reason and soul are linked together with the highest heaven; life is at the centre, where the Sun/heart is; spirit, bodily humours and the lower faculties follow as one gets lower and lower.

The third column is the most curious of the three. It relates the regions of the celestial monochord to places in the sanctuary of God.[115] The Empyreal heaven thus is connected with the *sanctum sanctorum*, i.e. the most sacred place of the sanctuary; the middle region with its middle part, decked with the seven-branched candleholder; and the Elemental region with the external part of the tabernacle.

At the top of the monochord, the α (or *aleph tenebrosum* א)[116] symbolises the beginning of everything in God; at the lower bottom, ω (or *aleph magnum* א)[117] marks the end, which is however a new beginning. In fact, as one can read in the upper part of the plate, "God is the beginning, and the beginning is the end" (*Deus est principium*

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[115] God gave to Moses, in the Mount Sinai, instructions on how to build this sanctuary. Thanks to it, the Israelites had a physical (and portable) place where the divine presence was guaranteed during their Exodus.

[116] "God, α, or the lesser aleph of the uncreated darkness, or potency, reveals himself for the world's creation by changing to light, or act". (DEUS α seu aleph parvum e tenebris increatis seu potentia in lucem seu actum migrans se ipsum ad mundi creationem revelati).

[117] "God, ω, or the greater aleph, emerging from dark earth or the created darkness, reveals himself to men for the salvation of the world". (Deus ω seu aleph magnum et terra obscura seu tenebris creatis emergens, se ad mundi salvationem hominibus patefecit).

et principium est finis). Likewise, in the lower part one reads "God is the end, and the end is the beginning" (*Deus est finis et finis est principium*).

Finally, the tetragrammaton connects the *monochordum mundi symphoniacum* with Fludd's previous Cabalistic writings.[118] The spiritual *yod* (י) pertains to God; *he* (ה) follows, assigned to the Empyreal plus the upper half of the Ethereal realms; then *vau* (ו) inhabits the lower part of the Ethereal region; the material *he* (ה) is assigned to the Elemental region. It all ends as it began: with the *yod* (י), thus closing the circle of divine emanations.

In conclusion, this revision of the Fluddean celestial monochord corrects some of the imprecisions of the previous one, especially the subdivision of the octaves and the coherence of the musical scale. But, as I have shown, it also introduces a few ambiguities, the main one being the labelling of the macrocosmical regions not corresponding to the actual angelical hierarchies/planets/elements marked in the monochord itself. But Fludd does not seem particularly interested in resolving these issues, and does not address them in the commentary to its monochord. His main interest is, rather, to prove that his mathematics is more dignified than that of Kepler, and can penetrate the deeper secrets of the two cosmoses.

In Fludd's eyes, his *monochordum mundi symphoniacum* was the summa of his philosophy as it had been developed until 1621.[119] And one has to agree with him, regardless of his scientific reliability. Unlike the first celestial monochord, the revised one contains all the basic elements of the complex Fluddean philosophy as they had hitherto appeared in print. The macrocosmical regions are linked with the microcosmical faculties; the tetragrammaton, carrying with itself a plethora of Cabalistic hidden meanings is there, applied to the two cosmoses. The Platonic numbers, as mediated and integrated by Proclus, are inscribed in the plate too, proving that the Fluddean philosophy is based on the divine numbers. All these elements are missing from the monochord published in 1617. One could say that, thanks to the controversy with Kepler, Fludd was forced to revise the structure of his cosmological monochord, taking the opportunity to include in it the basic elements coming from his later speculation on the *musica humana* and Cabalistic themes.

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[118] See *DUCH* II, ii, *sectio* i, analysed in the previous chapter of this dissertation.

[119] The second reply to Kepler is published in 1622 and republished in 1623, but from the date written at its ends by Fludd himself we learn that he finished writing it on the 9 December 1621.

IV.vii The last *musica* (1626-33)

Thanks to another controversy, this time with the French friar Marin Mersenne, one has the chance to test the consistency of Robert Fludd's musical philosophy over time. If the quarrel with Kepler ended up with a revision of the *monochordum mundi*, the outcome of the debate with Mersenne brings basically very little change to the Fluddean musical philosophy.[120] More than ten years had passed from the publication of the *libri* on the three *musicæ*, and the English physician is content to defend them, adding nothing new to his musical metaphor of the cosmoses. Unlike Kepler, Mersenne was mainly interested in theological issues, and music plays just a small part in his attack against Fludd.

One of the passages which is noteworthy in this context concerns the *musica instrumentalis* and comes from the second reply of 1633. Here Fludd states that

> I remain satisfied of the invention of my symphonic monochord and its use because it allows me to compose forty different parts over one single bass-part, and to sing any one of them. Some common musicians who ignore my method of composition say and believe that I am not skilled in practical music, but only in its speculation. But my friends know that this is not true, since I know that they, thanks to the use of that monochord, not only compose and write melodies, but write songs and adapt them to various musical instruments. I invented, following the laws of my monochord, a certain musical instrument with brass strings, by means of which I used to reproduce whatever harmony which presented challenging passages because of its flat and sharp semitones. And this instrument was not without the praise and approbation of eminent musicians, both French or Italian, at the court of the king of England. For this reason I am content with the exact and deep knowledge of my monochord, because thanks to it the mysteries of God and the macrocosmical and microcosmical Nature, together with those of vocal and instrumental music, can be demonstrated.[121]

Although some ill-informed people say that Fludd was only concerned with the *musica speculativa*, Fludd's closest friends know very well that this is not true. Indeed, he is actively involved in the practice of music: thanks to the use of 'his' monochord,

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[120] *Sophiæ cum moria certamen* (1629) and *Clavis philosophiæ et alchymiæ fluddanæ* (1633).

[121] "Attamen in Monochordi mei Symphoniaci inventione, eiusque usu sto ego contentus, quippe mediante quo, super unum cantum Bassum 40 partes, ab invicem sono exacte discrepantes, componere possum, et partem in arte Musica, quamlibet canere. Et quamvis aliqui Musici vulgares, viam meam componendi ignorantes, fronte prima, qua harmoniæ leges intuentur, dicant et credant, me in vulgari musices praxi non multum, sed in quadam duntaxat eiusdem speculatione versari; tamen eorum de me sententia, ab Amicis meis familiaribus cognoscitur esse admodum incongrua; quippe quos mediante Monochordi illius usu, nonmodo canere, et componere cantilenas scio; sed etiam cantiones sic compositas, variis Musices instrumentis adaptare. Imo vero Instrumentum quoddam musicum, chordis æneis ornatum, ipsius mei Monochordi directione conflavi, mediante quo harmoniam, utcunque compositione, propter semitoniorum acutorum et mollium in eo concursum difficilem, in illud conferre soleo: idque non sine Musicorum insignium, tam Gallicorum quam Anglicanorum, in curia Regis Angliæ versantium, approbatione atque commendatione. Quare mihi sufficiet exacta et interna Monochordi mei cognitio; quippe mediante ua, mysteria, tam Dei et Naturæ cum Macro- tum Micro-cosmicæ, quam cantus et compositions artificialis, demonstrari queunt". *Clavis philosophiæ et alchimiæ fluddanæ*, p. 29.

professional musicians not only sing and compose melodies, but transpose the musical parts in order to make them fit to other instruments. Moreover, Fludd claims he invented a musical instrument with brass strings that could reproduce difficult harmonies. This *instrumentum musicum* had been praised by important musicians from France and England at the court of James I. This is likely to be the *instrumentum magnum* described in the *De templo musicæ*. Though Fludd wrote that he was "content with the exact and deep knowledge" deriving from his monochord, the volumes he published starting from the year 1623 tell another story. Fludd refers to instruments and compositional devices he described many years before. Moreover, here he is replying to Gassendi's analysis of his philosophy, in which he mentions Fludd's monochords. Therefore it is hardly surprising that the proud Fludd would strengthen his position about the validity of this instrument, without at the same time adding anything substantial or prolong his exposition.

In this chapter I have shown how music is at the core of the philosophy of Robert Fludd. Nevertheless, as I have already suggested in chapter III, it slowly fades into the background over the course of his career, in order to give way to more specifically medical speculations. The bases of the Fluddean speculation on music are first explained in his *Tractatus apologeticus* (1617); there one finds a first general account of the *musica mundana* and the pyramidal *scientia*. A complete examination of Fludd's celestial music is to be found, published in the same year, in the third *liber* of the first *tomus* of the *DUCH*, where the first great *monochordum mundi* is presented. In the following year, 1618, the *De templo musicæ* is released as part of eleven treatises on the liberal arts. It is a treatise with many medieval aspects, especially in the first four *libri*, but which presents at least two interesting elements: the use of the bass as the fundament of the harmony, and the invention of a new instrument able to produce music without the help of a musician.

The third Boethian kind of *musica*, the one concerned with man, is addressed in 1619. In this chapter I have surveyed the most significant writings on the subject; the Fluddean *harmonia humana* in fact spans many pages and, indeed, a whole *sectio* (*DUCH* II, i, *sectio* i). After the year 1619 other subjects would pervade the publications of Fludd, even though his pyramidal theory and the musical-numerological foundation of his philosophy remain, more or less silently, in the background.

Further developments on the *musica mundana* occur thanks to the dispute with Johannes Kepler. In fact, in *Monochordum mundi symphoniacum*, printed as a quarto-edition in 1622 and republished the following year bounded with *Anatomiæ amphitheatrum*, Fludd revised his first celestial monochord, correcting some of the imprecisions and adding more details coming from his recent speculations. As I have shown, this revision brings about new issues, which seem to be left unresolved. The debate with Mersenne sees Fludd content to defend his thesis explained in the previous publications without adding anything substantially new and referring Mersenne to his previous tracts on music. Noteworthy, though, is a quick mention of the monochord; it concerns its practical application with a subtle reference to the *De templo musicæ* and the 'instrumentum magnum', without any other reference to musical speculation.

Leaving aside the two above-cited main controversies which spurred Fludd to dive further into his musical philosophy (but which were not planned in, and are not part of, his *magnum opus*), the medical writings, and in particular the investigation of the meteors and their causes, would absorb the English physician from the year 1623 (*Anatomiæ amphitheatrum*) onwards, leaving less room (if any) for the pure musical speculation which characterised the first volumes. Fludd was becoming more and more the physician dedicated to the microcosm and the investigation of its illnesses and cures. The weather-glass, first introduced in 1626,[122] started to be employed more frequently as a metaphorical and epistemological tool by the English physician, almost replacing the divine monochord. Finally, when in 1631 his treatise on the human heartbeat sees the light of day, the two worlds – music and medicine – are joined together. The weather-glass becomes the instrument thanks to which the health of the patient can be measured through the use of musical analogies, thus originally becoming a sort of 'medical monochord' in the hands of Robert Fludd.

[122] As I have shown in the previous chapter, though, its principle had been described as early as the first pages of the *DUCH* (1617).

V. The weather-glass and *musica* in Fludd's later writings

This chapter will mainly explore Robert Fludd's treatise on the heartbeat, the *Pulsus, seu nova et arcana pulsuum historia* (1631), and has the purpose of showing an original example of application of music as a metaphor to the microcosm. The relevance of this treatise has been hitherto underestimated, and it is mainly remembered just for its mention of Harvey's work:

> Robert Fludd (1574-1637), a prominent Rosicrucian, wrote a treatise on the pulse in which many of the ancient authors are quoted. It is replete with Biblical references and Rabbinical lore. However, its chief interest lies in the fact that it contains the first printed mention (1630) of William Harvey's *De motu cordis*.[1]

This is what Emmet Field Horine wrote in 1941; to the best of my knowledge, this is one the first mentions of the *Pulsus* in academic research. Not many steps forward have been done since then, except the valuable contributes by Pagel and Debus, who gave insights on the Harvey-Fludd connection and the weather-glass.[2] More recently Rösche described the Fluddean 'Spirituelle Kardiologie' in his monograph on Fludd.[3] Nevertheless, Rösche gave only a superficial and incomplete context of the pulse lore and its relation to Fludd, limiting his account to the sole description of the content of the treatise.

The above-mentioned exceptions left apart, Fludd's *Pulsus* is still remembered, if mentioned at all, because of its endorsing of Harvey's pivotal work. I am much indebted to the research of Pagel and Debus, though there is still something to add to their investigation. If one turns to the musicological field, the *Pulsus* is barely mentioned in the context of studies related to music. Yates, Ammann, Gouk, Godwin, Gozza, and Hauge, all focused on the *De utriusque cosmi historia* and on the polemics Fludd-Kepler/Mersenne, and went rarely beyond these. Even studies on the 'music of the pulse' often – and surprisingly – ignore Fludd or, at best, treat him insufficiently.[4]

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[1] E. F. Horine, 'An Epitome of Ancient Pulse Lore', *Bulletin of the History of Medicine*, 10, 1941, pp. 209-249 (230).

[2] Pagel, 'Religious Motives'; *William Harvey's Biological Ideas*, New York, 1967; 'William Harvey Revisited', *History of Science*, 8, 1969, pp. 1-31, and 9, 1970, pp. 1-41; and *New Light on William Harvey*, Basel, 1976. A. G. Debus, 'Robert Fludd and the Circulation of the Blood', *The Journal of the History of Medicine and Allied Sciences*, 16, 1961, pp. 374-393; and 'Harvey and Fludd: The Irrational Factor in the Rational Science of the Seventeenth Century', *Journal of the History of Biology*, 3, 1970, pp. 81-105; and 'Key to Two Worlds', pp. 109-144.

[3] Rösche, *Robert Fludd*, pp. 448-459.

[4] A few examples: N. G. Siraisi, 'The Music of Pulse in the Writings of Italian Academic Physicians', *Speculum*, 50, 4, 1975, pp. 689-710; D. Bonge, 'Gaffurius on Pulse and Tempo: A Reinterpretation',

I argue that the close survey of the *Pulsus* can unveil a treatise with original musical features, and also suggest that such a treatise worked as a 'signpost' in the journey from the monochord to the weather-glass at which I have hinted in the previous chapters.

I shall also give a short account of the very last publication by Fludd, *De philosophia moysaica* (1638) and its English translation *Mosaicall Philosophy* (1658). Thanks to both the analysis of the *Pulsus* and Fludd's posthumous publications I shall be able to clearly show the development I already have hinted at in the previous chapters: the affirmation of the weather-glass as metaphorical tool *par excellence* and the fading out of the monochord, for the benefit of other 'philosophical' experiments such as, for example, the weather-glass itself and the observation on the nature of the magnet.

V.i *Musica* and heartbeat in the *Pulsus* (1631)

Fludd's *Pulsus*, a one-hundred-page exposition on a subject with a very long tradition (a 'pulse lore' which I shall briefly describe in its main moments), allows us to obtain important information on the development of Fludd's philosophy. The most striking feature of the *Pulsus*, hitherto overlooked by previous scholars, is the 'return' of the monochord after several years of absence from Fludd's pages. This pivotal point in Fludd's philosophical path could not have been noticed without the chronological analysis of the Fluddean output which I have carried out in chapter III and the survey of Fludd's *musica* in chapter IV.

Moreover, the Fluddean account on the music of the pulse is, to my knowledge, the first treatise of that kind written by an Englishman ever to appear. The speculation on the subject started in ancient Greece with Herophilus, was diffused by

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Musica Disciplina, 36, 1982, pp. 167-174; L. Holford-Strevens, 'The Harmonious Pulse', *The Classical Quarterly*, 43, 2, 1993, pp. 475-479; J. Prins, 'The Music of the Pulse in Marsilio Ficino's Timaeus commentary', in M. Horstmanshoff et al. (eds), *Blood, Sweat and Tears: The Changing Concepts of Physiology from Antiquity Into Early Modern Europe*, Leiden, 2012, pp. 393-413; G. L. Townsend, 'Sir John Floyer (1649-1734) and His Study of Pulse and Respiration', *Journal of the History of Medicine and Allied Sciences*, 22, 1967, pp. 286-316. Prins only reference to Fludd is the inclusion of a plate from the *DUCH* II, i, p. 105, while surprisingly not even mentioning Fludd's *Pulsus*. Townsend only mentioned Fludd's *Pulsus* to say that "The first of the 17th century English treatises on the pulse perhaps served only to complicate further an already top-heavy system. It was the product of the prominent Rosicrucian Robert Fludd (1574-1637), the chief representative of the school of medical mystics who laid claim to the possession of the key to universal science. He appears to have had nothing to say on pulse counting". (Ibid., p. 296). A brief mention of Fludd's *Pulsus* is in Kümmel, *Musik und Medizin*, pp. 37-38.

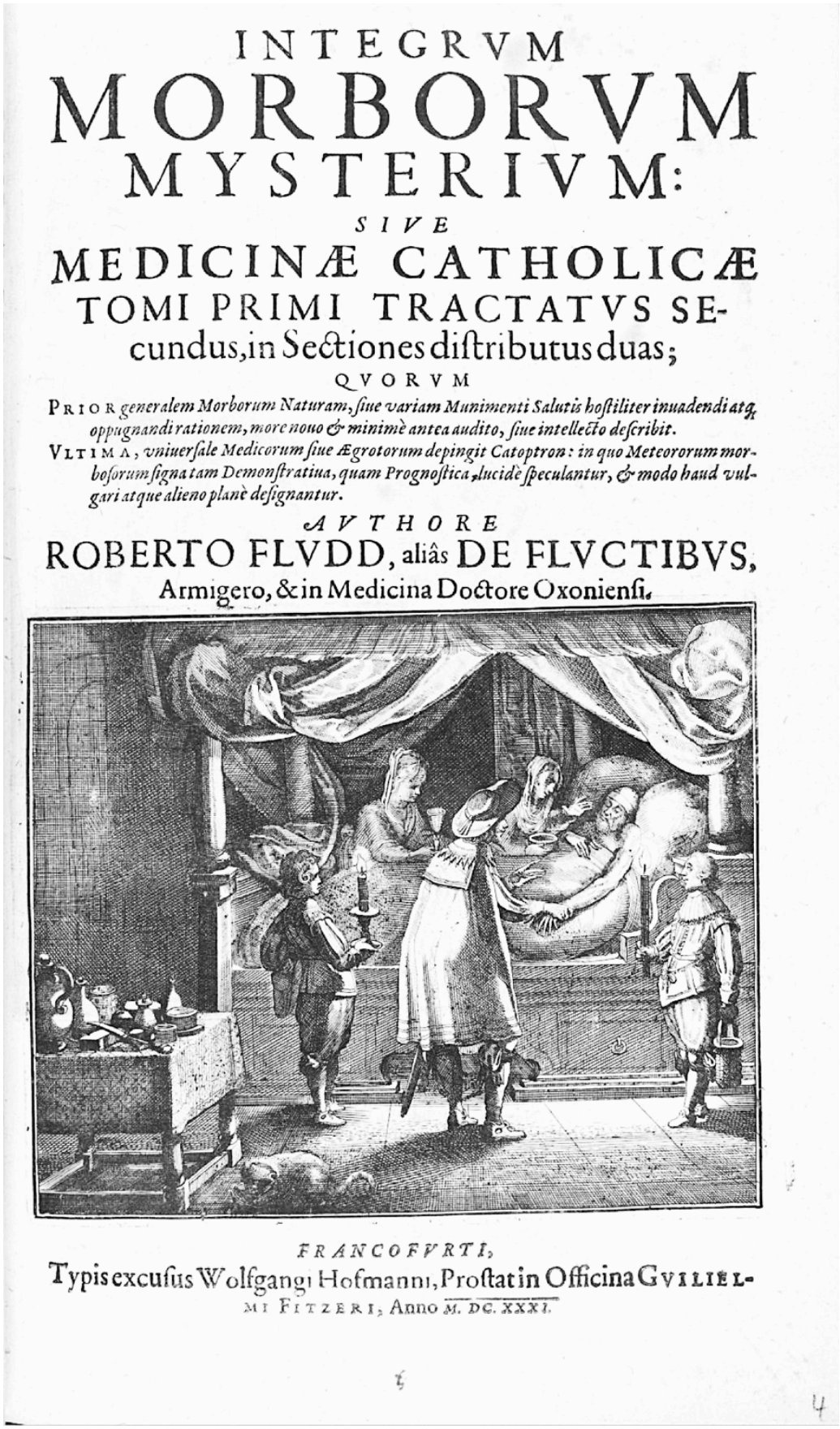
Galen and Avicenna, and thrived in the Continent from the fourteenth century. As Nancy Siraisi observes,

> [...] certain medical writers who flourished in the north Italian *studia* during the fourteenth and fifteenth centuries seem to have been much readier than either musical theorists or natural philosophers to provide their readers with detailed discussion of the nature of the music of pulse.[5]

No extensive accounts on the link between heartbeat and music had been published by an English author before the *Pulsus*; Fludd, who was in touch with European circles, added his own original contribution to the theory of pulse. His employment of the weather-glass as a metaphorical instrument for demonstrating his philosophy places his work amongst the most curious and yet noteworthy speculations. Finally, the interesting parallels that can be drawn between the monochord, which characterised the early works, and the weather-glass, which appeared at a later stage, will allow us to understand the extent to which Fludd's philosophy coheres throughout his whole *opera omnia*.

The second *tractatus* of the *MC* I, entitled *Integrum morborum mysterium* and published in 1631, opens with a frontispiece which reveals the two medical subjects Fludd is particularly keen to survey. The fact that they are depicted right in the frontispiece testifies to the importance he put on them. These two subjects are urinomancy, or the analysis of (and divination through) urine, and the knowledge (*scientia*) of the human heartbeat. Both these subjects will be analysed in *sectio secunda* of *Integrum*, the very last publication of the *DUCH*/*MC* project.

[5] Siraisi, 'The Music of Pulse', p. 689.



INTEGRVM
MORBORVM
MYSTERIVM:
SIVE
MEDICINÆ CATHOLICÆ
TOMI PRIMI TRACTATVS SE-
cundus, in Sectiones distributus duas;
QVORVM
PRIOR generalem Morborum Naturam, siue variam Munimenti Salutis hostiliter inuadendi atq; oppugnandi rationem, more nouo & minimè antea audito, siue intellecto describit.
VLTIMA, vniuersale Medicorum siue Ægrotorum depingit Catoptron: in quo Meteororum morbosorum signa tam Demonstratiua, quam Prognostica, lucidè speculantur, & modo haud vulgari atque alieno planè designantur.
AVTHORE
ROBERTO FLVDD, aliâs DE FLVCTIBVS,
Armigero, & in Medicina Doctore Oxoniensi.

FRANCOFVRTI,
Typis excusus Wolfgangi Hofmanni, Prostat in Officina GVILIELMI FITZERI, Anno M. DC. XXXI.

Figure 110: frontispiece to *tractatus secundus* of *MC* I[6]

[6] This plate is very similar to the one to be found in Johannes de Ketham, *Fasciculo di medicina vulgare*, Venice, 1493, fol. 9r.

As one can see from the plate above, the doctor is taking the pulse of the patient with his right hand, while with his left hand he is counting the number of beats. A white cat at the bottom is a good omen (as opposed to a black cat), and suggests domesticity. Two valets hold candles in order to light up the dark room, or/and to purify the air and avoid bad contagion. The assistant to the right carries a basket too. Though this detail might not seem necessarily relevant, a comparison with another plate taken from *MC* reveals that such a basket is probably used for carrying a flask with a sample of the patient's urine. The image below is taken from the frontispiece to the *liber* dedicated to urinomancy, and depicts the doctor receiving from his assistant the flask with the urine which he will analyse.

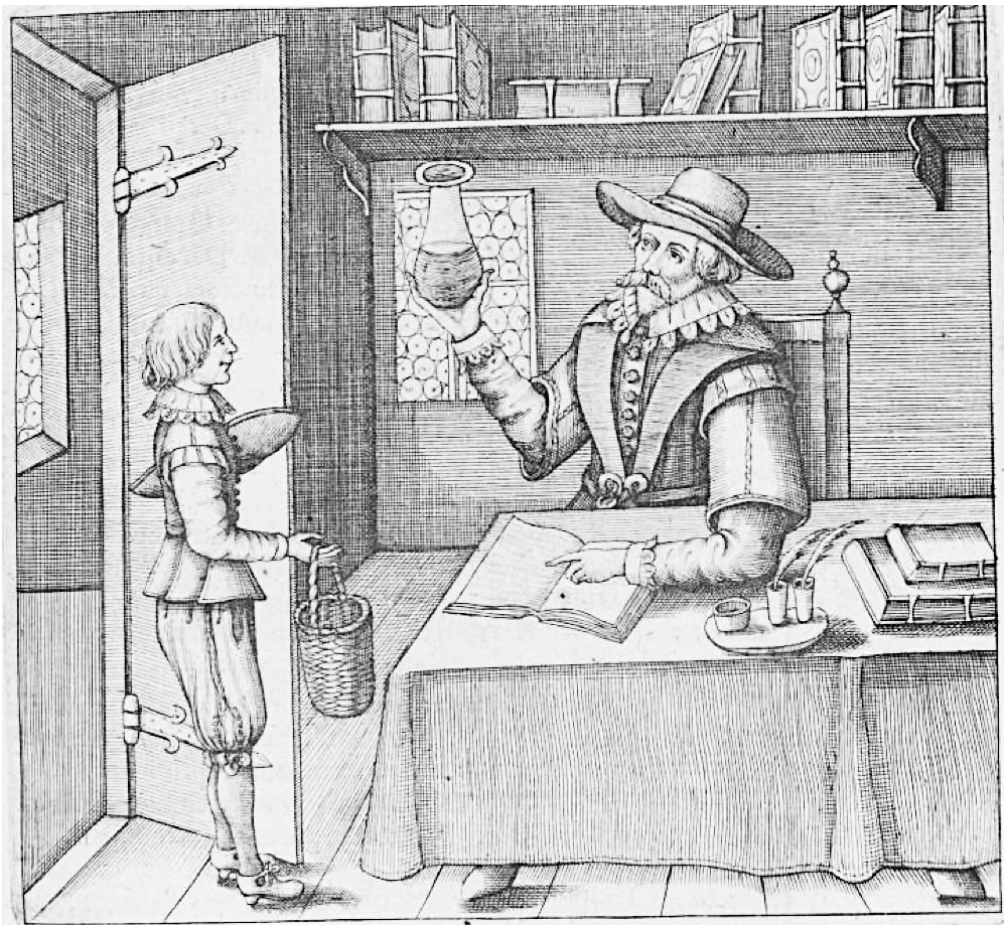


Figure 111 (*MC* I, ii, *sectio* ii, p. 255)

In both the surveys of the analysis of urine and that of the pulse Fludd makes extensive use of the weather-glass, which proves to be the leitmotif in late Fluddean thought. For a deep understanding of how this device fits into Fludd's philosophy, a conspicuous *portio*n of *sectio* i of *Integrum morborum mysterium* is dedicated to a detailed explanation of its operation.

To be sure, as I have already shown in chapter III, the concept underlying what would be developed into Fludd's weather-glass has been presented to the reader at the very beginning of the *De utriusque cosmi historia*, in 1617. On that occasion, though, the two-vessels system was used as a mere philosophical *experimentum* in order to demonstrate the opposing qualities of heat/light and cold/darkness; there is no mention at all of using that 'experiment' as a practical tool for the measuring of temperature, nor can one find any specific metaphorical application of it. As time passes, Fludd seems to grow increasingly fond of this experiment, with very important developments. In fact, in 1626, the *Philosophia sacra* featured a long description of the same principle, but this time there is a significant change: the development of the 'proper' weather-glass.

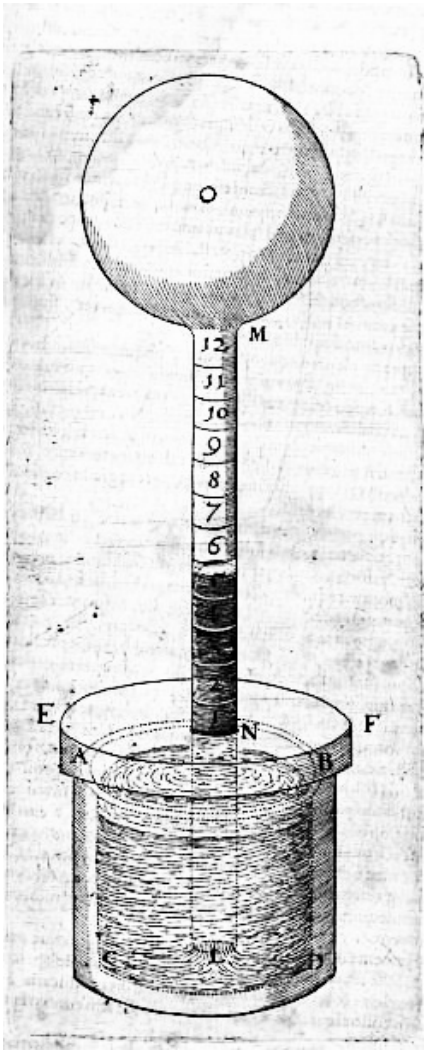


Figure 112 (*PS*, p. 287)

I have already shown that the *Experimento quodam* which can be found at the end of *Philosophia sacra*, and from which the above plate is taken, is not present in the original plan of the work. It looks like a later addition, as if Fludd learned about the

instrument and understood its great potential for the application to his philosophical system only towards the end of the composition of *PS*. In 1629 one finds again, in *MC* I, a short account of the instrument.[7] In 1631, a long section at the beginning of *Integrum morborum mysterium* explains accurately the weather-glass and the importance it held, by then, in the Fluddean system. In the last two *partes* of the second *sectio* of *MC* I, ii (the ones dealing respectively with urinomancy and the pulse) the new instrument is consistently and vastly present. Lastly, in Fludd's posthumously published work in 1638, *De philosophia moysaica*, the weather-glass would again play a key role, thus confirming the importance of this instrument in later Fluddean thought.

The sources by Fludd might have used for building his weather-glass might have been Giovanni Battista dalla Porta (1535-1615) and his *Magia naturalis*, where he describes the experiment of putting a heated glass flask with an oblong neck into a vessel full of water.[8] But, as Arianna Borelli puts it,

> [t]he fact that air expands when heated, moving objects which stand in its way, had been known since antiquity. Devices based on this effect are described in the writings on pneumatics by Philo of Byzantium (c. 200 BC) and Hero of Alexandria (c. 62 AD). This knowledge was passed on first to Arabic-Islamic scholars and craftsmen, and later to Renaissance engineers, who were particularly skilled in developing fountains based on both pneumatic and hydraulic effects. However, the idea of making the phenomenon of expansion and contraction of air visible through glass seems to have occurred for the first time only to late Renaissance experimenters. This may have had much to do with the ready availability of glass vessels of all forms, used in alchemical experiments.[9]

The *Commentaria in artem medicinalem Galeni* (Venice, 1612) by Sanctorius da Padova featured the first ever written account of a weather-glass as an instrument of precision for measuring the temperature.[10] Sanctorius explains that he has developed

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[7] *MC* I, i, pp. 17-19.

[8] Fludd has even been credited as the inventor of this instrument; see, for instance, Francesco Lana Terzi, *Prodromo ouero saggio di alcune inuentioni nuoue premesso all'arte maestra*, Brescia, 1670, p. 62. Giovan Batista Clemente de' Nelli ascribed the invention to Galileo Galilei and hypothesised that Fludd learned about the instrument while he was in Padua. G. B. C. de' Nelli, *Vita e commercio letterario di Galileo Galilei*, Lausanne, 1793, pp. 76-77.

[9] A. Borelli, 'The Weather-glass and Its Observers in the Early Seventeenth Century', in C. Zittel et al. (eds), *Philosophies of Technology: Francis Bacon and Its Contemporaries*, 2 vols, i, Leiden, 2008, pp. 67-130 (68).

[10] Sanctorius da Padova (1561-1636), a successful physician and professor of medicine at the University of Padua, was the first to employ instruments for precise measurements in medicine. He further developed his thermometer giving a much longer description and a depiction in the *Commentaria in primam fen primi libri Canonis Avicennæ*, published in 1625. He devised a pulsilogy for the measurement of the rate of the pulse, consisting of "a scale of inches and a cord with a movable weight marked with a transverse line [...]. The physician would move the pendulum and note the pulse with his fingers. If the pendulum moved faster than the pulse, the physician would lengthen the line and vice versa until they would coincide, thus showing the pulse rate as the number of inches". (N. Ghasemzadeh and A. M. Zafari, 'A Brief Journey into the History of the Arterial Pulse', *Cardiology*

his instrument building upon the description of a similar machine described by Hero of Alexandria (I-II century A.D.) in his *Spiritalia seu pneumatica*. This work was translated into Latin in the late sixteenth century and enjoyed a wide diffusion; Giovanni Battista dalla Porta and Fludd himself were highly fascinated by Hero's work.[11] One has to wait eight more years after the year 1612, though, for the first published visual representation of the weather-glass, with Giuseppe Biancani's *De sphæra mundi*.[12] Biancani maintains that the paternity of the instrument is to be ascribed to Sanctorius.[13]



Figure 113: (Biancani, *De shpæra mundi*, p. 111)

Research and Practice, vol. 2011, Article ID 164832, 14 pages, 2011. doi:10.4061/2011/164832, p. 6). Sanctorius' pulsilogy was the first new instrument to have been devised after Herophilus' water clock.

[11] Fludd quotes and employs several of Hero of Alexandria's experiments; for instance: *DUCH* I, i, p. 32, p. 73, p. 203, p. 409, p. 496, p. 498, p. 500; *DUCH* I, ii, p. 178; *PS*, p. 91.

[12] Giuseppe Biancani (1566-1624) was an Italian astronomer and mathematician, friend of Galileo Galilei (as Sanctorius was), who criticised the Copernican system. His *De sphæra mundi, seu cosmographia demonstrativa, ac facili methodo tradita* (On the sphere of the cosmos, or demonstrative cosmography, though delivered easily) was published in Bologna 1620, even though it had already been completed by 1615.

[13] "[…] qui Sanctorius cognominatur, huius esse inventorem". G. Biancani, *De shpæra mundi*, p. 111.

Francis Bacon, in his *Novum organum* (1620), implies that the weather-glass was widely known at his time, as the passage I quote here attests.

> Of all substances that we are acquainted with, the one which most readily receives and loses heat is air; as is best seen in calendar glasses, which are made thus. Take a glass with a hollow belly, a thin and oblong neck; turn it upside down and lower it, with the mouth downwards, and the belly upwards, into another glass vessel containing water; and let the mouth of the inserted vessel touch the bottom of the receiving vessel, and its neck lean slightly against the mouth of the other, so that it can stand. And that this may be done more conveniently, apply a little wax to the mouth of the receiving glass, but not so as to seal its mouth quite up; in order that the motion, of which we are going to speak, and which is very facile and delicate, may not be impeded by want of a supply of air.
> The lowered glass before being inserted into the other, must be heated before a fire in its upper part, that is its belly. Now when it is placed in the position I have described, the air which was dilated by the heat will, after a lapse of time sufficient to allow for the extinction of that adventitious heat, withdraw and contract itself to the same extension or dimension as that of the surrounding air at the time of the immersion of the glass; and will draw the water upwards to a corresponding height. To the side of the glass there should be affixed a strip of paper, narrow and oblong, and marked with as many degrees as you choose. You will then see, according as the day is warm or cold, that the air contracts under the action of cold, and expands under the action of heat; as will be seen by the water rising when the air contracts, and sinking when it dilates. But the air's sense of heat and cold is so subtle and exquisite as far to exceed the perception of the human touch, insomuch that a ray of sunshine, or the heat of the breath, much more the heat of one's hand placed on the top of the glass, will cause the water immediately to sink in a perceptible degree. And yet I think that animal spirits have a sense of heat and cold more exquisite still, were it not that it is impeded and deadened by the grossness of the body.[14]

Though Fludd himself sometimes terms his instrument a 'calendar',[15] he does not mention Bacon's account of the instruments; indeed, he never mentions Bacon's name at all, notwithstanding that he almost certainly read his works and perhaps knew him personally. Fludd affirms that he had found the description of the weather-glass in a manuscript dating back at last seven hundred years.

> This experiment resounds, in his realisation, with the one which is shown at the beginning of our physical survey of the macrocosm, i.e. at the end of its *capitulum* 6 of *liber* i, although others would have built upon its base and its principle the instrument here presented, changing only the appearance of the machine, and ascribing it to his own invention. However, I frankly attribute it to antiquity, as I have found it in an ancient manuscript dating back at least seven hundred years. This instrument, if we divide its tube in equal proportions, will appear to be exactly the same both in its functioning and even almost the shape, when compared to the one in the aforementioned shape that has already been published throughout the world.[16]

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[14] F. Bacon, *Novum organum*, book 2, XIII, 38; translation in F. Bacon, *The Works of Francis Bacon*, ed. by J. Spedding et al., 12 vols, vii, London, 1996, pp. 143-144.

[15] "[…] we call this instrument 'calendar' [...]". ([...] organon istud ideo vocamus *Calendarium* […]). *MC* I, ii, *sectio* ii, p. 9.

[16] "Hoc etiam experimentum in effectu consonans est cum illo in *Principio Physicæ nostræ Macrocosmi Historia* expresso, videlicet in *fine cap. 6. lib. 1. eiusdem*: quamvis alii super illam ipsam basim, naturæque rationem, hoc præsens, mutata solummodo machinæ effigie, construxerint, illud suæ propriæ inventioni ascribendo, tamen illud antiquitati ingenue attribuo, quoniam ego illud nostrum in vetustissimo manuscripto annis ab hinc ad minus septingentis conscriptum inveni, quod quidem (si in

This 'ancient manuscript' has been identified by Taylor to be the *De ingeniis spiritualibus* by Philo of Byzantium (III century B.C.);[17] it was in fact the property of the mathematician Thomas Allen, Fludd's teacher: it is very likely that Fludd had the chance to consult Philo's work from that manuscript.

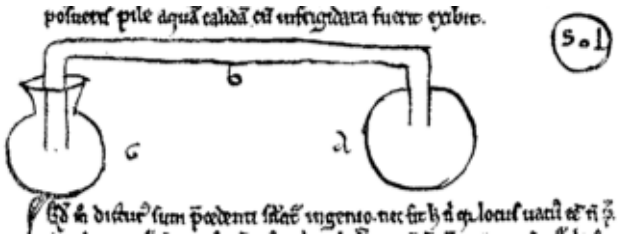

Figure 114: two-vessels system as depicted in Philo of Byzantium, *De ingeniis spiritualibus* (MS Digby 40, fol. 10^{v}; Bodleian Library, Oxford)

The resemblance between the above plate and the instrument Fludd says he has modified in order to build his weather-glass is striking. The Sun stands in the top-right corner, heating the bulb filled with air (on the right), which is connected via a tube to the water-filled vessel (on the left).

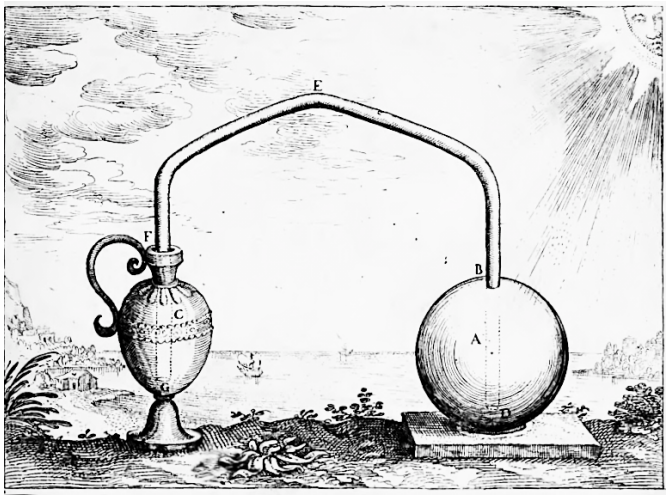

Figure 115 (*DUCH* I, i, p. 32)

The following plate (figure 116) clarifies the link between Philo's instrument and Fludd's weather-glass. It is found in the *Integrum morborum mysterium*, just after the passage where the English physician mentioned the ancient manuscript. On the left-hand side the 'original' weather-glass as found in the MS Digby 40 is clearly recognisable in the form Fludd depicted it in 1617. It has to be kept in mind that at

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proportiones æquales dividatur eius tubus) idem omnino in effectu et quasi figura seu effigie apparebit, quod istud iam per mundum in prædicta forma sive fabrica publicatum". *MC* I, ii, *sectio* i, p. 9. In the *De philosophia moysaica*, published in 1638, Fludd states instead that the manuscript is "more than five hundred years old". *De philosophia moysaica*, fol. 1^{v}.

[17] F. S. Taylor, 'The Origin of the Thermometer', *Annals of Science*, 5 (1942), pp. 129-156 (145).

that stage he made no mention of measurement of temperature or other practical uses, nor had he hinted at any further development. On the right, the pipe of the same instrument has been straightened, thus leading the development towards the definition of a weather-glass.

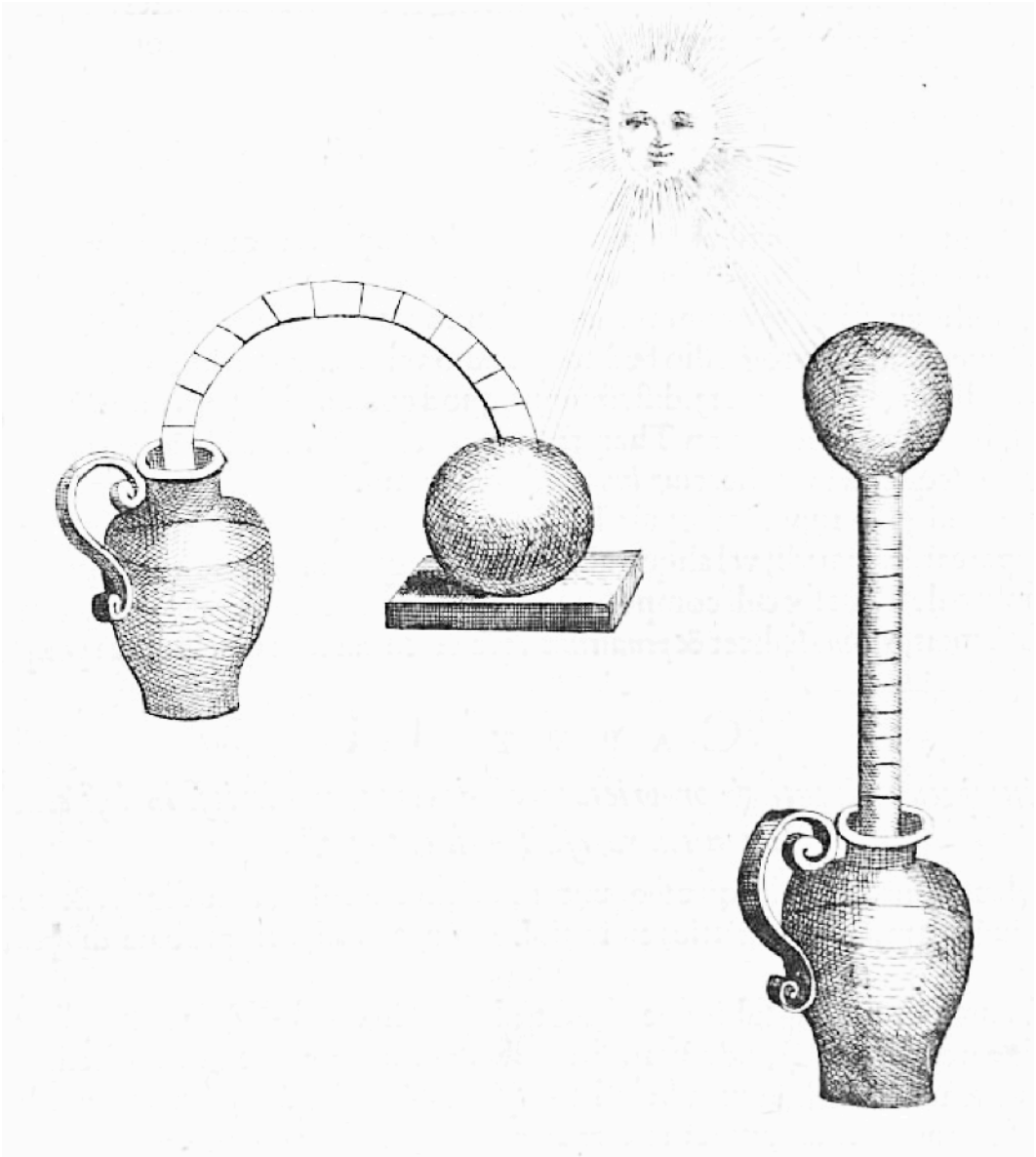

Figure 116 (*MC* I, ii, *sectio* i, p. 9)

As one can see, the pipe has been divided into twelve signed equal steps, i.e. thirteen parts. What is noteworthy is that in the appendix to *Philosophia sacra* (1626) the graduated scale went from 1 to 12 in a continuous ascending progression (see figure 112). Nevertheless, five years later the tube had been re-marked with a progression starting from the bottom with 1, reaching number 7 in the middle point, then returning to 1 as one reaches to the upper end of the pipe. This has important

implications, as it will make the weather-glass more suitable for being harmoniously implemented into the Fluddean philosophy. As Fludd explains,

> we divided the diameter of this [pipe of] glass in two hemispheres, of which one we call wintery, and the other summery. We subdivided the radiuses of both of them using a better method, i.e. in 7 degrees, of which we make the beginning where the equator meets the middle of the pipe, thus the progression will be from the middle of the tube towards the extremities in this way: 1, 2, 3, 4, 5, 6, 7, because the whole diameter has been divided into 13 parts. And this will be enough, since when the water will rise to the seventh degree of the wintery hemisphere the river Thames begins to freeze.[18]

This is a fundamental passage: Fludd, well aware of the practical uses of the weather-glass, nonetheless felt, as Debus puts it, "that this was little more than obvious. There were much greater mysteries for it to illuminate".[19] The dichotomies of light/darkness, hot/cold, expansion/condensation etc. are at the base of the Fluddean system. Therefore, it is not by chance that the weather-glass is divided by Fludd into two 'hemispheres', each representing one of the two opposing qualities. In the middle point stands the 'equator', to which the number 1 is assigned, as if it were a unique place at which both the opposite extremes convene.[20] It is already clear where this thread is leading: once again, to the pyramidal *scientia* with which the reader is already well acquainted.

The following plate shows the representation of Fludd's weather-glass with the juxtaposition of the two intersecting pyramids. It is taken from *sectio* i of *tractatus* ii of *MC* I (or *Integrum morborum mysterium*, 1631), and it is the first time Fludd clearly and visually juxtaposes 'his' pyramids to the weather-glass.

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[18] "Nos igitur dividimus diametrum istam vitream in duo hemispheria, quorum unum facimus hyemale, alterum æstivale. Horum ergo utriusque semidiametros melioris methodi gratia in gradus 7. distinguimus, quorum initium facimus intersectionem illam quam æquator facit in colli medio, ita ut progressio fit a colli medio versus extrema hoc modo. 1. 2. 3. 4. 5. 6. 7. quare tota diameter in partes 13. distribuetur, quod quidem sufficiet, cum in ascensu aquæ ad 7. hemispherii hyemali flumen Thamesis incipit congelari". *MC* I, ii, *sectio* i, p. 10.

[19] A. G. Debus, 'Key to Two Worlds: Robert Fludd's Weather Glass', *Annali dell'Istituto e Museo di storia della scienza di Firenze*, 7, 2, 1982, pp. 109-144 (123-124).

[20] *MC* I, ii, *sectio* i, p. 26.

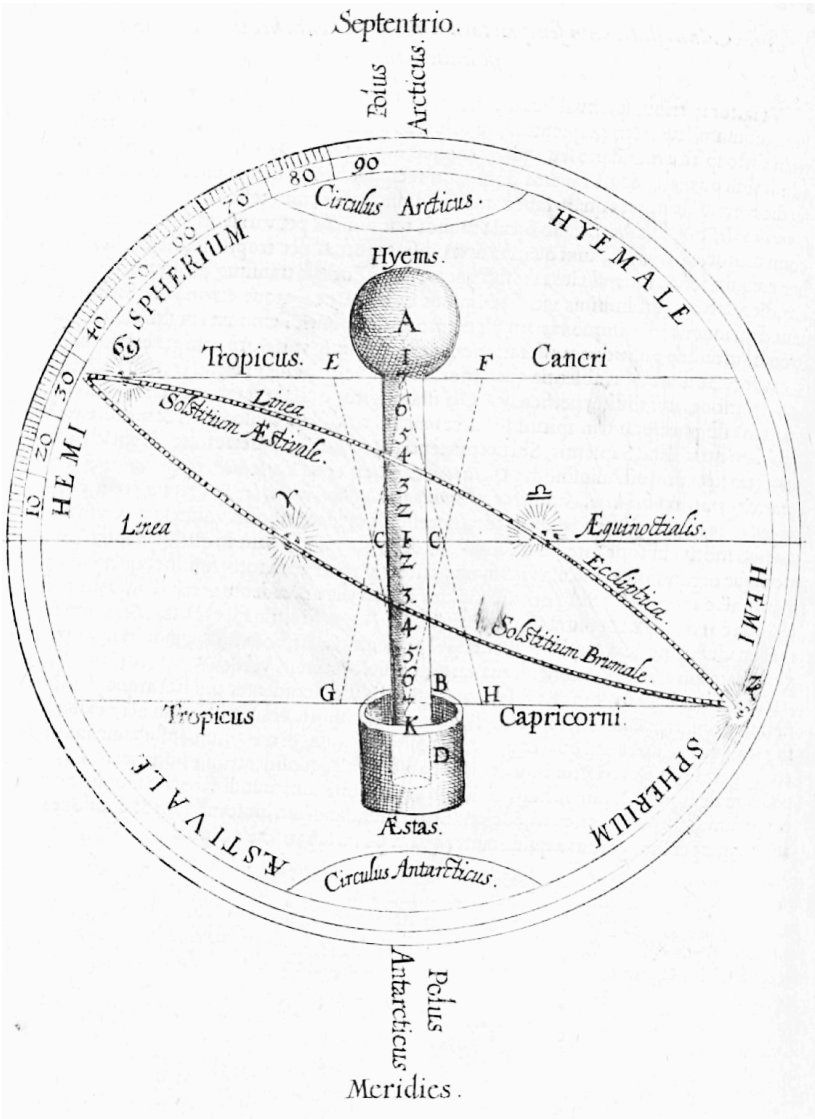

Figure 117 (*MC* I, ii, *sectio* i, pp. 28, 51)

The northern Arctic Circle, at the top, is the seat of cold, which has the property of contracting, while the southern Antarctic circle at the bottom is denoted by the quality of heat/expansion. Fludd likens the system of the weather-glass to the Earthly globe, with imaginary 'parallels' (the gradations 7 to 1 to 7) and the two tropics. More importantly, Fludd associates the air inside the bulb and the tube to the 'macrocosmic spirit':[21] when this expands, it means that it is heated by the divine heat; on the other hand, it is contracted by the cold macrocosmic qualities.

What Fludd is doing here is adopting the weather-glass, an instrument which at his time was starting to be developed and applied to various fields, to the macrocosmic structure of the world. The North Pole becomes, in a smaller scale, the upper bulb of the weather-glass, while the South Pole, the lower vessel full of water.

[21] Later on Fludd would compare it to the 'microcosmic spirit' too, the vital spirit which vivifies the human body.

With the equator at the balance between the two extremes, it was perfectly natural for Fludd to apply the concept of the intersecting pyramids to this 'micro-system', which indeed informs almost every corner of Fluddean thought. Clearly visible in the previous plate are the wintery pyramid E-K-F and the summery one G-I-H, with the equinoctial line in the middlemost part of the tube C-C.

The reader is not new, by this time, to this sort of operation, but I would like to go a little further here and draw a parallel between the earlier stage of the Fluddean thought (pre-1626) and the later one (1626-1637). The monochord had not appeared in Fludd's work since 1622 with the second reply to Kepler. Nevertheless, this does not mean that he abandoned his 'musical' philosophy, nor that his thought has undergone fundamental changes. The basic tenets of the Fluddean philosophy, with the dichotomies and their associated pyramidal system, are still there, as strong as ever.

If one looks carefully, in the later works Fludd is following the same path, even though he is using different metaphorical tools. What was true for the monochord (1617 to 1622) is in fact true for the weather-glass from 1631 onwards. The graduated tube of the weather-glass can easily be likened to the string of the monochord; and the octave, the middlemost place of the monochord, is still the *sphæra equalitatis* or, better, the equator.

What is certainly more relevant for Fludd the physician, though, is the metaphorical application of the weather-glass to the microcosm, which in Fludd assumes original traits. This is firstly explained in *tractatus* ii, *sectio* i, *pars* iii, *liber* iii of *MC* I (1631). In manner to what probably happened before, the air inside the weather-glass is likened now to the 'microcosmic spirit'; this is the spirit of life which nourishes us, entering into our body through the act of breathing. In fact, quoting Sendivogius, Fludd affirms that

> man is created by the earth and lives thanks to the air; for air contains the hidden nourishment of life, which in night-time we call dew, and in day-time rarefied water, of which the congealed invisible spirit is better than the whole world.[22]

The weather-glass becomes a fertile tool upon which a vast majority of elements, qualities, diseases, and much more, can be juxtaposed. In the example below, one can

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[22] "Creatus homo de terra, ex aere vivit, est enim in aere occultus vitæ cibus, quem nos rorem de nocte, de die aquam vocamus rarefactam, cuius spiritus invincibilis congelatus est melior quam terra universa". M. Sendivogius, *Novum lumen chymicum*, Geneva, 1628, p. 62. Quoted in *Pulsus*, p. 20.

see how Fludd relates the traditional Hippocratic-Galenic four humours (phlegm, blood, yellow bile and black bile) to the graduated pipe of the instrument:

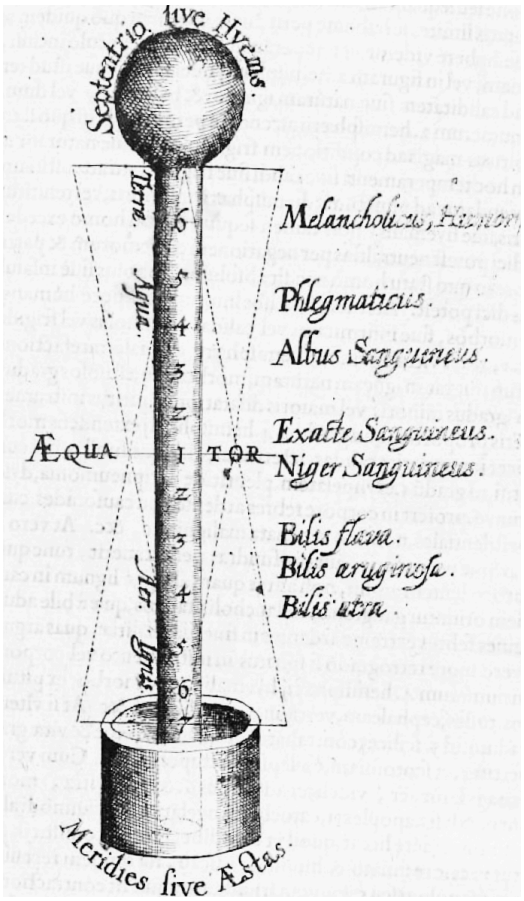

Figure 118 (*MC* I, ii, *sectio* i, p. 53)

The most favourable condition for health and good life takes place when the humours are in perfect balance, corresponding to the equator of the weather-glass – the *regio æqualitatis* of the intersecting pyramids or, as it were, the octave in the monochord. But if the temperature rises, thus pushing the level of the water down towards the bottom, the bile prevails. In this case, with the predominance of the 'summery hemisphere', the vital spirit will be increasingly rarefied and excitable by the yellow bile in the first gradations, and then by the black bile as the water decreases towards the extremity. *Vice versa*, if the water will rise towards the upper half of the instrument, this will mean that the vital spirit of the microcosm is contracted, leading to an unbalance towards the white blood, phlegmatic humour and, in the worst-case scenario, melancholic temperament.

The correspondence between macro- and microcosm can be demonstrated once again: in fact, melancholic people prefer cold temperatures and dislike southern regions. On the other hand, choleric people prefer hotter places and dislike the wintery season.

In another plate one can appreciate the link between the four Aristotelian elements and the illnesses of the body as deduced from the weather-glass's graduated tube. Grade 7 to grade 4 of the wintery hemisphere are assigned to the element earth and apoplexy, catalepsy, paralysis, stupor, scotoma and epilepsy. Grades 4 to 1 are the dominion of water, and its related diseases are catarrh, headache, and the cold temperament. From 1 to 4 in the summery hemisphere one finds the air, with its hot temperament, jaundice, intermittent fever, erysipelas and itchiness. Lastly, the lower part of the weather-glass (cold gradations from 4 to 7) is characterised by the element fire and illnesses such as pestilential fever, scratching and burning black bile, and gangrene. Once again, the perfect temperament (*temperamentum ad pondus*) is to be found right in the middle because, as the wise say, "virtus, veritas et æqualitas in medio consistit" (virtue, truth and proportion are in the middle).

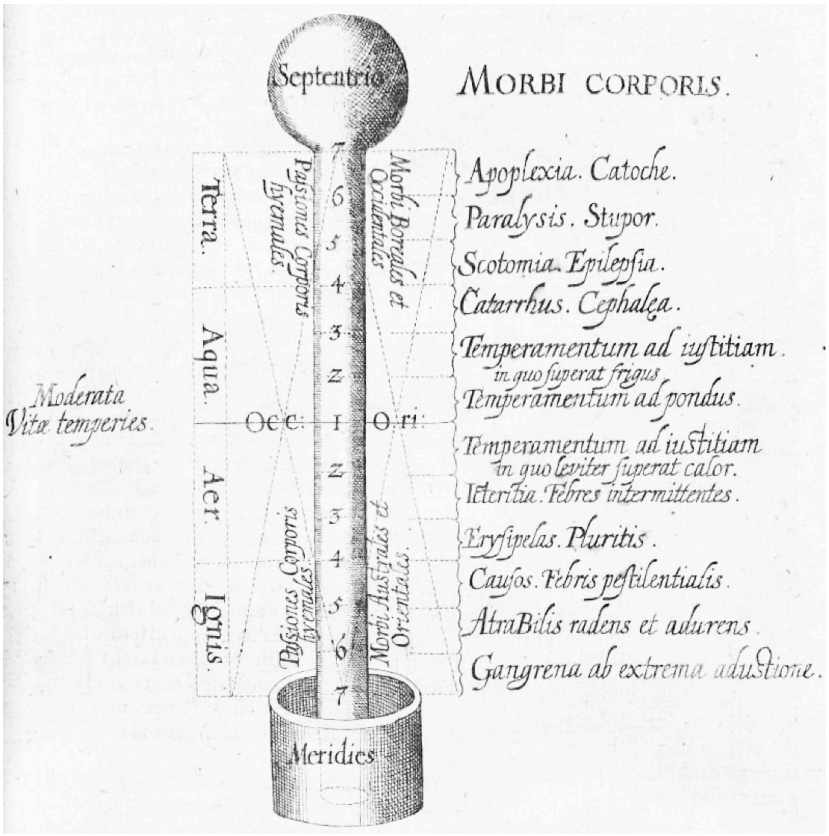

Figure 119 (*MC* I, ii, *sectio* i, p. 55)

The choleric character, caused by excess of yellow bile, is associated with the element of fire, the phlegmatic with water, sanguine with air, and melancholic, which derives from an excess of black bile, with earth. It is remarkable that Fludd, although on many occasions so critical about the Galenic doctrine, here accepts without reserve Galen's theory of temperaments.

Not only the diseases of the body, but also those of the soul can be understood thanks to the weather-glass. This is perhaps even more important, since, as Reuchlin (from whom Fludd borrows extensively) has it,

> all the inferior things are a representation of the superior ones, and as the lower is, so it is done above. They [the inferior things] portend what is owed to the virtues and what to the vices: therefore, everyone must pay attention to how they live and how they die.[23]

Our body is just the vehicle for the vital spirit, and it is 'shaped' from it, no differently from what happens when hot wax is imprinted with a seal.[24] The diseases of the soul range, in the wintery region of the weather-glass (*borealis*), from the most melancholic ones, e.g. envy or sadness, to more moderate shyness. In the summery region (*australis*), on the other hand, they span from lycanthropy, which is the extremely phlegmatic quality, to luxury. The grades that are closest to the 'exacta animi temperies' (sane proportion of the soul) characterise mild tendencies towards one or the other hemisphere, and are not considered proper diseases to be cured.

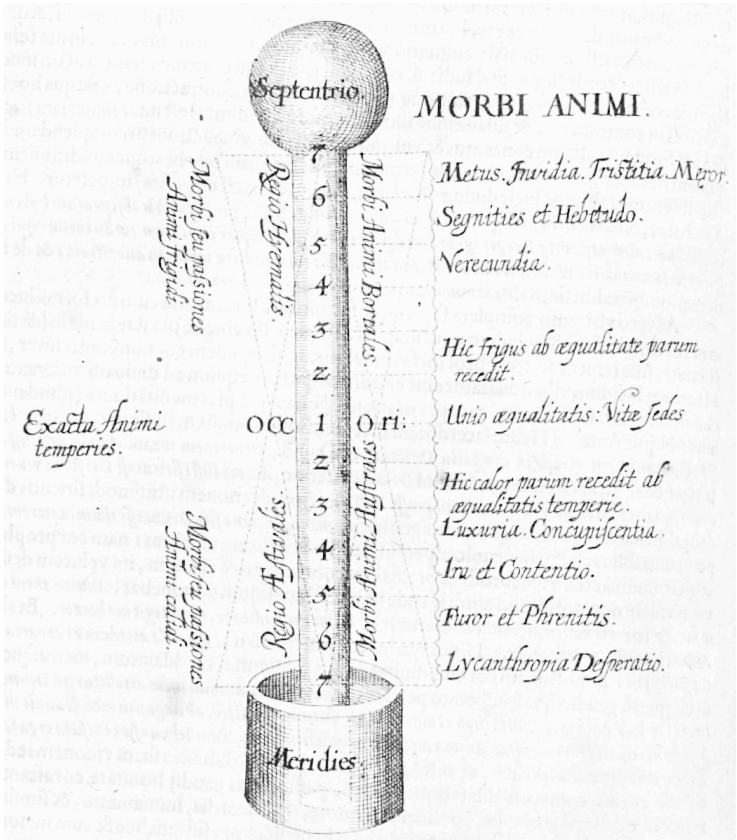

Figure 120 (*MC* I, ii, *sectio* i, p. 58)

[23] "Omnes res inferiores sunt repræsentativæ superiorum, et uti fit inferius, sic agitur superius, tendunt hæc aliquid et virtutibus debitum et vitiis, ut cavendum cuique sit quo vivat, et quo moriatur modo". J. Reuchlin, *On the Art of the Kabbalah*, ed. and tr. by S. and M. Goodman, New York, 1983, *liber* III, lxxix, p. 354.

[24] *MC* I, ii, *sectio* i, p. 55.

Once having set up this new system at the beginning of *Integrum morborum mysterium*, Fludd will extensively use it in the following publications: the treatises on urinomancy and on the pulse – i.e. the last two *partes* of *MC* I – and the *De philosophia moysaica* (1638). Fludd dedicates about 180 pages to diagnosis and prognosis through urine. The grades of the weather-glass are in this case associated to the colour and viscosity of urine.

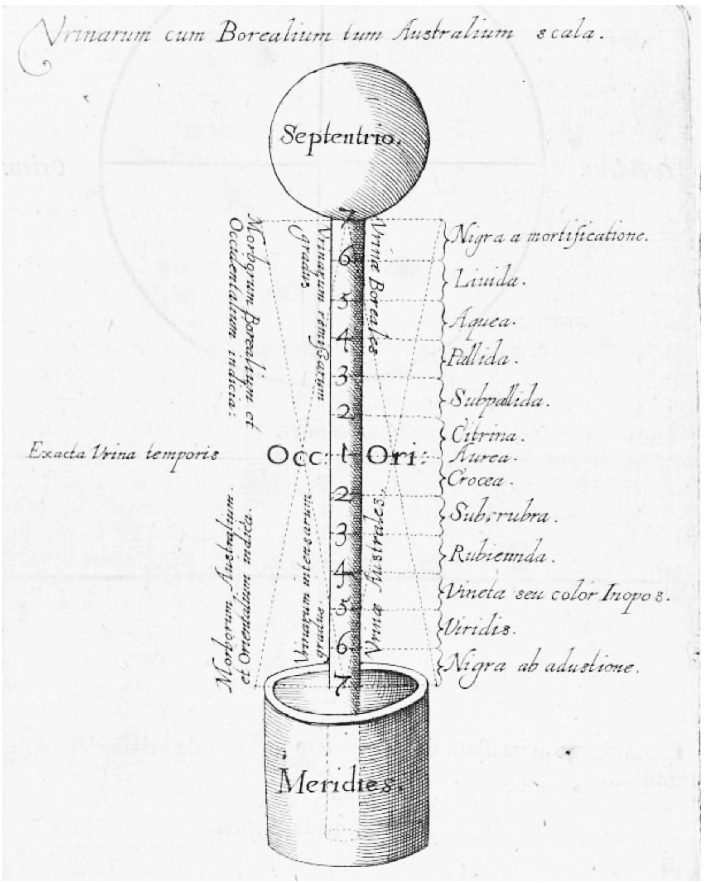

Figure 121 (*MC* I, ii, *sectio* ii, p. 271)[25]

The 7th grade of the northern hemisphere is associated with the colour of 'putrefied black' in urine, grade 6 with a bluish colour, to grade 5 with the colour 'aqua', grade 4 with pale, grade 3 with slightly pale, and grade 2 with yellow-lemon. In the southern hemisphere, the lowest grade is 'burning black', grade 6 is green, 5 is wine-colour, 4 is full red, 3 is reddish, 2 is yellow-saffron. In the middle, the 'exacta urinæ temperies' (sane proportion of the urine) corresponds to the golden colour. The treatise on urinomancy goes in great detail on several aspect of this *scientia*, considering planetary influences, connections with the elements and the humours, and much more.

[25] The 'exacta urina temporis' is probably, instead, 'exacta urinæ temperies'.

V.i.a A short introduction to the pulse lore

Before going into a detailed description of the Fluddean *Pulsus* I would like to draw a very brief (and necessarily incomplete) history of the pulse lore, in order to better comprehend where Fludd stands as a perpetuator of that tradition. As Nancy Siraisi noted,

> [t]he physician who turned to any of the standard authorities on pulse [...] would find in the works of each of them some allusion to the musicality of pulse. Undoubtedly, [...] the principal sources of information were Galen and Avicenna. Galen's somewhat obscurely expressed views, scattered through several of his pulse tracts, were paraphrased and developed by Avicenna in Book I, Fen 2 of the *Canon* as part of the discussion of the tenth *genus* of pulse, that is, in Avicenna's classification, of pulse determined by *pondus*. Any reader of or commentator on the Canon of Avicenna was therefore confronted with the apparent endorsement of the music of pulse by two of the most highly respected of all medical authors.[26]

Galen wrote indeed several treatises on the heartbeat, which were well known, and are heavily quoted, by Fludd.[27] But actually the very first author who linked heartbeat and musical rhythm was Herophilus of Calcedonia (335-280 B.C.), considered by Fludd

> [...] renowned philosopher and very skilled in medicine, and moreover competent in the true mysteries of astrology [...].[28]

Herophilus was a pivotal figure in the history of medicine and made substantial contributions to the study of the pulse and many other medical matters. He was the first to describe the anatomy of the brain and the symptoms of mental illness; he discovered the nerves, described the ovaries and part of the uterine tubes, and in general made a fundamental contribution to medicine, physiology, and anatomy, stressing the importance of the experimental method.[29] All the writings by the Greek physician have been lost, and all we know about him is scattered around the writings of a few later authors, mainly Galen; the latter outshone Herophilus with his undisputed authority for more than one thousand years, but at the same time contributed to keep the Herophilian theory alive.[30] In recognising Herophilus'

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[26] N. G. Siraisi, 'The Music of Pulse in the Writings of Italian Academic Physicians', *Speculum*, 50, 4, 1975, pp. 689-710 (697).

[27] Those quoted by Fludd are *De pulsuum usu*, *De pulsibus libellus ad Tirones*, *De pulsuum differentiis*, *De dignoscendis pulsibus*. Galen wrote other works on the subject.

[28] "[...] philosophus quidem famigerabilis, et in medicina peritissimus, nec non verorum Astrologiæ mysteriorum gnarus [...]". *Pulsus*, p. 81.

[29] See L. Russo, *The Forgotten Revolution: How Science Was Born in 300 BC and Why It Had to Be Reborn*, London, 2004, pp. 143-144.

[30] Another author thanks to whom Herophilos' theory was transmitted is the work of Rufus of Ephesus, Greek physician whose treatise was translated into Latin by Burgundio of Pisa (12th century) and

accomplishments, Fludd follows a process of rediscovery of Hellenistic culture (and of challenging authorities such as Galen himself) started only in the sixteenth century. As von Staden has it,

> [a]s one classical patriarch – Galen – was vanquished, new ones had to satisfy the perennial need for the sanction of the past: Herophilus as the Gospel.[31]

Part of this process were certainly Vesalius (1514-1564), Cesalpino (1519-1603) and Gabriele Falloppio (1523-1562). The latter, for instance, wrote that

> Herophilus' authority on anatomical matters is gospel to me. [...] When Galen contradicts Herophilus, it is to me as if he were contradicting medical gospel.[32]

Though certainly more inclined to believe in the 'real' gospel, Fludd considers Herophilus to be by far more praiseworthy than Galen. Galen questioned Herophilus' account on how to 'rhythmically' diagnose the heartbeat, considering it not clear and criticising the excessive reliance of Herophilus' followers upon the 'metricality' of the pulse.[33] In short, Herophilus' theory of the rhythm of the pulse was based on the concept of *arsis* (dilation, corresponding to the up-beat) and *thesis* (contraction, the down-beat) as basic units. The πρῶτος χρόνος αἰσθητός (primary perceptible time unit) was derived from the *arsis* of a new-born child: this corresponded to the *breve* used in the feet of musical meters. Once decided, the rhythmical reference (one could call it *tactus*) is employed for the definition of the pulse in the four stages of life. One can say then that a new-born child normally has a pyrrhic foot, i.e. two equal *breves* following each other in *arsis* and *thesis*. The second stage of our life is characterised by a trochaic foot, with the diastole lasting two breves and the systole one. In the third stage a spondaic foot typifies our heartbeat, *arsis* and *thesis* measuring both two breves each. Lastly, in the final stage of life one experiences an iambic foot, i.e. diastole lasting one breve and systole two. In some cases which could be termed as pathological the contraction can last even longer, with a ratio *arsis*:*thesis*, for example, of 1:10.[34]

Moreover, Herophilus stressed the connection between the temperature of the body and the frequency of the pulse, an argument which in Fludd would acquire high

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Nicholas of Reggio (1345). See W. F. Kümmel, *Musik und Medizin: ihre Wechselbeziehung in Theorie und Praxis von 800 bis 1800*, Freiburg, 1977, p. 26.

[31] H. von Staden, *Herophilus: The Art of Medicine in Early Alexandria*, Cambridge, 1989, pp. xi-xii.

[32] "Herophili authoritas apud me circa res anatomicas est Evangelium. [...] Quando Galenus refutat Herophilum, censeo ipsum refutare Evangelium medicum". Quoted in von Staden, *Herophilus*, p. xi. Translation in Russo, *The Forgotten Revolution*, p. 342.

[33] Von Staden, *Herophilus*, p. 276; Siraisi, 'The Music of Pulse', p. 698.

[34] Von Staden, *Herophilus*, pp. 280-281.

importance and would be visually impressed in the depictions of the two hemispheres of the weather-glass. Even more so, Herophilus devised an instrument for the measurement of the frequency of the heartbeat. This is a *clepsydra*, a portable water-clock in which a different amount of water, according to the natural beat corresponding to the age of the patient, was put inside it. Its functioning is not completely clear; all we know about it comes from Marcellinus' *De pulsibus* (II century A.D.), who reported a highly significant account in this context, which is the following:

> [...] upon entering to visit a patient, he would set up his water-clock and feel the pulse of the person suffering from a fever. By as much as the movements of the pulse exceeded the number that is natural for filling up the water-clock, by that much he declared the [patient's] pulse too frequent – that is, that [the patient] had more or less of a fever.[35]

This would mean that Herophilus was using his instrument not only to obtain a precise calculation of the heartbeat, but also as a rudimentary and indirect, thermometer, given its ability to measure the connection between body temperature and frequency of the pulse.[36] Perhaps Fludd had this *clepsydra* in mind when he applied the rhythm of the pulse to his own weather-glass.

It was Pietro d'Abano who, after Galen and Avicenna, wrote what became the most detailed accounts on the music of the pulse so far, which was included in his *Conciliator differentiarum philosophorum et precipue medicorum*, arguably known by Fludd.[37] As Luminita Florea observes, Pietro d'Abano

> [...] went far beyond offering a medical view of the conjunction of pulse and musical rhythm: Differentia 83 is a lengthy discourse on music theory concepts such as interval species and their corresponding mathematical ratios, the division of the monochord, syllabic note nomenclature, the structure of the ancient Greek Greater Perfect System, and the like.[38]

The *Conciliator* indeed treats the pulse in great detail; moreover, the appearance of the monochord within such a context perhaps connects this influential work with Fludd's *Pulsus*, which also features the monochord and its main consonances. The following picture is taken from the *Differentia 83*, and portrays the

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[35] Marcellinus, *De pulsibus*, in H. Schöne (ed.), *Festschrift zur 49. Versammlung deutscher Philologen und Schulmänner in Basel im Jahre 1907*, Basel, 1907, pp. 448-472 (463). Translation by von Staden in his *Herophilus*, p. 353.

[36] Von Staden himself notes that Herophilus used his instrument "also as a thermometer" (Ibid., p. 283).

[37] The *Conciliator* was finished in 1303 and published for the first time in Mantua, 1472. Girolamo Savonarola (1452-1498) too put the heartbeat in connection with rhythmic durations; these are similar to those proposed by the music theorist Johannes Vetulus de Anagnia (first half of 14th century).

[38] L. Florea, 'The Body Animal and Human as a Simile: Aristotelian and Galenic Anatomy in Late Medieval Books of Music Theory and Practice, ca. 1200-1350', *Philobiblon*, x-xi, 2006, pp. 74-123 (86).

monochord in the upper part, with the Boethian proportions and the consonant musical intervals below it.

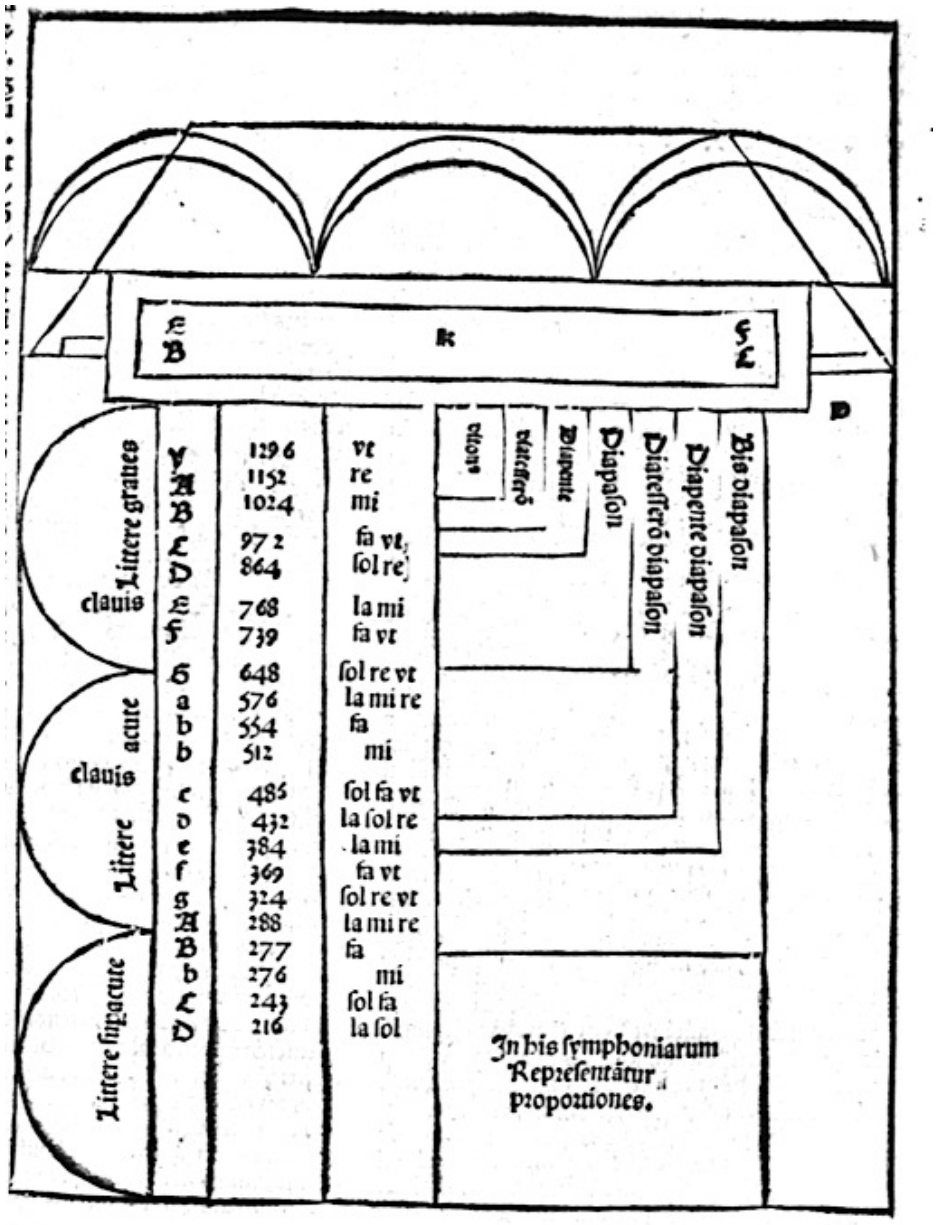

Figure 122 (P. d'Abano, *Conciliator*, fol. 121r)

Michele Savonarola (1384-1468) provided in his *Summa de pulsibus* specific correspondences between pulse and musical time. Grandfather of Girolamo Savonarola and respected physician himself – he was professor at the University of Padua and court physician to the Este family –, Michele affirms that a good physician should learn from a musician how to correctly recognise the rhythm of the pulse in order to give a correct diagnosis.[39]

[39] "Savonarola asserts that a physician has to know the speed of a normal heartbeat (*pulsus temperatus*), and to do so he must have a good knowledge of the duration of the two *divisiones quaternaria and senaria imperfecta* ("imperfectus minor et cantus imperfectus maior, et primus

In the fourteenth century, the musicality of the pulse started to appear in music-theory writings. Marchetto da Padova (*c*. 1274-*c*. 1330) recognised the importance of the connection between music and pulse, tracing the origin of this idea back to Pythagoras,[40] while in the late fifteenth century Johannes Tinctoris (*c*. 1436-1511) ascribed it to Galen and Avicenna.[41] As Dale Bonge observes, though,

> [t]he first music theorists to develop this topic are Ramos and Gaffurius, and of these Gaffurius is probably the more important because he treats the matter more extensively. There can be little doubt that Gaffurius's treatment of pulse influenced many later writers who take up the issue.[42]

Indeed, Bartolomé Ramos de Pareja (1440-1522) wrote, in his *Musica practica*:

> [f]or 'measure' is, as we have said, that interval or time span contained between the diastole and systole of a well-tempered [human] body. [...] When, therefore, the singer especially desires to sing accurately and with equality of measure, let him set in motion a likeness of such a pulse while singing, [by] striking his foot, hand, or finger somewhere.[43]

This 'mensura', he explains later, is the semibreve. The account by Franchinus Gaffurius runs as follow:

> [f]inally, modern [musicians] have assigned to the regular semibreve a measure of one unit of time, including diastole and systole in the sound of each individual semibreve. And since diastole and systole, or arsis and thesis (which are opposites and indeed the smallest [parts] of the pulse), are considered the measure of a single unit of time, [musicians] have divided that semibreve (regularly arranged in an interval measure of time) into two equal parts, as if, in [the measurement of] sound just as in the measurement of the pulse, one [part] were to contain the quantity of a diastole [and]

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appellatur quaternarius, secundus vero senarius"), which anyone can learn from a good musician in eight hours. He therefore believes that the breves of Italian *mensuræ* are absolute time values that can be easily memorized. But what is the ratio of a healthy man's heartbeat to the length of these two breves? It is halfway between the two ("tempus inter hos medium est tempus sive mensura temperata"). In Savonarola's day and in the Veneto environment, the breve of the imperfect *senaria* was once one and a half times the *quaternaria breve* (according to Prosdocimo), so the mathematical half-way point between the two breves is five minims". From M. Gozzi, 'New light on Italian Trecento notation', *Recercare*, xiii, 2011, pp. 5-78 (22). See also W. F. Kümmel, 'Zum Tempo in der italienischen Mensuralmusik des 15. Jahrhunderts', *Acta Musicologica*, 42, 3/4, 1970, pp. 150-163.

[40] M. da Padova, *Musica, seu lucidarium in arte musicæ plana*, ed. by M. Gerbert, in VV. AA., *Scriptores ecclesiastici de musica sacra potissimum*, 3 vols, iii, Hildesheim, 1963, pp. 64-70 (66).

[41] "Which is very probably seen in the sayings of Avicenna and Galen, of whom the first says: 'It must be known that the nature of music is located in the pulse'. And the other: 'When the nature of musical proportions became known to me, then the gates of pulse were open to me'". (Quod satis probabile videtur ex dictis Avicenne et Galieni quorum primus ait: 'Debes autem scire quod in pulso reperitur natura musicæ'. Et alter: 'Cum natura proportionum musicalium mihi nota fuit, tunc ianuæ pulsus mihi apertæ fuerunt'). See J. Tinctoris, *Complexus effectum musices*, ed. by A. Seay, in VV. AA., *Corpus scriptorum de musica*, 42 vols, xxii-2, Rome, 1975, pp. 165-177 (173). Translation in L. Florea, 'The Body Animal and Human as a Simile', p. 88.

[42] Bonge, 'Gaffurius on Pulse', p. 167.

[43] "Mensura enim, ut diximus, est illud tempus sive intervallum inter diastolen et systolen corporis eucraton comprehensum. [...] Cum igitur cantor recte et commensurate cantare desiderat, instar pulsus istius pedem aut manum sive digitum tangens in aliquem locum canendo moveat". B. R. de Pareja, *Musica practica*, Bologna, 1482, p. 83. Translation in Bonge, 'Gaffurius on Pulse', pp. 172-173.

> the other [part] that of a systole. To this [part] they have assigned the minimum fullness of voice, naming it, because of that, 'minima'.[44]

As one would expect, there is not an in-depth survey of the kinds of pulse or more medical-philosophical details that one could find in writings by physicians – and therefore by Fludd himself. The analogy between music and heartbeat here concerns strictly musical matters, i.e. for giving instructions about how to correctly sing or play a certain piece of music or define the duration of a particular note. Bonge has already pointed out that there is a major discrepancy between Ramos and Gaffurius: the former, in fact, compares the duration of a semibreve to a whole pulse, systole and diastole put together. The latter, on the other hand, is of the idea that a semibreve of a well-tempered body is to be found between the *arsis* and the *thesis*. For Fludd, the perfect pulse would be that characterised by a minim (diastole) plus another minim (systole), thus apparently following Gaffurius' theory.

The fifteenth century witnessed the first attempt, after Herophilus', to employ a *clepsydra* for the precise measurement of the heartbeat. In fact, Nicholas of Cusa proposed to weigh the quantity of water that had flowed into a basin after the physician had counted one-hundred pulses from the patient's arm. The greater or lesser quantity of water would therefore tell us the kind of disease. The 'Galenical' medical establishment, more interested in the quality of the pulse, ignored Cusa's suggestion.

In the sixteenth century the most important contribution to the subject came from the Polish Josephus Struthius (1510-1568), who challenged Galen's theory on the subject and tried to simplify his categorisation. He was

> [...] the first modern writer on the pulse, and his work may have formed part of the substructure for Harvey's discovery of the circulation. In 1540, while Professor of Medicine at Padua, Struthius wrote a monumental treatise on the pulse, *Ars sphygmica,* which contained mnemonic and graphic methods of describing the pulse and which soon appeared in many editions and translations.[45]

His work enjoyed great success;[46] Harvey would include several quotations by Struthius in his *De motu cordis*, and even though his name does not appear in Fludd's

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[44] "Neoterici postremo rectæ semibreui temporis unius mensuram ascripserunt: diastolen et sistolen uniuscuiusque semibreuis sono concludentes. Cumque Diastole et Sistole seu Arsis et Thesis quæ contrariæ sunt ac minimæ quidem in pulsu: solius temporis mensura consyderentur: semibreuem ipsam integra temporis mensura dispositam: duas in partes aequas distinxere: quasi altera Diastoles in mensura pulsus tanquam in sono: altera Sistoles quantitatem contineat. Huic enim minimam vocis plenitudinem ascripserunt ipsam inde minimam nuncupantes". F. Gaffurius, *Practica musicæ, liber secundus*, Milan, 1496, fols aaiij^{r-v}. Translation in Bonge, 'Gaffurius on Pulse', pp. 169-170.

[45] Townsend, 'Sir John Floyer (1649-1734)', p. 295.

[46] J. Struthius, *Sphygmicæ artis iam mille ducentos perditæ et desideratæ libri V*, Basel, 1555.

writings it is reasonable to assume that he knew him. For Struthius, the *eurythmus* is equal to two minims, which is the perfect pulse for Fludd too:

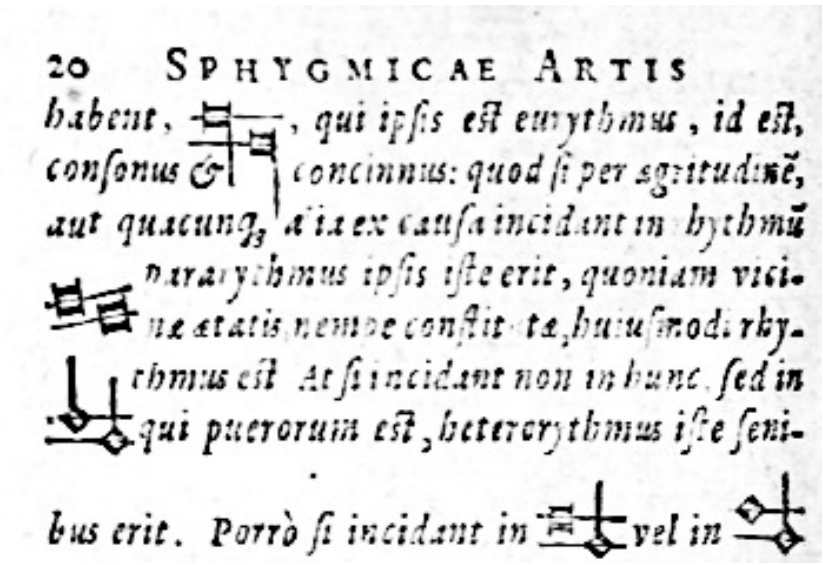
20 SPHYGMICAE ARTIS
habent, 𝅗𝅥𝅗𝅥, qui ipſis eſt eurythmus, id eſt,
conſonus & concinnus: quod ſi per ægritudinẽ,
aut quacunq; alia ex cauſa incidant in hythmũ
pararythmus ipſis iſte erit, quoniam vici-
næ ætatis nempe conſtit te, huiuſmodi rhy-
thmus eſt. At ſi incidant non in hunc, ſed in
qui puerorum eſt, hetererythmus iſte ſeni-
bus erit. Porrò ſi incidant in 𝅗𝅥 vel in 𝅝

Figure 123: (J. Struthius, *Sphygmicæ artis*, p. 20)[47]

An interesting contribute came from Spain where, in 1584, appeared a treatise entitled *De pulsus arte et harmonia libri duo* (Two books on the art and harmony of the pulse) by Luis Mercado (1525-1611), physician to the kings of Spain and Portugal Philip II and Philip III.[48] Mercado presents several aspects similar to Fludd's; for instance, he was always ready to refute the Galenical tradition, and aspired to restructure the traditional medical knowledge, though he strenuously defended the idea of a communication between the left and the right ventricles of the heart through the interventricular septum. Fludd, together with Harvey, denied this concept – and he was right. In his treatise on the pulse Mercado draws parallels between musical notation and the succession of diastole and systole.

[47] ([old people have the rhythm] 𝅗𝅥𝅗𝅥, which is *eurythmus* for them, i.e., harmonious and balanced; and if due to illness, or any other cause, they were subject to the rhythm 𝅝𝅝, this will be the *pararythmus* for them, since a rhythm of this kind is established for the neighbouring age. And if they were subject not to this [i.e. the *pararythmus*], but to 𝅗𝅥𝅗𝅥, which is typical of children, this will be the *heterorythmus* in the old age).

[48] L. Mercado, *De pulsus arte et harmonia libri duo*, Valladolid, 1584. I am indebted to Luis Robledo for pointing my attention towards this Spanish treatise. Recent accounts on this fascinating figure are J. Riera, *Vida y obra de Luis Mercado*, Salamanca, 1968; and J. I. B. Pérez, 'Luis Mercado y la traducción de textos médicos en el Renacimiento: *El libro de la peste*', in F. G. Codina et al. (eds), *La Universitat de València i l'humanisme: Studia humanitatis i renovació cultural a Europa i al Nou Món*, València, 2003, pp. 667-676.



Figure 124 (L. Mercado, *De pulsus arte et harmonia libri duo*, p. 124)

In 1604, the *De pulsibus* by Ercole Sassonia (1551-1607), professor of medicine in Padua, was published in Frankfurt. This survey of the pulse delves in detail into the concept of regular and irregular rhythm of the heartbeat and gives an attempt to visualise its strokes.[49]

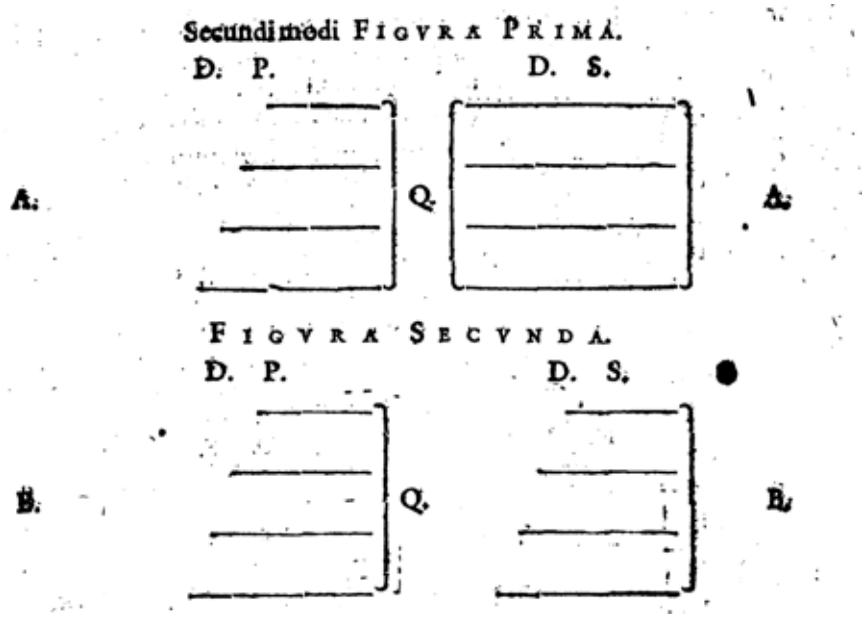

Figure 125 (E. Sassonia, *De pulsibus*, p. 35)

In the above example, which takes into consideration two kinds of irregular pulse (**A** and **B**), one can appreciate the complexity of the system devised by Sassonia. Two strokes are being compared and put into proportion with each other: D.P. (*diastole prima*) and D.S. (*diastole secunda*), separated by the rest between the two (Q., i.e.

[49] E. Sassonia, *De pulsibus tractatus absolutissimus*, Frankfurt, 1604. Sassonia, together with Struthius, is quoted already in the first edition (1621) of Robert Burton's *Anatomy of Melancholy*.

quies). The four lines of each stroke denote four different spots of the artery as detected by the four fingers of the physician. In **A**, the first stroke is perceived to have an unequal start in all the fingers, while the second has equal duration; in **B**, both the first and the second diastole have unequal durations.

A mention should be made of Pietro Paolo Galera (1548-1601), professor of *medicina practica* in Perugia, whose *Tractatus de pulsibus* was published there in 1597. Though not clearly linking musical rhythms with pulse frequency, Galera resonates with Fludd's philosophy on more than one occasion. For example, he writes:

> [...] in the same way God has placed the Sun in the midst of the planets, so He placed the heart in the middle of the microcosm, and this was made so that, with the help of its work, the whole body be easily heated and gain strength, since [the heart is] the fundament and the food of the increated heat and of the virtue of life, and from which the spirits originate.[50]

Further on, he distinguishes four kinds of pulses that are connected with the four qualities (hot, cold, dry and moist), the 'hot pulse' being the quicker and the 'cold' the slower, due to the rarefaction of the spirit.[51] Moreover, the four seasons are connected with the pulse too: Galera, for example, describes the pulse of the spring, which is hot, moist, and moderate; this notion could easily fit in the lower part of Fludd's weather-glass' summery hemisphere, from grades 1 to 4.[52]

The French mathematician and physician Jean Fernel (1497-1558), surely known by Fludd since he is quoted in the *De philosophia moysaica*, also supported the proportional musicality of the pulse.[53] Around the same time, in Germany, Franciscus Jöel (1508-1579) employed musical notation to describe the heartbeat; he arguably did so after having seen Struthius' treatise.

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[50] "[...] quemadmodum Solem Deus optimus Maximus in medio planetarum collocavit, ita cor in microcosmo in medio situavit, hoc autem factum fuit ut faciliori negocio eius ope totum corpus calefiat, ac incrementum accipiat, cum sit basis ac pabulum calidi innati, virtutisque vitalis, a quo spiritus originem trahunt". P. P. Galera, *Tractatus de pulsibus*, Perugia, 1597, fol. 7^{r}. Michele Savonarola described, amongst other types of pulses, the pulse of summer, of winter and of autumn. This element would still be alive in 1650 with Giovanni Zecchi ("Pulsus in Æstate celerrimi, et frequentissimi deprænhenduntur, quoniam calor maxime sollicitat [...] Hyeme autem, contra rariores, et tardiores sunt pulsus, quoniam calor non usque adeo impellit". G. Zecchi, *Consultationes medicinales Johannis Zecchii. Accessit tractatus eiusdem De pulsibus*, Frankfurt, 1650, p. 928).

[51] Galera, *Tractatus de pulsibus*, fols 39^{r}-40^{r}.

[52] Ibid., fols 34^{v}-36^{v}.

[53] J. Fernel, *De proportionibus*, Paris, 1528, fol. iiii^{r}.

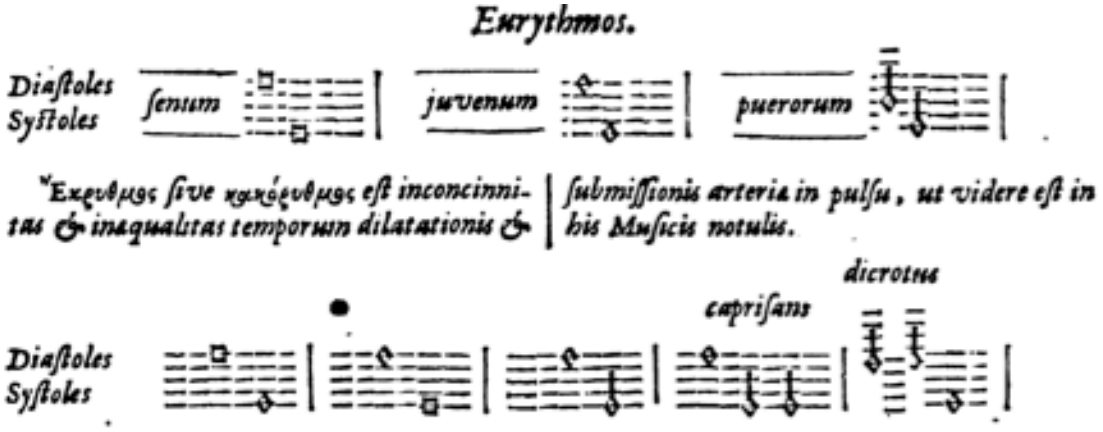

Figure 126 (F. Jöel, *Opera medica*, p. 82)

The upper part of the plate illustrates the *eurythmos*, i.e. the healthy rhythms, from the older person (*senex*, having the slowest pulse) to the younger (*puer*, with he quickest pulse), passing through the youth (*iuvenis*). This differentiation between the pulses in different ages recalls Herophilus' account, even though the ages are here three and not four. All three have a 1:1 proportion between diastole and systole, unlike the situations described at the bottom, where diastole and systole are in different proportions, with each scenario indicating one particular disease.

Fludd dismisses a large part of the Galenic doctrine, turning instead towards the discovery of the circular motion of the blood by William Harvey.[54] Harvey, a colleague in the Royal College of Physicians and friend of Fludd, published his *De motu cordis* in Frankfurt in 1628. In that book, which will prove pivotal for the history of western science, he presented for the first time a detailed description of the circular motion of the blood, its relation to the other part of the body, and how it is pumped, getting re-used (thus circulating) and not 'dispersed' or evaporated, as the Galenic doctrine held. This view perfectly suited Fludd's mystical theories: since the Sun is the centre of the microcosm and the source of its life, so the heart, which is its mirror in the microcosm, plays the same function in the human body.

Fludd's view on this matter is actually more complex, and he had explained it before in his *Anatomiæ amphitheatrum*, more precisely in the *libri* on the mystical anatomy of the heart and that of the blood, which I have already mentioned in chapter III. There, the main focus was both on the macrocosm-microcosm correspondence and on the alchemical analogy, with the human body almost compared to an alchemical laboratory, the blood undergoing a process of chemical

[54] Actually, as Luigi Russo pointed out, Cesalpino was probably the first to describe the function of the cardiac valves in blood circulation in his *Peripateticarum quæstionum libri quinque*, Florence, 1569, even though that was done incompletely. See Russo, *The Forgotten Revolution*, p. 342.

distillation.[55] The *Pulsus*, on the other hand, concentrates on the principles of condensation and rarefaction as explanation for the circulation of the winds in the macrocosm, and by analogy of the blood in the microcosm. The Sun, in fact, revolving around the Earth, impressed on the winds a circular motion. Those winds, which carried the vital spirit, once entering the human body through the act of breathing impressed that same circular motion to the blood, while nourishing it. After having read Harvey's *De motu cordis*, Fludd adjusted his views according to his colleague's discovery, thus putting aside the alchemical analogy.

The picture that emerges from all of the above considerations is rather complicated. The Galenic tradition, and the account of Galen on Herophilus as filtered through Avicenna, perpetuated the idea of a parallel between music and the heartbeat. Fludd states, in his treatise, that there is some confusion in the ancients' theory of the pulse. Besides, the Bible remains the real and true text thanks to which it is possible to obtain the key for a correct understanding of the world. Galen and Avicenna, authorities on the medical field, only reached a partial understanding of the pulse. But Fludd is confident of his ability to propose a new theory: this will bring clarity into the knowledge of the heartbeat and in the praxis of the physician who puts it into practice in order to diagnose and cure diseases. Though Fludd cannot be said to follow a strictly scientific method, he made use of several *experimenta*, and his profession allowed him to assist dissections of human bodies. The English physician is a son of his time and, as Debus put it,

> [...] appears progressive not only in his rejection of the intraventricular pores, but also in his insistence that the arterial blood differs from the venous blood primarily because it contains a vital ætherial spirit closely associated with saltpetre.[56]

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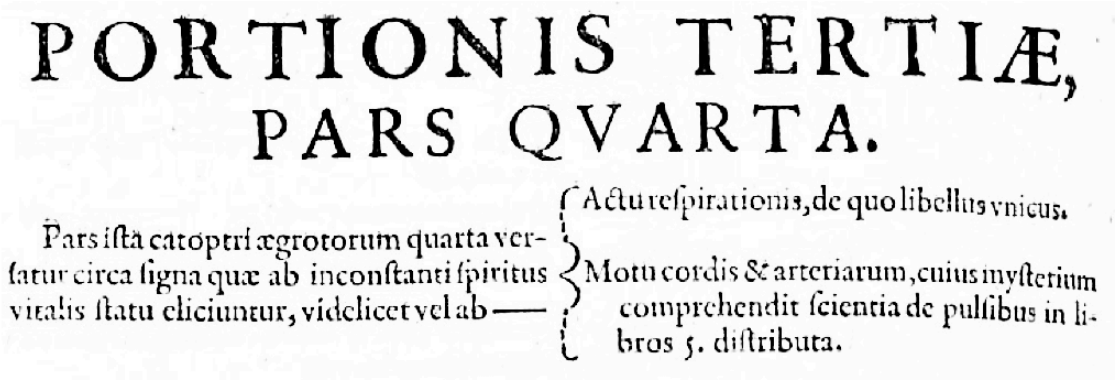
[55] This analogy had previously been illustrated by the French physician Joseph *DUCH*esne (*Ad veritatem hermeticæ medicinæ*, Paris, 1604).

[56] A. G. Debus, 'Robert Fludd and the Circulation of the Blood', *Journal of the History of Medicine and Allied Sciences*, 16, 4, 1961, pp. 374-393 (375).

V.i.b *Pulsus, seu nova et arcana pulsuum historia*

The treatise on the human heartbeat was initially planned to be the last *membrum* of the fourth *pars* of *portio* iii of *Integrum morborum mysterium*, *sectio* i. What actually happened, though, is that it would be published separately. The frontispiece of the *Pulsus* announces that it is *pars* iii of *portio* iii of the *Integrum morborum mysterium*. This is rather confusing, since this publication was supposed to conclude *pars* iv of *Integrum morborum mysterium*, as is clear from the following detail taken from the beginning of *pars* iv.


PORTIONIS TERTIÆ,
PARS QVARTA.

Pars iſta catoptri ægrotorum quarta verſatur circa ſigna quæ ab inconſtanti ſpiritus vitalis ſtatu eliciuntur, videlicet vel ab —

Actu reſpirationis, de quo libellus vnicus.

Motu cordis & arteriarum, cuius myſterium comprehendit ſcientia de pulſibus in libros 5. diſtributa.

Figure 127 (*MC* I, ii, *sectio* ii, p. 412)[57]

I propose, then, that the *Pulsus* is actually an 'undeclared' *pars* v, erroneously entitled 'pars iii' by the author, or perhaps by its publisher. It might well represent what it was supposed to be in the original plan, i.e. a second *membrum* of *pars* iv, which means that the title is not correct anyway. But in at least two passages Fludd terms the *Pulsus* 'tractatus', subdividing it into *libri*.[58] Also, and more significantly, the page numbering restarts and does not continue as happens in the previous pages of *Katholicon medicorum katoptron*. All of the above suggests that the survey of the human heartbeat has probably undergone, in a typical Fluddean fashion, the same fate of other treatises (see chapter III), to the extent of receiving a virtual 'stand-alone' status.

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[57] "FOURTH *PARS* OF THE THIRD *PORTIO*. This part four of the mirror of the diseases surveys the symptoms coming from the inconstant state of the vital spirit, i.e. from [1.] the act of breathing, in a single book; [2] the motion of the heart and of the arteries, which mystery includes the *scientia* of the pulse, divided in five books".

[58] "But we will write copiously about the mystery of these topic in the next *tractatus* on the beats [...]". (Sed de integro huiusce rei mysterio in tractatu sequente de pulsibus copiose egimus [...]). *MC* I, ii, *sectio* ii, *portio* iii, p. 413; "We have subdivided this *tractatus* on the pulse in five *libri* [...]". (Tractatum istum de Pulsu in libros divisimus quinque [...]). *Pulsus*, p. 2.

PVLSVS
Seu
NOVA ET ARCANA
PVLSVVM
HISTORIA, E SACRO
FONTE RADICALITER
EXTRACTA, NEC NON MEDI-
CORVM ETHNICORVM DICTIS
& authoritate comprobata.
HOC EST,
PORTIONIS TERTIÆ PARS TERTIA,
DE PVLSVVM SCIENTIA.
Authore ROBERTO FLVD
Armigero, & in Medicina Doctore Oxoniensi.

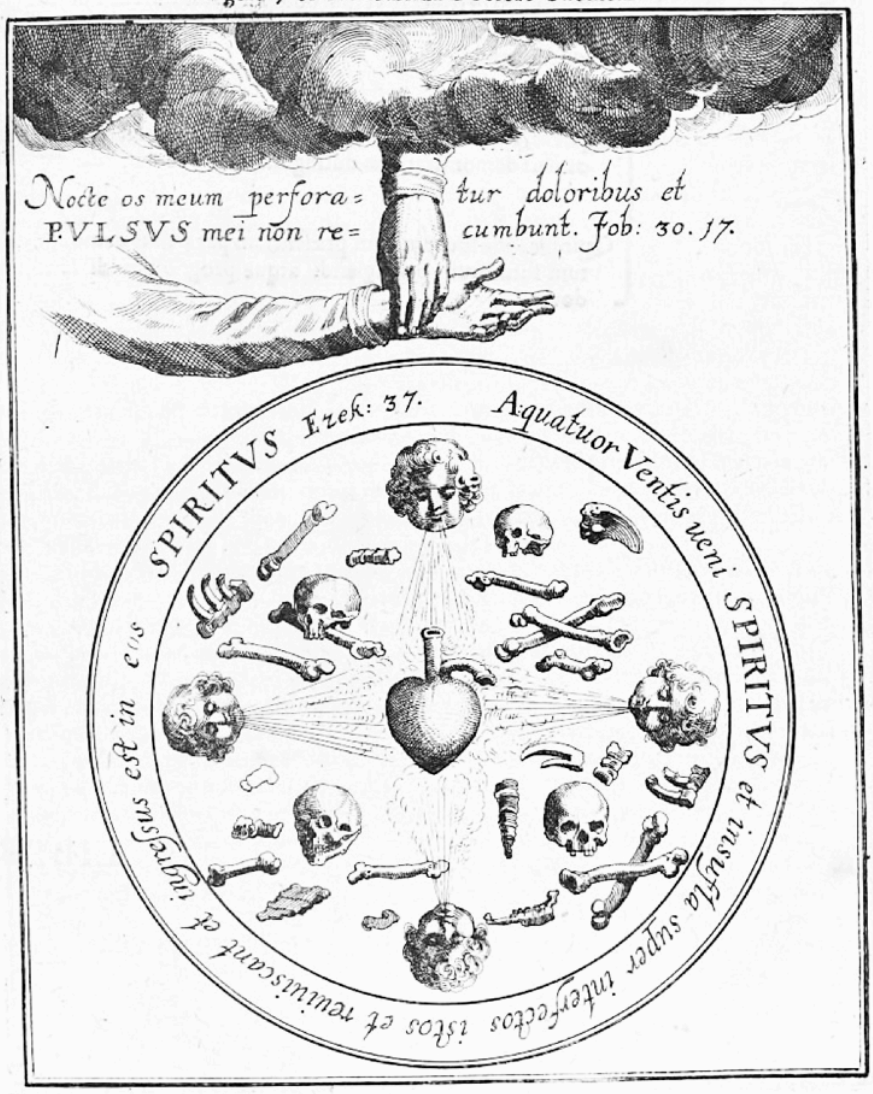

Figure 128: frontispiece to the *Pulsus* (1631)

As the title announces, the *Pulsus* is a "new and secret survey of the heartbeats, basically drawn from the sacred source, yet approved by the authority and statements of the pagan doctors". In the title page (figure 128) one sees the heart surrounded by various bones and skulls. At its top, bottom, left and right, four angels blow in it the four winds, carrying with them the vital spirit that nourishes the microcosm. Around the circular picture, a biblical citation is given: "Come, breath of life, from the four winds, and breathe on these slain men to make them live; and the breath of life came into them" (Ezekiel 37:9-10). Above it, a hand coming out of the clouds takes the pulse, almost suggesting that it is God Himself who takes the pulse of the patient. Another biblical quotation, below the arm of the patient, goes like this "By night, anguish racks my frame, and my heartbeats do not settle down" (Job 30:17).

As we have just seen the treatise on the pulse was actually planned to be part of the same *pars* iv, together with the treatise on the act of breathing. In fact, according to a long tradition, the act of breathing and the heartbeat were considered to stem directly from the soul. The soul, having participated in the harmony in God before becoming incarnate in our body, carries within it the divine proportions:

> [e]very soul, in this life, is entranced by musical sounds, inasmuch that not only those who have a more civilised habit, but all of the barbarian nations too exercise themselves in songs by which they are motivated to the ardour of courage, or relaxed into the softness of indulgence; [this is so] because the soul carries the memory of the music of which it was aware in the Heaven into the body.[59]

As a consequence, the action of the lungs and of the heart is influenced by those divine proportions thanks to the mediation of the soul: it is no surprise, then, that Fludd groups these two aspects into the same *pars*. But if it is true that he dedicates a very short *portio*n (only two pages) to the act of breathing, the same cannot be said for the heartbeat. The *Pulsus*, contrary to the initial plan, would be published as a stand-alone publication, almost to signify the importance of this subject over other topics. Considering the Fluddean mystical view this should not appear strange. In fact, as already stressed on more than one occasion in this dissertation, the heart is by far the most important organ of Fludd's microcosm. It is interesting to consider the following assertion taken from the *De harmonia mundi* by Francesco Zorzi Veneto, one of Fludd's favourite philosophers:

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[59] "In hac vita omnis anima musicis sonis capitur, ut non soli qui sunt habitu cultiores, verum universæ quoque barbaræ nationes cantus, quibus vel ad ardorem virtutis animentur, vel ad mollitiem voluptatis resolvantur, exerceant: quia anima in corpus defert memoriam musicæ cuius in cælo fuit conscia". A. A. T. Macrobius, *Commentarii in Somnium Scipionis*, in *Opera*, ed. by J. Willis, 2 vols, ii, Leipzig, 1963, p. 105.

> [t]he Sun (according to the unanimous testimony of all the wise men) is the father of life and in it, thanks to some power, resides (as the Pythagoreans say) life and, as it were, the true Sun. This is why it is put in connection with the heart, which is the particular seat of the life. As the Sun, in the macrocosm, is the origin of light and life, by virtue of which all the other planets shine, so the heart, in the microcosm (according to the testimony of Galen and other wise men) is the origin of life and heat, the one who gives life and movement to all the organs. In fact the soul (whose primary site is, according to Aristotle, the heart), is the origin of the understanding, of the feeling, and of the spatial movement.[60]

But without looking too far both in space and time, William Harvey, contemporary to Fludd and author of one of the most important books in the history of science prior to 1800, affirms that

> [s]o is the heart the first principle of life and the sun of the microcosm, just as the sun deserves equally to be called the heart of the world, by whose virtue and pulsation the blood is moved, made perfect, quickened and preserved from corruption and lumpiness, and this familiar household god performs his office for the whole body by nourishing, cherishing and quickening, being the foundation of life and the author of all things.[61]

Fludd's treatise on the pulse is divided into five *libri*. The first one introduces the "primordial mystery of the pulse". It starts with the assertion that all the Christian physicians agree that the knowledge of the pulse is not an easy matter. Indeed, it entails four skills, namely: subtle and high intellect; perfect sense of touch; long experience in the praxis of taking the pulse; and proficiency in the proportions of music;[62] Fludd was proud to possess all these qualities, being both a successful physician and having a good knowledge of *musica practica*.

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[60] "Cum Sol (omnium sapientium testimonio) sit pater vitæ, et in quo residet (ut Pythagorei opinantur) virtute quadam vita, et verus Sol, ideo ipsum cordi assignant, tanquam præcipuo vitæ sedili. Et sicut ipse Sol in maiori mundo est principium lucis, et vitæ, dans omnibus planetis, ut luceant: sic cor in humano mundo (teste Galeno, et aliis sapientibus) est origo vitæ, et caloris, dans omnibus membris, ut vivant et operentur. Est enim anima (cuius primaria sedes est cor, ut ait Aristot.) principium intelligendi, sentiendi, et secundum locum movendi". Zorzi, *De harmonia mundi*, canticum I, tonus vi, cap. 26. Aristotle conveys the idea of the heart as the abode of the soul in his *De anima*, 2, 8, 420b; Galen addresses this topic in his *De temperamentis*, 3, 1, 625.

[61] "Ita cor principium vitæ et Sol Microcosmi (ut proportionabiliter sol Cor mundi appellari meretur) cuius virtute, et pulsus sanguis movetur, perficitur, vegetatur, et a corruptione et grumefactione vindicatur: suumque officium nutriendo, fovendo, vegetando, toti corpori præstat Lar iste familiaris, fundamentum vitæ aut hor omnium". W. Harvey, *De motu cordis*, 1628, p. 42. English translation in W. Harvey, *An Anatomical Disputation Concerning the Movement of the Heart and Blood in Living Creatures*, ed. and tr. by G. Whitteridge, Oxford, 1976, p. 76.

[62] "The entirety of the crowd of the Christian physicians who are nourished and taught in the schools admit that there is an arduous difficulty in the precise knowledge of the pulses, particularly on account of the regular and irregular pulse, since for the knowledge of this pulse it observed the necessity of the concourse of these four [things], which are: subtle and high intellect; perfect sense of touch; long experience and practice in the praxis of the pulses; and proficiency in the harmonious proportions of music". (Tota quidem Medicorum Christianorum turba, qui in scholis sunt enutriti atque instituti, arduam in certa pulsuum cognitione difficultatem esse asseveravit, idque præcipue propter pulsum ordinatum et inordinatum, quippe ad cuius pulsus notitiam hæc quatuor necessario concurrere observabat, videlicet intellectum subtilem et elevatum, sensum tangendi perfectissimum; longam experientiam et usum in pulsuum praxi, ac denique in symphoniacis musices proportionibus peritiam). *Pulsus*, p. 3. These four skills necessary to the knowledge of the pulses are also stated by Bernard

Though certainly following some (or all) of the above-mentioned sources, Fludd opts for a path that is in some respects unusual. Determined to employ his new instrument, the weather-glass, as a key to the understanding of any phenomena, he creates what is probably one of the most original treatises on the pulse ever written. God is the one and only origin of light and darkness, passivity and activity, contraction and dilatation. Darkness comes from contraction, whilst light is generated from expansion. This is proved both by common experience (*experientia vulgaris*) and the Bible. In fact, the cold action of the north winds transforms subtle air into dark and dense clouds, water into snow, hail, and ice, and light things into heavy ones, and turns motion into stillness. In the weather-glass this is easily seen because the action of the cold causes the air to contract; this attracts the water towards the upper part of the instrument. *Vice versa*, the action of the south wind generates the opposite reaction.

In *liber* iii Fludd describes ten Galenic kinds of pulses.

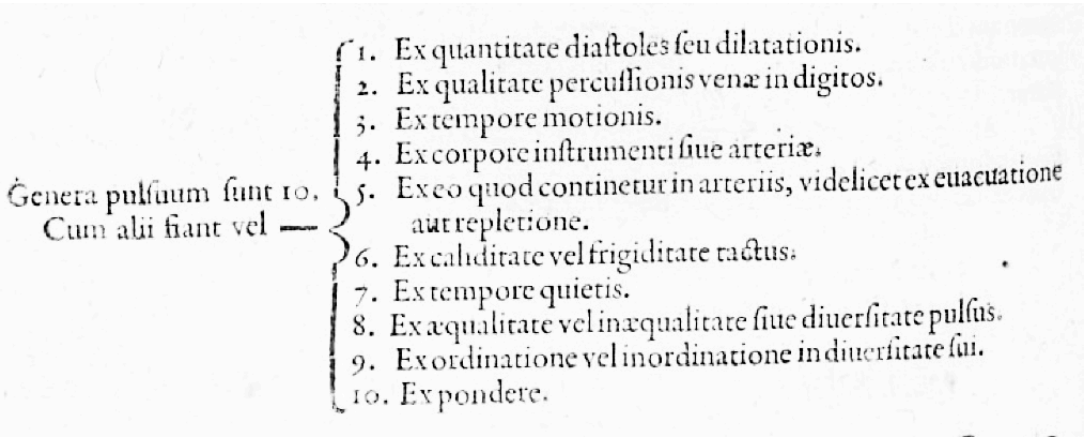

Figure 129 (*Pulsus*, p. 34)

In describing them, some musical elements can be traced. For example, in the second kind of pulse, which is inferred from the quality, i.e. the strength, of the percussion of the vein on the fingers (*ex qualitate percussionis venæ in digitos*), there are three subcategories: the strong, the weak, and the equal. Fludd associates the *b*♮ to the first one, and *b*♭ to the second, as to indicate that the stronger is sharp in respect to the 'natural' pulse, while the second is flat compared to it.

The third kind of pulse (i.e. *ex tempore motionis*) takes into consideration the time of the strikes. The pulse, as seen in this respect, can be quick, slow, and

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Gordon in his *De cognitione pulsuum tractatus utilissimus*, Lyon, 1550, pp. 892-896 (895). The same Gordon, who thought himself rather incompetent on the subject, is harshly criticised by Fludd for his 'adoration' for Galen.

moderate. In music, the minim (𝅗𝅥) indicates the "equal state of the rhythm, where the singing is neither too slow nor too quick".[63] But if the physician senses a rhythm of semibreves (𝅝), then an illness connected with a slow pulse is present, since this movement exceeds the equal one by one minim. On the contrary, if the diastoles follow a rhythm of crotchets (♩), the pulse will be quick, since it is the half of the healthy pulse, which is denoted by the minim.

Amongst the pulses included in the eighth kind one finds the 'convulsive and vibrated pulse', which is metaphorically associated to a tense string of an instrument which vibrates in a strong way. This metaphor, as Fludd himself attests, is taken from book 1, chapter five of Galen's *De differentiis pulsuum* (On the varieties of the pulses). After having finished with the description of the ten Galenic kinds of pulses, Fludd concludes *liber* iii, announcing that in the following one he will address the true kinds and causes of the pulses as derived from the sacred testimonies and not from Galen or other pagan physicians/philosophers.

With *liber* iv indeed one enters in more detail into Fludd's own 'Catholical' medical philosophy as applied to the knowledge of the heartbeat. As he is proud to announce, this is not yet known:

> [n]ow we shall proceed in our own way (indeed new), in which the differences of the pulses are esteemed both through the proof of the holy writings, and through philosophical, musical and ocular demonstration.[64]

As the Bible attests, "thou hast ordered all things in measure, and number, and weight" (book of Wisdom, 11:21). God impresses the divine numbers and proportion into the vital spirit, which is carried by the four winds. Once in our body, the vital spirit acts on the systole and diastole, thus setting the divine *mensura* in the heartbeat.

In *liber* iv something noteworthy happens. In its *caput* iv, entitled "In which is illustrated, both through the sacred authority and by means of a double ocular demonstration, the composition of the natural pulse and the necessary act for the

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[63] J. Rösche in his *Robert Fludd*, p. 457, observes that since Franchinus Gaffurius assigns the duration of a semibreve to the healthy pulsation, perhaps in Fludd's time, about 130 years later, the change of *tactus* in the practice of music influenced the musical side of the medical reflection upon the pulse. It should be taken into account, though, that Gaffurius considered the *whole* pulse (systole+diastole), while Fludd considered diastole and systole lasting a time-unit each (as Herophilus did). Jöel also measures the pulse of the children, which is supposed to be the most perfect one according to Fludd, using minims. For Mersenne, systole and diastole should direct, respectively, the lifting and the lowering of the conductor's hand (see below).

[64] "[i]am vero nunc viam nostram propriam (quamvis inauditam) calcando, quid de pulsuum differentiis revera sit censendum tam literarum sacrarum documentis quam demonstratione cum philosophica tum musica, idque ocularitер ostendemus". *Pulsus*, p. 47.

preservation of the healthy life",[65] the monochord makes its appearance again, after having been missing from Fludd's work for several years. In fact, in this *caput* one finds a "double ocular demonstration", which entails the monochord first and the weather-glass afterwards. This is a pivotal moment in the Fluddean philosophical path, where the musical instrument so heavily used in the first publications finally meets with the instrument which took its place, as it were, at a later stage. Given that the *Pulsus* has been little studied by other scholars, this element has remained hitherto unnoticed.

Fludd begins the ocular demonstration by declaring a truth to which his reader is accustomed: the source of life, eternal wisdom, emanates from the Father by means of the most perfect music – the one generated from the unison – and this took place in the heart of the heavens when the cosmos was created. In fact, God put His tabernacle in the Sun, which is in the middle of the heavens: there the Sun resounds with the perfect consonance, the octave, which splits God's perfect music into two equal intervals. By means of this very same proportion He acts on the heart of the human body through the material diapason, which has the propriety of contraction, and the spiritual one, which expands.[66] Fludd continues explaining how to find the consonances on the monochord, starting with the unison, the most perfect music which emanates everything from α to ω and "contains in itself all the consonances and dissonances",[67] and continuing with the intervals of octave, fifth and fourth.

The perfect life springs from the *diapason*, which occupies the middle point between two extremes: this is the reason why both the Sun in the macrocosm and the heart in the microcosm, the bearers of life, are in the middle point. This music, the

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[65] "In quo pulsus naturalis compositio, et necessarius ad vitæ salutiferæ beneficium actus cum authoritate sancta, tum duplici oculari demonstratione indicantur". Ibid., p. 51.

[66] "If [it is true], indeed, that the eternal wisdom (which is the source of life) emanates from the Father by means of the most perfect consonance, and occupied the centre of the heavens, He then placed his tabernacle in the Sun, which has its [tabernacle] in the middle of the skies, and claims for itself the place in the middle of the septenary. And there it moves in the centre, or middle unison, which originates two perfect equal consonances from the unity. In the same manner, the first emanation (as if it were the Son), proceeding from the Father, occupies the heart of the human being, and there, in that duty of life, acts. By means of the material (dense and heavy) octave itself on one side [of the heart] it moves by contracting, and on the other side, by means of the most perfect spiritual and subtle consonance, [it moves by] expanding". (Si quidem ut æterna sapientia (quæ est vitæ fons) emanat a patre per consonantiam symphoniacam perfectissimam, centrumque seu cor cœli occupavit: posuit enim tabernaculum suum in sole, qui suum in meditullio cœlorum, et in centro numeri septenarii sibi vendicat situm, atque ibi movet in centro seu medio unisono, constituens ex unitate duas perfectas consonantias æquales. Sic quidem eadem prima emanatio quasi filius a patre procedens, in eisdem proportionibus influit in cor hominis, atque ibi vitæ in eo officio fungitur, ipsum per diapason materialem, et spissam sive gravem ex uno latere, hoc est contrahendo movens, et ex altera parte per diapason seu perfectissimam consonantiam spiritualem et subtilem illud agitando). Ibid., p. 54.

[67] "[...] omnes tam consonantias quam dissonantias continens [...]". Ibid., p. 55.

'Catholic *diapason'*, happens in the pulse of human beings very rarely and in a very short time of our life, but it was certainly the perfect harmony that Adam, before the fall, enjoyed. It is called the 'temperamentum ad pondus', or 'æqualitas vitæ absolutæ'.

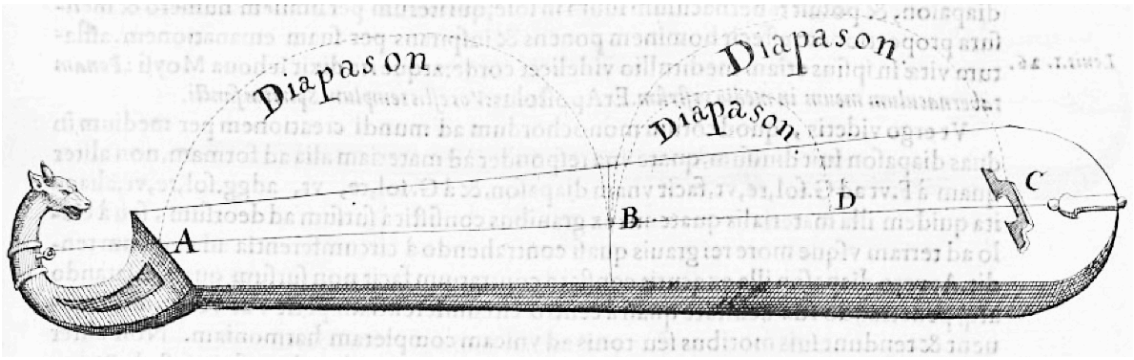

Figure 130: *temperamentum ad pondus* (*Pulsus*, p. 55)

When one leads a temperate and moderate life, then he/she is rewarded with a healthy life. This life is constituted by the *proportio sesquialtera* (2:3), the interval of the fifth, which can be obtained, in the monochord, by dividing the string into three equal parts. Such a consonance is just slightly less perfect than the octave, and still bears a good harmony to the human body. This state is called 'æqualitas ad iustitiam'.

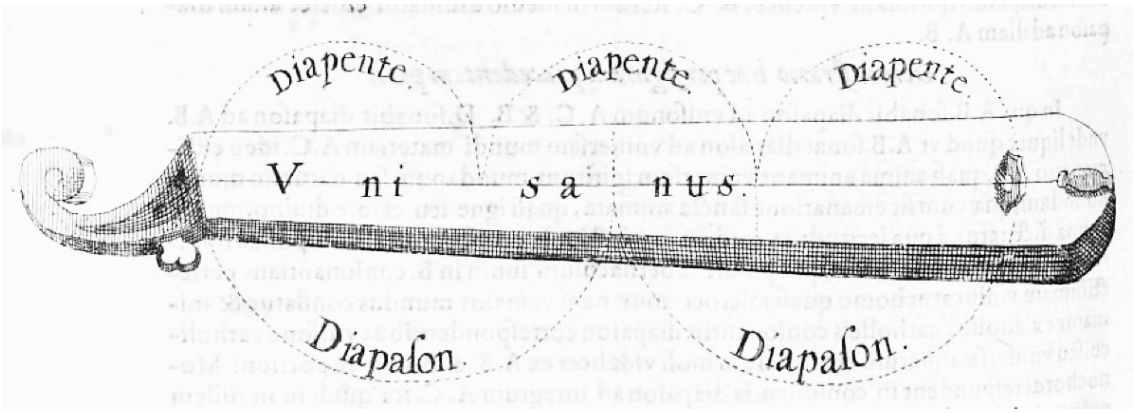

Figure 131: *æqualitas ad iustitiam* (*Pulsus*, p. 56)[68]

Sometimes it happens that there is a certain state of life in which the balance is not perfectly exact, but it still retains a degree of healthiness, as long as it does not exceed the limit of balance. In this case the *sesquitertia proportio* occurs, i.e. the interval of fourth (3:4), which one obtains if one divides the string of the monochord in four parts. This state is termed 'temperata ad iustitiam'.

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[68] Note the typo: *unisanus* instead of *unisonus*. Though a possible mistake, this leaves room for another interpretation, i.e. the 'collation' of the two words *unisonus* and *sanus*. The unison, in fact, is the healthy (*sanus*) interval *par excellence*.

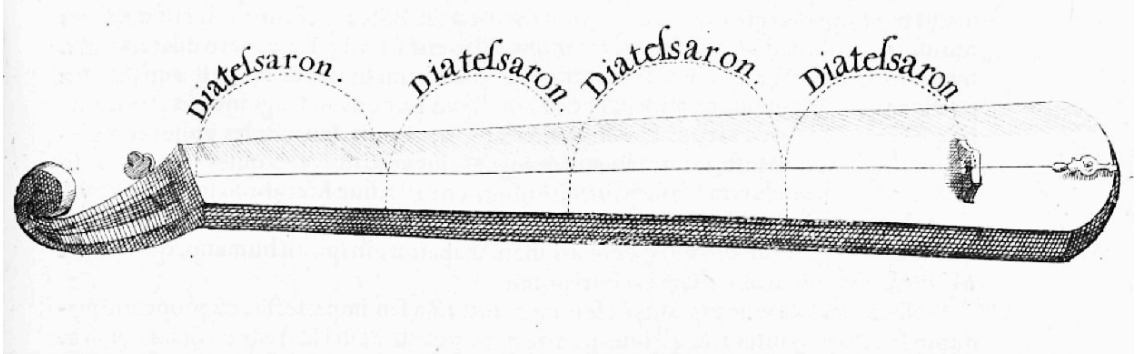

Figure 132: *temperata ad iustitiam* (*Pulsus*, p. 57)

After concluding this first 'experiment', Fludd turns to the weather-glass, for the second part of his demonstration. It is interesting to note that he explicitly considers this a better way to illustrate his concept: this is symptomatic of the preference he accords, in his later years, to the weather-glass over the monochord.

Fludd applies the concepts just surveyed to the weather-glass (see below, figure 133), thus equating the two instruments and putting them, so to speak, one beside the other. In fact, the healthier state occurs when the air and the water in the instrument are in a balanced state one in respect to the other, and their average value between diastole and systole is in the middlemost degree. This is compared to the *diapason*, or octave (1:2). There is no doubt, in fact, that Fludd is drawing parallels between the monochord and the weather-glass:

> [a]nd for this reason you see with open eyes the ratio and proportion of the 'æqualitatis ad pondus', which as I have said to consist of the consonance of octave. In fact, in the same way as in the figure of the monochord A is put in relation to C, so 2D is put in relation to 2E, and in the same way as the octave of equality is found in the middle B, so the measure of this equality corresponds to 1 of the equinox.[69]

But this situation, as already mentioned above, is the ideal one and does not occur often in our lives. There are some kinds of imbalances that can occur. For example, if the level of the water goes more towards the wintery hemisphere, and the point of rest between diastole and systole is in the **2E** degree, it means that the state is the phlegmatic 'æqualitas ad iustitiam', or fifth (2:3). If, on the other hand, the 'average' level of the water drops to **2D**, there is the same *sesquialtera proportio*, but this time it is sanguine. Consequently, if the state of rest between contraction and dilatation of the heart is in **3F**, with the systole in **4H** and diastole in **2E**, there occurs the less

[69] "Atque hac ratione apertis oculis videtis rationem et proportionem æqualitatis ad pondus, quam in consonantia diapason consistere dixi: nam ut in monochordi figura prima A. se habet ad C. ita se habet 2.D. ad 2.E. et sicut diapason æqualitatis invenitur in B.medio, sic quidem pondus istius æqualitatis consistit in 1. æquinoctii". *Pulsus*, p. 57.

perfect ‘temperata ad iustitiam’, characterised by the *sesquitertia proportio* (3:4), or fourth. If it happens in the wintery hemisphere of the instrument the pulse is of the phlegmatic kind; if, *vice versa*, it occurs in the southern hemisphere (with *æqualitas* in **3G**), it is of the bilious (i.e. associated with bile) kind.

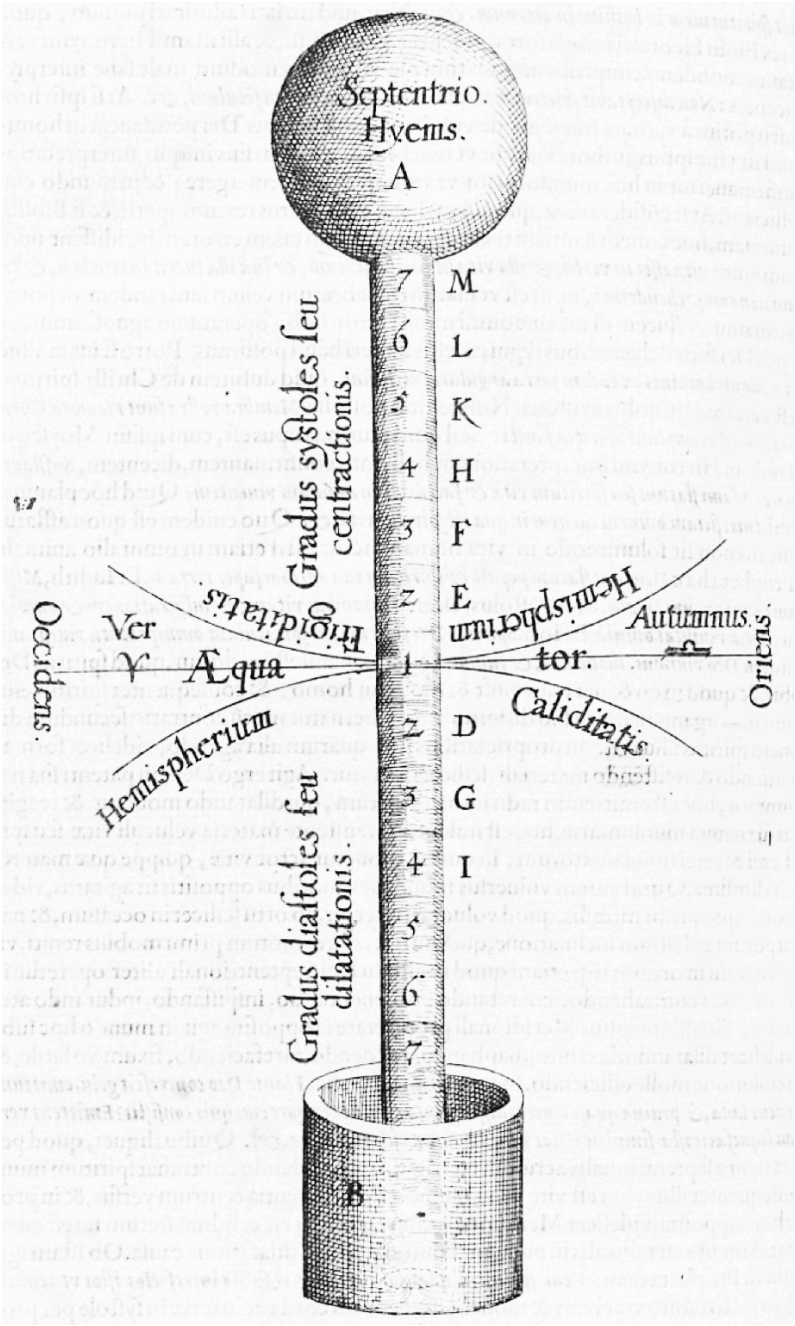

Figure 133 (*Pulsus*, p. 50)

The limit of healthiness in both directions is marked by grade **3**; within this range, the life is still healthy, and subtle variations of the humours signify just subtle variations in the character of the person, denoting his/her being more or less phlegmatic or sanguine. But if the level of water exceeds this limit, the harmony of the life turns into

discord and inequality, because the proportion between diastole and systole exceeds by too much the middle line **1**.

Caput iv goes ahead in describing the imbalances and their meanings, and one finds a plate which combines musical notation with Fludd's weather-glass.

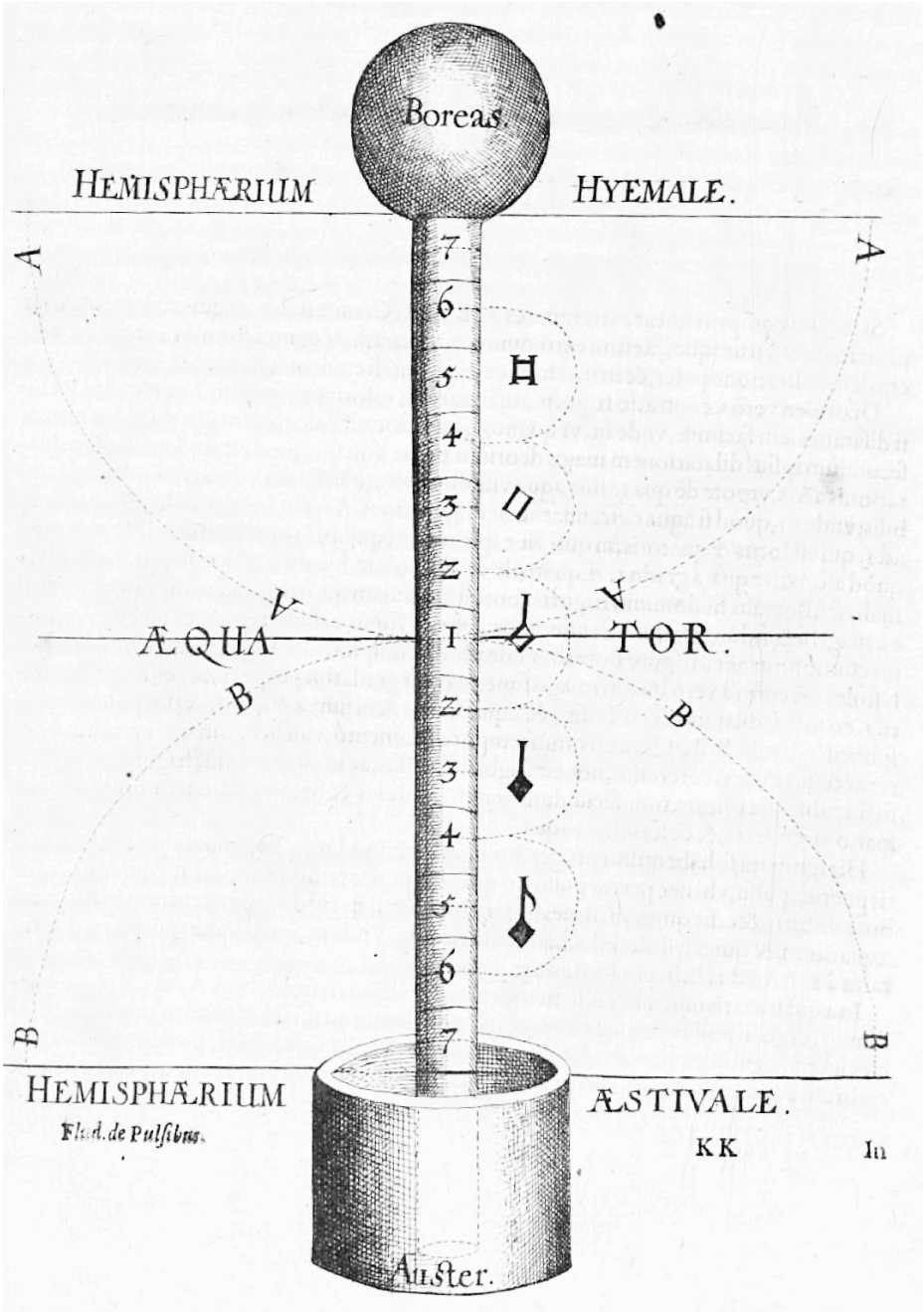

Figure 134 (*Pulsus*, p. 73)

In considering the Northern hemisphere, grade **7** is the extreme contraction and denotes a pulse that will soon lead to death; it corresponds to the *longa* – the musical note is not depicted in the above plate. When the systole happens in 6 and the diastole in **4**, thus obtaining a middle-degree of **5**, the duration of the two acts is of a *brevis*, i.e. the contraction will last the length of a breve, and so does the expansion.

The reason why the pulse is so slow in this situation is because the spirit is highly condensed due to the excess of cold, and thus it takes more time to expand in the diastole. When the systole is in **2** and the diastole in **4** there is an *æqualitas* of **3**, which happens when the two acts last the duration of a semibreve each.

The most perfect healthy state is when both the contraction and dilatation each lasts a minim. What happens in the southern hemisphere is the mirror of what happens in the northern one. If the upper part of the weather-glass is characterised by slower values, the lower part sees the prevalence of faster tempos. When systole and diastole last one crochet each it means that one is considering grade **3** of the graduated scale, with systole in **2** and diastole in **4**. If they last a quaver each, the ratio systole:diastole is **4**:**6**, with the rest in **5**, corresponding to a very hectic pulse.

Each of the pulses is associated with each of the four elements, which will in turn help to classify the disease the patient is suffering from. Thus, the **6-5-4** (systole-*æqualitas*-diastole) pulse of the wintery hemisphere characterises melancholy and earth; this is the northern pulse. The **4-3-2** one is associated with water, and denotes the western pulse. The southern pulse, i.e. the **2-3-4** in the summery hemisphere, is connected with air. Lastly, the eastern pulse **4-5-6** is of a fiery quality.

It may happen that the pulse can be *dispar* or, in other words, that the systole and diastole are not of the same length, e.g. when the systole lasts a crotchet's length and the diastole a quaver's. This might happen if during the diastole the heat exceeds the cold. In this way, the diastole will take less time to expand due to the abundance of heat, whilst the systole will be obstructed and will requires more time for cooling the over-heated spirit.

Lastly, *liber iv* ends with a comprehensive plate; this 'universal system of the pulses' summarises the Fluddean musical system of the heartbeat. This representation is similar to other Fluddean schemas,[70] and testifies to the struggle to build a coherent system based on the weather-glass.

[70] See, in particular, the weather-glass as applied to the analysis of the urine (figure 121).

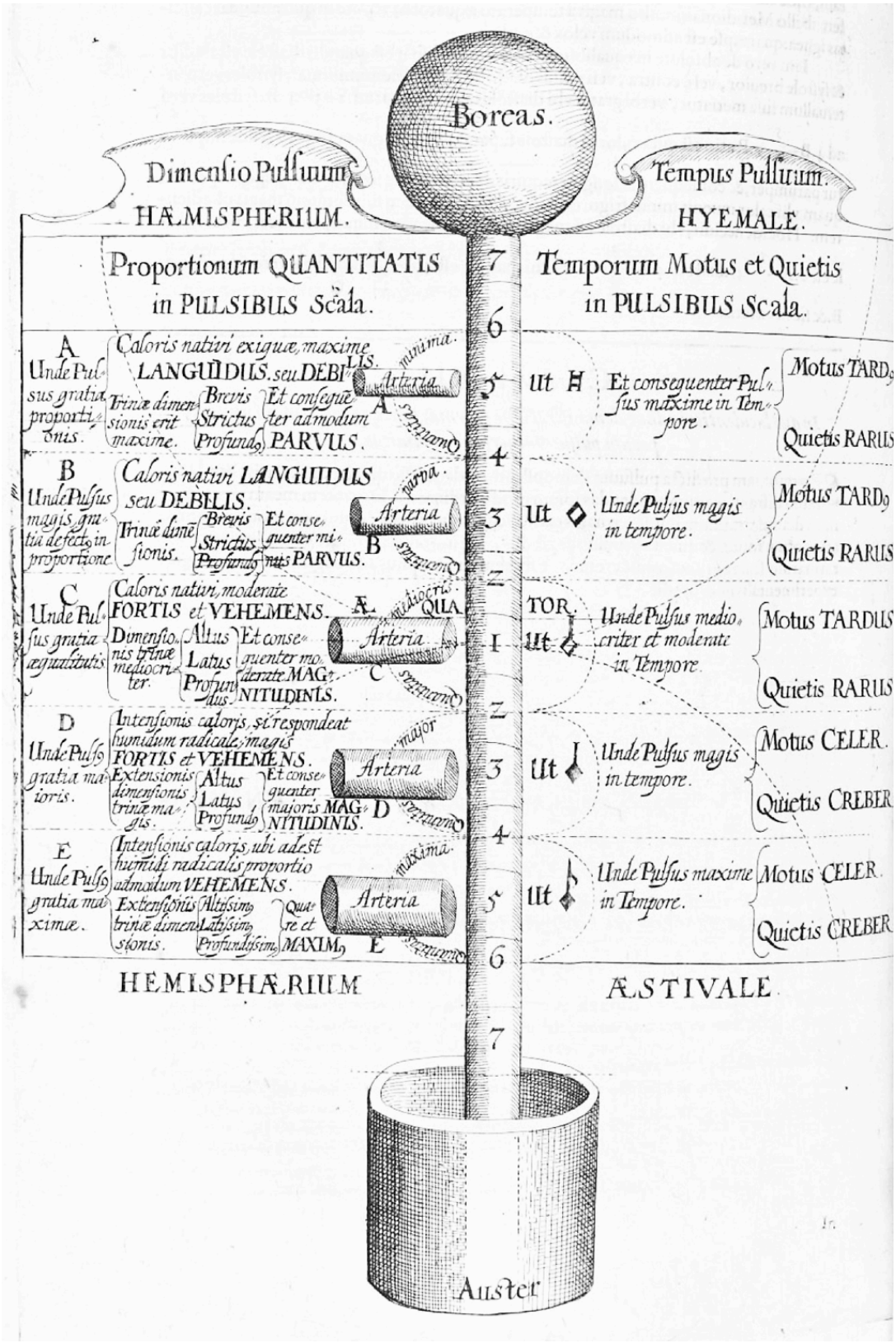

Figure 135 (*Pulsus*, p. 78)

On the left-hand side one can identify the main genres of pulses as described by Fludd. The pulse **A**, beginning from the top, is the slowest one, its diastole and systole lasting a breve each. This happens when the vital spirit is very cold and very prone to contraction. The arteries are very feeble (*quantitas minima*) and difficult to sense with the finger, and diseases connected to the *vitrea pituita* (the nasal mucus) are

very likely to happen. It is worth noticing that following the ancient medical tradition Fludd believed that the blood in the arteries was different from that in the veins, the first containing refined vital spirit and the latter carrying the nourishments for the body.[71] The volume and the strength of the artery are thus directly influenced by the degrees of heat or cold.

The pulse **B**, the second from the top, has still a slow movement, lasting two semibreves. The artery here is a bit stronger and wider (*quantitas parva*) compared to the **A** type, but still smaller in respect to the healthy artery. The **C** type typifies the perfect and healthy state. This is the *pulsus æqualitatis*, and it is characterised by an equal proportion of heat and cold; its artery is neither too small nor too big (*quantitas mediocris*). Accessing the summery hemisphere one encounters the **D** pulse. In this situation the diastole and systole last a crotchet each, giving a faster heartbeat. The artery is larger than normal and is expanded by the vital spirit under the influence of the heat (*quantitas maior*). Lastly, the pulse **E** is dangerously fast, and here the extremely rarefied vital spirit expands the artery abnormally.

As I have shown, the connection between heartbeat and music stems from a very long tradition. It originated with Herophilus of Calcedonia in the third century B.C., had been transmitted and charged with authority thanks to the accounts of Galen and Avicenna, it prospered in the fourteenth century (the *Conciliator* by Pietro d'Abano is a telling example), and continued to be present in the writings of music theorists (Franchinus Gaffurius, Ramos de Pareja, Marchetto da Padova, Johannes Tinctoris) and physicians (Josephus Struthius, Franciscus Jöel, Luis Mercado) alike. When the 'music of the pulse' finally reached Robert Fludd, it had enjoyed almost two millennia of medical and musical speculations. Was there anything new that could have been added to it? And moreover, was that lore about to fade?

I believe the answer to both questions is positive. The Fluddean survey of the pulse distinguishes itself from other works on the pulse. If considered alone, the *Pulsus* cannot be fully understood and, on the contrary, might appear as an oddity, an incomprehensible blend of musical rhythms, humoral theories and mystical motives. Nevertheless, if appropriately placed in the wider context of the Fluddean production,

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[71] So not Harvey: though he believed that indeed the blood carries within itself heat and spirits, he stressed the fact that artery and veins both contain the same blood. Nevertheless, "Harvey acknowledged that arterial blood is more spirituous and 'possessed of higher vital force'" (W. C. Aird, 'Discovery of the Cardiovascular System: From Galen to William Harvey', *Journal of Thrombosis and Haemostasis*, 9, 2011, pp. 118-129 (125)).

it can reveal important details and be appreciated as an original contribution to the pulse tradition. The weather-glass as a metaphorical instrument applied to the pulse is a genuine invention of Fludd himself. To be sure, it had been applied to urinomancy before; in general, it is employed by Fludd for the purpose of demonstrating the forces at work in both the macrocosm and the microcosm. As Fludd himself remarked in his later works, the weather-glass allows a better understanding of his philosophy and provides, as it were, the key to it. In reading the first *tractatus* of the first *tomus* of the *De utriusque cosmi historia*, one would be sure that such a key is instead, without any doubt, the monochord.[72]

Yet, and almost surprisingly, in the *Pulsus* the monochord reappears after a few years of absence from Fludd's writings – although outshone by the prominence of the weather-glass. The fact that this happens right in the treatise concerned with the heartbeat reinforces both the connection between music and pulse and the connection between the monochord and weather-glass. These two metaphorical devices are united together under the aegis of the pyramidal *scientia*, as I have shown in the course of this chapter. The consistency of Fludd's philosophical path is thus maintained: what changes is the adoption of another, more up-to-date and effective metaphorical tool. The combination of the aforementioned with elements coming from both Paracelsian medicine and humoral theory, all inscribed into Fludd's Catholic medicine, certainly creates a heterogeneous combination which perhaps was not to be exceeded by other physician or musician of that time.

Robert Fludd then originally contributed to a tradition that not only was, at the beginning of the seventeenth century, inexorably fading, but had previously been basically silent in English soil. In fact, as Gary Townsend observed, up to the end of sixteenth century

> [...] all the major contributions to the numbering of the pulse were made by Continental physicians. The English were outstanding only in their absence, and this despite the fact that the examination of the pulse was considered of the first importance and was even represented in the arms of the Royal College of Physicians. The first of the 17th century English treatises on the pulse perhaps served only to complicate further an already top-heavy system. It was the product of the prominent Rosicrucian Robert Fludd (1574-1637), the chief representative of the school of medical mystics who laid claim to the possession of the key to universal science. He appears to have had nothing to say on pulse counting.[73]

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[72] As already mentioned in chapter III, Fludd regarded the experiment with the wheat as the key to a correct understanding of his philosophy. Nevertheless, this is not a mark of inconsistency; rather, it is symptomatic of Fludd's multi-faceted philosophy.

[73] Townsend, 'Sir John Floyer', p. 296.

True: Fludd did not add anything substantial to the pulse counting – nor was he honestly interested in it. His interests were rooted in his own philosophy of macro- and microcosmical musical interactions, with the weather-glass and the *qualitative* music of the pulse occupying the metaphorical substratum of his thought. Fludd seems to have been the great synthesiser of the pulse lore in a time when that same long-lasting tradition was about to give way to other, more 'scientifically correct' speculations. And yet, the same weather-glass – a newly devised instrument – may be considered a bridge towards those new thoughts that characterised the years of the so-called scientific revolution.

After the *Pulsus* had been published, one can trace a good number of publications similar to the Fluddean one: the fascination for the connection between heartbeat and music, in fact, kept the renewed *momentum* for at least two hundred years since Struthius' contribution. In 1636, for example, Marin Mersenne wrote that the musical measure has to be counted in such a way that the systole or contraction of the heart will correspond to the lifting, and the diastole or dilation of the heart will correspond to the lowering of the hand, so that the masters of music will sing truthfully the worships of God.[74] In another passage, Mersenne specifies that

> the white notes with tails [i.e. the semibreves] show that it is necessary to make the sound of the letter last the time of half a measure, which ordinarily lasts a 7200th part of an hour, or a 120th part of a minute, that is to say, during the diastole of the heart.[75]

Fleming has argued that

> [...] after the discovery of the circulation, interest in the detailed study of the pulse seems to have waned out.[76]

I do not think this reflects what actually happened, especially if one considers the lore of the 'music of the pulse'. For example, one of the most astonishing post-Fludd publications in this regard is the *Monochordon symbolico-biomanticum. Abstrusissimam pulsuum doctrinam, ex harmoniis musicis dilucide, figurisque ocullariter demonstrans*, printed in 1640, by the German physician Samuel Hafenreffer (1587-

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[74] "[...] de sorte que la systole ou la contraction du cœur respondra à l'élevation, et sa diastole ou dilatation à l'abaissement de la main, afin que les Maistres de Musique dient veritablement en chantant les loüanges de Dieu [...]". M. Mersenne, *Harmonie universelle*, 2 vols, i, Paris, 1636, p. 255. I am indebted to Vivien Williams for her help with this passage.

[75] "[...] le notes blanches à queuë monstrent qu'il faut faire durer le son de la lettre le temps d'une demie mesure, la quelle dure pour l'ordinaire 1/7200 partie d'une heure ou 1/120 d'une minute, c'est à dire durant la diastole du cœur". M. Mersenne, *Harmonie universelle*, 2 vols, ii, Paris, 1637, p. 86. English translation in M. Mersenne, *Harmonie universelle: The Book on Instruments*, tr. by Roger E. Chapman, The Hague, 1957, p. 113-114.

[76] P. R. Fleming (ed.), *A Short History of Cardiology*, Amsterdam, 1997, p. 21.

1660). This book is clearly indebted to Fludd, who is indeed quoted in the introduction to the work, insomuch that it correlates the intervals and proportions of the monochord to various kinds of pulses, with Cabalistic and astrological elements, and pushes the Fluddean theory considerably further.[77]

An effort which goes in the same direction of Fludd's *Pulsus* came from another German scholar, i.e. Athanasius Kircher.[78] Like Hafenreffer, Kircher explored and expanded the connections between pulse and music, linking musical notation, heartbeat, the four elements, the four temperaments, etc., in a way which for several aspects closely recalls Fludd's speculation of twenty years before. Kümmel rightly notes that

> Kircher had high hopes for his musically-illustrated pulse-theory. He thought that a physician who studied it thoroughly and applied himself to it diligently could perform marvels. Kircher attributed the low cure-rate of contemporary medicine primarily to the fact that physicians had insufficient insight into the secrets of the pulse, and he sketched a portrait of a physician who knows the harmony of the pulse so well that he can differentiate accurately between the different types of pulses displayed in individual diseases, and so know the suitable remedies to administer to restore the patient's body to a state of perfect harmony.[79]

Fludd would have certainly agreed with such a determination in considering the knowledge of music in relation to the pulse fundamentally important. With the development of new instruments for the measurement of both the heartbeat and the beats in music, the pulse lore slowly began to fade in the eighteenth century, and an increasing number of medical writers began to criticise it.[80] The last medical works of a certain importance in this context are the treatises by the French physician Francois Nicolas Marquet (1687-1759)[81] and of Johann Georg Friedrich Franz (1737-1789).[82]

If one considers the strictly musical side, one still finds some examples of the use of the heartbeat as *tactus* for a composition. In his posthumously-published *Musica Deo sacra* (1668), the Welsh composer Thomas Tomkins (1572-1656)

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[77] For a closer analysis of Hafenreffer's musical-medical theory see Kümmel, *Musik und Medizin*, p. 38.
[78] A. Kircher, *Musurgia universalis,* 2 vols, ii, Rome, 1650, pp. 413-420.
[79] "An seine musikalisch illustrierte Pulslehre knüpfte Kircher große Erwartungen. Ein Arzt, der sie gründlich studiert und sich fleißig darin geübt habe, werde, so glaubte er, Wunderbares vollbringen können. Die geringen Heilerfolge der Medizin führte Kircher vor allem darauf zurück, daß die Ärzte zu wenig Einsicht in die Geheimnisse des Pulses hätten, und er entwarf das Bild eines Arztes, der die Harmonie des Pulses so gut kenne, daß er die Pulse der einzelnen Krankheiten genau unterscheiden, dadurch die passenden Gegenmittel anwenden und den Körper schnell wieder zu vollkommener Harmonie bringen könne". Kümmel, *Musik und Medizin*, pp. 45-47. The English translation is by Paul Ferguson.
[80] For example, Jacques Menuret (1733-1815), Carlo Gandini (1705-1788), Théophile de Burdeu (1722-1776), Christian Gottfried Gruner (1744-1815).
[81] F. N. Marquet, *Nouvelle methode facile et curieuse, pour apprendre par les notes de musique a connoitre le pouls par la musique*, Amsterdam, 1747.
[82] *Prolusio de medicorum legibus metricis* (Lipsia, 1782).

included the direction "Let the measure be of two pulsations of the human body".[83] In 1756, the German composer and flute player Johann Joachim Quantz (1697-1773) referred to the human pulse in order to describe the tempo of some dances.[84] Yet, no new in-depth surveys of the connection of the pulse with musical rhythms were published after the end of the eighteenth century. In 1747, Marquet published his treatise on heartbeat and music. But, as the same title declares, this was by then just considered an 'easy and curious method' of surveying the human pulse; nothing more than an oddity.

V.ii The fading of the monochord

After the *Pulsus* had been published, only a couple of Fludd's publications would see the light of the day while he was still alive, and both of them spring from polemics with which he was engaged. The first one is the reply to William Foster, who in 1631 published his *Hoplocrisma-spongus, or, A sponge to wipe away the Weapon-Salve*. This was an attack against the weapon-salve and, in general, against the possibility of action at a distance, which in his opinion would certainly need some sort of black magic to operate. More importantly, Foster's book was particularly harsh towards Fludd himself, who was a strong advocate of the possibility of curing a wound by applying a special unguent to the weapon that caused the offence. Fludd, true to character, did not wait long to reply in printed form and indeed, in the same year, published his *Dr. Fludds Answer unto M. Foster*. The message was clear: not only did Fludd remain adamant in his adoption of the weapon-salve, but he defended its legitimacy and qualities against the criticisms of Foster.

The year 1633 witnessed the publication of the second and final hard-hitting reply to Pierre Gassendi and Marin Mersenne, entitled *Clavis philosophiæ et alchimiæ Fluddanæ*. Its 87 pages are dedicated to defending Fluddean philosophy and add nothing substantially to Fludd's philosophical system.

In 1638 a final book was printed under Fludd's authorship. For the first time after seven years this is a publication which was not sparked by a personal polemic. Its title is *De philosophia moysaica*, and it is divided into two *sectiones*. The first *sectio*

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[83] T. Tomkins, *Musica Deo Sacra et Ecclesiæ Anglicanæ; or Music dedicated to the Honor and Service of God, and to the Use of Cathedral and other Churches of England*, London, 1688, p. 334.
[84] J. J. Quantz, *Versuch einer Anweisung die Flöte traversiere zu spielen*, ed. Hans Peter Schmitz, Kassel, 1953, p. 201.

is subdivided into five *libri*, the first of which, significantly, describes in detail the weather-glass and its use. What is noteworthy is not so much the actual description of the instrument, which does not differ from that previously given in *MC* and *PS*, but the very reason for its employment that Fludd presents.

> The author of this tractate did esteem it the greatest means of conquest, in this Herculean combat, which is to be effected betwixt the two deadly enemies, and strong champions, Truth and Falsehood, i.e. the wisdom of God and that of the World, if he could find out some vulgar, and well known experiment, or practical instrument, which might serve our celestial champion Truth, instead of an Herculean club, to tame and examine that foul monster, Infidelity [...]. For this cause therefore, and to this effect, he chose a certain spiritual invention, commonly termed weather-, or calendar-glass, which he calls a demonstrative or experimental instrument, so that by means of ocular and practical experiments of itself he might demonstrate the falsehood of the worldly philosophy and defend the truth [...].[85]

As I shall show briefly, this is a noteworthy point in Fludd's output which, together with the lengthy discussion of magnetism to be found in the last *sectio*, is testimony to a considerable shift towards 'real' experimentation. As far as the weather-glass is concerned, it has to be noted that Fludd does not claim that he invented the instrument. On other occasions he had been proud of presenting his own inventions, original ideas or synthesis, taking care to stress his paternity.[86] But he is pretty clear in stating that this is not the case about the weather-glass.

> The instrument commonly termed the calendar, or weather-glass, has many counterfeit masters or patrons in this our age who, because that they have a little altered the shape of the model, do vainly glory that it is a masterpiece of their own finding out. [...] I cannot rightly arrogate or assume into myself the primary composition of this instrument, although I have made use of it in my *historia naturalis* of the macrocosm and elsewhere (but in another form) to demonstrate the verity of my philosophical argument. I confess that I found it graphically specified, and geometrically delineated, in a manuscript of above five hundred years at least.[87]

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[85] "Author huius tractatus præcipuum fore victoriæ medium in hoc conflictu Herculeo, qui inter duos inimicos et agonistas fortissimos veritatem et falsitatem, hoc est, sapientiam Dei et illam mundanam est faciendus, existimavit, si vulgare et bene notum aliquod experimentum sive practicum instrumentum invenire potuisset, quod cœlesti nostro Athletæ, scilicet veritati loco massæ sive fustis Herculei ad monstrum illud deforme et horrendum, nempe Infidelitatem domandam et exterminandam inservire queat [...]. Propter hanc igitur causam et ad hunc effectum machinam quandam spiritalem, nomine speculi Calendarii dictam elegit, quam ipse vocat instrumentum suum experimentale sive demonstrativum, ut per ocularia et practica eiusdem experimenta sapientiæ et philosophiæ mundanæ falsitatem delineare et veritatem defendere possit [...]". *De philosophia moysaica*, fol. 1^{v}.

[86] As it happens, for example, with his *instrumentum magnum* or his *scientia pyramidum*.

[87] "Ratione instrumentum sive speculum hoc nostrum experimentale, plurimos, habet inventores spurios seu adulterinos, qui; quoniam typi formam aliquantulum immutarunt, ipsius inventionem a seipsis prius excogitatam gloriantur. [...] iure mihi fabricam huius instrumenti primariam arrogare aut vendicare queam, quamvis illo in naturali Macrocosmi, mei historia et alibi ad veritatem argumenti mei philosophici demonstrandam (licet in alia forma) sum usus: et agnosco, me illud in veteri quingentorum saltem annorum antiquitatis manuscripto graphice specificatum, atque geometrice delineatum invenisse". Ibid., fol. 1^{v}.

The message is clear: Fludd does not dwell on the weather-glass because he wants to secure the paternity of its invention to himself. On the contrary, unlike other coeval colleagues, he is not ashamed to admit that he simply took inspiration from another source, i.e. an old manuscript. This is certainly an act of intellectual honesty, since the knowledge of the weather-glass just began to spread in England during Fludd's time thanks to Cornelius Drebbel and Francis Bacon. The huge importance and potentiality Fludd sees in the weather-glass is certainly strictly related to its predominance in the Fluddean works from 1626 onwards. The fact that this instrument is again surveyed in Fludd's very last, and posthumous, publication underlines the ultimate relevance of it as a key for the understanding of both the macro- and the microcosm.

The following four *libri* of *sectio* i are all dedicated to the description of the true 'mosaical' philosophy as opposed to the worldly Aristotelian one. There are no substantial developments here; these *libri* repeat what Fludd had already expounded in his previous works, often referring the reader to them and adding several *experimenta* which are mainly performed with the help of the weather-glass. Worthy of mention is *caput* iii of *liber* iv. Here, Fludd gives eight arguments to demonstrate the validity of the psalm 18:6 "God hath put his tabernacle in the Sun".[88] Amongst them there is a musical one: in fact, Fludd argues, by pressing the middlemost point of the string of a monochord one obtains the most consonant interval, i.e. the octave. Since the astronomers are concord in affirming that the Sun is at the centre of the cosmos, it follows that the Sun is placed in the middlemost point of the distance between the Earth and the upper limit of the highest heaven. What is interesting to note is that this musical argument is mixed with Cabalistic, geometric, theological and other ones, and does not appear to be the most important; to be sure it is listed as the seventh out of eight.

In *sectio* ii one finds a detailed survey of the notions of sympathy and antipathy: for convenience this *sectio* could be dubbed Fludd's *historia sympathiæque antipathiæ*. This is a sort of continuation and further investigation of the weapon-salve and the philosophy behind it. In fact, in the time that separates Fludd's reply to Foster and the publication of the *De philosophia moysaica* there was a big debate over that topic. Fludd, who never missed any occasion to defend his own ideas against any accuser, wanted to publish a very detailed apology of what became a cure of which the English physician was very fond. The first mention of this treatment is to be found

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[88] This passage is well described in A. G. Debus, 'The Sun in the Universe of Robert Fludd', in *Le Soleil à la Renaissance: Sciences et mythes*, Bruxelles, 1965, pp. 260-286 (268-270).

in the *Anatomiæ amphitheatrum*;[89] but if it is true that Fludd then dedicated only a few pages to the topic, fifteen years later the survey is much more significant both in length and insight.

After a close survey of the whole Fluddean production from the first early works until this last book published in 1638, it is my opinion that a slight change in Fludd's attitude can be traced. The *De philosophia moysaica*, in fact, relies upon many practical demonstrations and experiments, and its second *sectio* even leaves the sacred authority in the background. No, Fludd did not abandon his Catholic medicine and his religious tenets at all. Yet, interestingly, the main authority of the *historia sympathiæque antipathiæ* is one of the fathers of modern experimental method, William Gilbert, with his *De magnete* (London, 1600). I have already shown in chapter III of this dissertation how Fludd hastened, in 1617, to make it clear that he was against Gilbert's Copernicanism – and Copernicus himself. On that occasion, the idea of an Earth revolving around a static Sun could simply not be accepted by the pious Fludd. Twenty-one years later, though, the scenario was different. The Gilbertian account of a hidden force capable of acting at a distance and without physical contact between two objects was far too alluring for Fludd, so eager to demonstrate in general the validity of his (medical) philosophy, and in particular the trueness of the weapon-salve cure. Already the German physician Rudolf Goclenius the Younger (1572-1621) defended his sympathetically-working cure by appealing to Gilbert's *De magnete*.[90] Jan Baptist van Helmont, also an apologist of the weapon-salve cure, mentioned Gilbert and his experiments on magnetism in his *De magnetica vulnerum curatione* (1621).[91]

To my knowledge only Allen Debus noticed that in the second (and last) *sectio* of the last Fluddean publication the Bible and Paracelsus are quoted far less than William Gilbert's important work on magnetism, which enjoys about 40 citations. Moreover, Fludd shows that he carefully studied another text on magnetism, also published in England: this is *A Short Treatise of Magneticall Bodies and Motions* by the English physician Mark Ridley, a colleague of Fludd's in the Royal College of

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[89] *AA*, pp. 236-239.

[90] Published in Marburg 1608, Goclenius' *Tractatus de magnetica vulnerum curatione* (On the magnetic curing of wounds) started a debate on the weapon salve which presented as the main protagonists himself, van Helmont and the Flemish Jesuit Jean Roberti (1569-1651) on the continent. One of the most stubborn representatives of this cure in British soil was certainly Robert Fludd. It must be noted that the sympathetically-operating cure was widely known and followed by many in Fludd's time (even Sir Francis Bacon did not overtly contest it) and beyond: Sir Kenelm Digby is a good example.

[91] See A. G. Debus, 'Robert Fludd and the Use of Gilbert's *De magnete* in the Weapon-Salve Controversy', *Journal of the History of Medicine and Allied Sciences*, XIX, 4, 1964, pp. 389-417 (404-405).

Physicians, and Censor together with him in 1618. Furthermore, the number of cases and stories narrated by Fludd in the course of his last treatise exceeds the ones present in any other Fluddean publication.

The above observations about the *De philosophia moysaica* acquire a distinctive significance if considered against the background of the whole Fluddean *opera omnia*. I argue that Fludd grew more and more conscious of the need to provide a good number of convincing examples, experiments, and experiences taken from his daily work as a physician in order to support his ideas of a world (be it the macro- or the microcosm, but with an obvious emphasis on the latter) in which everything is interconnected and functions by way of sympathies and antipathies between its components. As I have shown in the course of my dissertation, Robert Fludd started to employ his 'ocular demonstrations' rather early in his publishing career, and they indeed characterise many of his pages. It is in the second *sectio* of the *De philosophia moysaica*, though, that one can perceive a significant increase in the employment of experiments and 'real life' stories. I am not suggesting that in the end of his career Fludd altogether changed his epistemology. After all, as Debus rightly observes,

> (y)et Fludd clung more tenaciously than most to the mystical approach of the neo-Platonists. For him the Holy Scriptures and the semi-divine Hermetic corpus carried far more weight than ocular demonstrations ever could. He might turn to mechanical examples to demonstrate the immobility of the earth, he might invoke Harvey's dissections to demonstrate the solid structure of the septum of the heart, and he might quote the experiments of Gilbert and Ridley to show the truth of sympathetic magic, but these were all a lesser form of proof.[92]

Still, in Fludd's last publication the emphasis on – and the number of occurrences of – 'ocular demonstrations' is rather striking. Fludd became perhaps aware of the need of providing increasingly more proof in order to convince the followers of the false and worldly Aristotelian doctrine of the necessity of a big turn towards the real Christian philosophy.

The English translation of the *De philosophia moysaica* was published in 1659 with the title *Mosaicall Philosophy*. An in-depth work of comparison of the two editions has yet to be done, and it is surely one of the areas of research that still have to be fully explored. Many scholars have, perhaps understandably, taken it for granted that the latter translation represents *verbatim* the very same text of the 1638 edition. This is generally true, though I have, from an initial perusal of the two

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[92] Debus, "Robert Fludd and the Use of Gilbert's *De magnete*", p. 394.

editions, already spotted some discrepancies.[93] The most curious, especially if considered from a 'musical' point of view, is the one occurring in the sixth and last *caput* of *membrum* i of *liber* ii in *sectio* ii. It is a demonstration that bears the title "How this is demonstrated by means of the proportions of harmony; what is sympathy and what antipathy".[94] The English text is shorter than the Latin one and leaves the first paragraphs out. In the Latin version the musical demonstration of what are sympathy and antipathy is carried out by means of the monochord. In fact, after a short appearance in the *Pulsus*, the 'Pythagorean' instrument emerges once more in the *De philosophia moysaica*, this time for an even shorter account than that published seven years before.

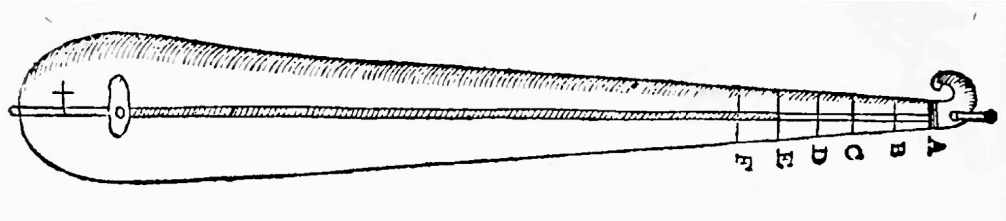

Figure 136 (*De philosophia moysaica*, fol. 96^{v})

This is the last time one finds a monochord in a Fluddean publication. The text that accompanies it explains the concepts of sympathy and antipathy by comparing the sounds produced by two strings (of two monochords) vibrating together.

> From this it is clear that, notwithstanding both strings are of the same thickness, nevertheless the air [is] always both in proportion and in disposition in respect to their shortness or length, and both dissonant and consonant sounds are observed to be produced.[95]

The shorter the string, Fludd continues, the more its vibration rarefies the air, and as a consequence produces a higher-pitched sound. On the other hand, the longer the string, the less rarefied is the air due to its slower vibration, thus making a lower-

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[93] For example, in fol. 56^{r} of the Latin edition Fludd writes that he already mentioned a few stories in his *historia meteorologica* (i.e. *PS*), pp. 202-203, and for this reason he will omit them. But at the corresponding point in the English translation two stories, indeed taken from *PS*, are added, and there is no reference to the unnecessary inclusion/repetition of them (*Mosaicall Philosophy*, pp. 117-118). Another discrepancy is that in the second *liber* of the first *sectio* of the Latin edition there are seven *capita*, while in the English translation there are six chapters. To be sure, it is *caput ii* which has been omitted in the *Mosaicall Philosoph*y.

[94] "Quomodo harmoniæ proportionibus probetur, quid sit sympathia et quid antipathia". The title remains basically the same in the English edition ("How this is demonstrated by harmony; what sympathy and antipathy is").

[95] "Unde liquet, quod quamvis ambæ chordæ sint unius latitudinis, tamen semper respectu illarum vel brevitatis vel longitudinis aer tam proportione, quam dispositione in rarefactione et condensatione varias observantur super eas edere voces, tam dissonantes, quam consonantes". *De philosophia moysaica*, fol. 96^{v}.

pitched sound. As a conclusion, the reason for a pleasant or, on the contrary, dissonant harmony resides in the proportion and density of the air, due to the 'Catholic' spirit that is present in it ("mediante actus spiritus in ipso Catholici"). The medium in which, and through which, the divine spirit acts both sympathetically and antipathetically in this world is the air; it acts on the creatures not differently from what happens with the flute or whatever other musical instrument.

The mention of the flute here is particularly worthy of attention for at least two reasons. The first is that Fludd already gave a short account of this instrument in his *liber* on the *musica mundana*. But, as I have shown in chapter IV, on that occasion the (metaphorical) flute had been used to demonstrate a) that in the highest region of the heavens the celestial music is more high-pitched than in the lower regions, and b) that without the 'divine blower' (God) the flute – i.e. the world – is devoid of music. This is then a different context and, to a certain extent, a more practical demonstration. The second reason why the mention of the flute in the Latin edition of Fludd's posthumous work is particularly interesting is because in the English edition the image of the monochord, with its associated description, disappears altogether, and is substituted with, indeed, a flute.

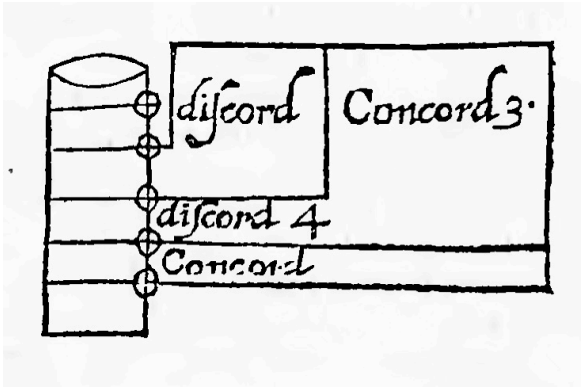

Figure 137 (*Mosaicall Philosophy*, p. 199)

The above 'English demonstration' of the reasons for sympathy and antipathy focuses on the pipe and not around the monochord. The text that accompanies the above plate does not go into detail, but from the poorly-drawn image one can infer that Fludd is making a comparison between different notes played on the flute and finding concordances or dissonances according to which subsequent notes are played. In the 1659 edition only one short sentence addresses the issue of the strings, vaguely recalling the lengthier – but still short – one of the 1638 edition.

> Demonstrated by a Pipe, whose notes vary according unto proportion, in spirit or aire, moved by one and the self-same blast, whose proportions, when they disproportionably meet, do jar; but when they proportionably meet, accord and agree. All spirits in creatures are proportioned by more or lesse aire, all in spirit of life, moving and acting; and according to the proportions in concord or discord, they agree or disagree: as the weights of Phythagoras his hammer, in bodies proportionate or disproportionate. *Also two strings being as one stretched up, give concording or discording sounds, according to their greatnesse or shortness*. As for example, in this case of aire in a pipe.[96]

This is not a translation corresponding to the Latin text, which is rather remarkable, since this is one of the few instances in the whole treatise where the two texts are not paralleled. What does this tell us? Unfortunately there are no clear indications about who actually translated the book, and we are not sure whether the translation into English has been carried out by Fludd himself or someone unknown. If Fludd was the translator, and the work was originally in Latin and was translated later, this leads to the conclusion that, by the very end of Fludd's career, the monochord had lost much of the fascination it had had for him in the pre-1626 works. In fact, it received shorter and shorter attention, until it was omitted completely in the last publication – even in that half-page where it 'should' be there. All of the above adds up to what I have already tried to demonstrate in the previous chapters: it seems that the monochord, which was the metaphoric instrument *par excellence* in Fludd's earlier works, increasingly loses its primacy over time. The weather-glass 'officially' took its place in 1626 (with the *Experimentum* in *Philosophia sacra*), and twelve years later another 'experimental device' would flank it, this being Gilbert's *magnes*.

Fludd dedicated the first *sectio* of his last work to the weather-glass, and the second *sectio* to the Gilbertian experiments with the magnet as further proof of the validity of his philosophy. In the 1638 edition only one meagre mention (less than half a page) is left to the monochord; and by 1659 it had disappeared completely. What a fate for the glorious monochord, which characterised so vividly the early Fluddean writings!

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[96] *Mosaicall Philosophy*, p. 199. The italic is mine.

Conclusion

At the end of this dissertation it is clear why a character like Robert Fludd poses several challenges to the scholar. I set out my work in order to test the consistency of Fludd's concepts throughout his works; in particular, I wanted to understand if it was true that the musical metaphor, emphasised by so many scholars, really shapes his *opera omnia*. Is the *monochordum mundi*, so persistent in studies of Fludd's work, really the best representation of his thought? As I was proceeding with my research, I increasingly realised that the musical metaphor is only one of the manifold aspects at stake. I was expecting to find increasingly more speculation on *musica* after the promise of the initial publications. Instead, I have found many other mystical and medical investigations, which perhaps better represent the English physician and his day-to-day profession. Yet, a little-known treatise published in 1631, the *Pulsus*, has offered new insights and perspectives into Fludd's later speculations; in it, music plays a significant role, even though within an approach which is in many ways different from the one which characterised the early publications. The philosophical interactions within the Fluddean works are quite often difficult to follow if a background of a wide range of different traditions and 'philosophies' is not taken into account. Limiting the scope of my enquiry has been necessary in order to keep the thesis within reasonable bounds; on the other hand, I did not want to lose touch with the 'big picture'. How is one to reconcile these two, in some aspects contrasting, goals?

The first two chapters have provided an introduction to Fludd through his biographical information and his philosophical background. As I have shown, Fludd was well known throughout Europe at his time. His books were discussed, praised, and often criticised. People like Johannes Kepler, Marin Mersenne and Pierre Gassendi took the trouble to write lengthy treatises against Fludd's philosophical system. Others, like Gregor Holst, expressed enthusiastic appreciation. In one way or another, Robert Fludd's ideas were circulating amongst, and discussed by, men of high intellectual standing all over Europe: this certainly implies that Fludd was not a marginal figure and that his philosophy, as radical – and in many aspects conservative – as it may appear, was considered worthy of analysis and discussion by contemporary learned men.

It is my opinion that an up-to-date, comprehensive and chronological survey of both the *De utriusque cosmi historia* and of the *Medicina catholica* was needed. This is why I have tried to fill this gap – though conscious of the limits that a Ph.D. dissertation poses in terms of focus and length. In chapter III I have examined the two major works by Fludd (*DUCH* and *MC*). This operation has brought several noteworthy results. For example, it has allowed me to gain a better perception of the breadth of the topics covered by Fludd. The chronological order in which Fludd's volumes have been published has almost always followed the order in which Fludd wrote the corresponding manuscripts he sent to the printers. As a consequence, my chronologically-ordered examination has made it possible to follow closely the unfolding of the Fluddean philosophical path. Another result of this operation has been the better appreciation of the place that the appendix to *Philosophia sacra*, the last publication that claims to be part of the *DUCH*, plays in context of Fludd's output. In fact, that appendix had apparently not been planned by Fludd, thus only added in a second moment, perhaps after Fludd learned about the weather-glass. The new instrument is nothing more than a revised version of the inverted-pipe experiment described at the very beginning of the *DUCH*. But in straightening out the pipe, Fludd reshapes it and renders it more appropriate to his pyramidal *scientia* and, as a consequence, to the monochord. The Fluddean weather-glass has, in fact, two extreme poles and a straight graduated 'line' connecting them, with a scale going from 0 to 12. The appendix to PS is a watershed: from then onwards the weather-glass would be significantly present in Fludd's works. Yet, there still was something missing: in 1629 the instrument is better refined and the graduated scale is revised, now going from (-)7 to 1 and from 1 to (+)7. This modification is far from superficial, since it allowed one to establish a central point of balance: this recalls the *sphæra æqualitatis* of the intersecting pyramids, the Sun in the macrocosm, the heart in the microcosm and, finally, the octave in the monochord.

As I have shown, Fludd systematically enlarges, and sometimes adds subsections to, the last parts of a publication, thus deviating – sometimes in a substantial way – from the original plan he himself set out to follow. One of the most important and significant of these 'deviations' is that occurring in 1629, when instead of continuing with the *DUCH* project Fludd starts a brand new project, entitled *Medicina catholica*. My hypothesis is that the latter is actually the natural continuation of the former. According to the original plan, it was supposed to be one of the last sections of the *DUCH*; but it probably grew beyond expectations, to the

point of forcing Fludd to abandon his beloved *historia* of the two cosmoses and start afresh with a new plan. This, as one might expect from a physician by profession as Fludd was, is entirely devoted to 'Catholic' medicine and the microcosm.

If one considers the *DUCH* alone, the imbalance in terms of depth of enquiry and complexity of the plans between the survey of the macrocosm (*tomus* I; 994 pages) and that of the microcosm (*tomus* II; 1064 pages) is patent. The almost equivalent number of pages for the two *tomi* points to an equilibrium which is only illusory. The 'macrocosmical' survey is replete with a large number of plates, while *tomus* II is much more densely written and far less illustrated. If one adds *MC* to the side of the scale, thus raising the number of pages dedicated to the microcosm to 2585, this unbalance becomes exceedingly striking. The Fluddean synthesis is certainly not a harmonious *historia* of the two cosmoses! It seems that the macrocosm and its harmonies lose priority after the enthusiastic investigation in *tomus* I of the *DUCH*, leaving room for more in-depth accounts of the human body, the causes of illness and the cure of diseases. In addition, Fludd's *historia* of the macrocosm proves rarely original in many areas and is in fact more a matter of common knowledge; on the other hand, later publications, with their emphasis on the weather-glass, magnetism, and the *Pulsus* itself, introduce more original traits.

Where does all this leave *musica*? I have tried to address this question in the last two chapters of my dissertation. In chapter IV I have zoomed-in and focused on where, how and how much music in its broadest sense fills Fludd's work. I have provided a short introduction to the tradition of 'metaphorical music', finding continuities and discontinuities with Fludd's work. For example, I have mentioned Gaffurius' image as in tune with the Fluddean *monochordum mundi*; but in Fludd's plate the ancient modes are substituted with the steps of the major scale, and the god who presides over the divine harmony is not Apollo but the Christian God. I have demonstrated how the pyramidal *scientia*, a fundamental philosophical model ever-present in the Fluddean outlook, gives the framework for the celestial, the elemental and the human monochords. This is a notion which had been previously overlooked by scholars like Gozza, Hauge, Gouk. In other words, the monochord is something that perfectly suited the theory of intersecting pyramids and has been employed within that 'skeleton' – almost as a *result* of the pyramidal *scientia*. If this is true, the musical metaphor in Fludd needs perhaps to be reconsidered, so much so that Fludd's celestial music is generated from the different proportions between spirit and matter going from Earth, the lowest point of the cosmos, to God, the highest one. There is no

mention of the planets or their spheres emitting an orbital resonance – their specific 'hum' – as one reads in Pythagoras and his followers.

I have demonstrated how the monochord with its musical metaphors slowly fades into the background as time goes on. Powerfully present in *tomus* I and in the first *tractatus* of *tomus* II of the *DUCH*, it soon became obsolete or, at least, inadequate to represent and explain the topics surveyed in the following publications. When the time came to defend his ideas against the attack carried out by Johannes Kepler, Fludd was forced to correct some of the errors which were present in the *monochordum mundi* published in 1617 and to devise an updated monochord, featured in the *Monochordum mundi symphoniacum* (1622). That was the last year in which a significant account of the monochord and on *musica speculativa* is given. What happened next?

The new philosophical (and metaphorical) instrument would replace the monochord. This does not mean, though, that music completely disappears in the philosophy of the English physician or that some fundamental change occurs in his thought. The idea of the 'pyramidal' proportions between the elements, the spheres and the regions of the body is a constant, if background, notion throughout all the work by the English philosopher. Nevertheless, this shift is noteworthy from an epistemological point of view; it shows a development. What changes is the means through which Fludd illustrates, explains and proves his theories' progress, while the main tenets of his philosophy remain the same. If the monochord could exemplify ideas and concepts in 1617-18, a few years later this would not be possible anymore without devising a new metaphorical tool, fitter for the purpose. This tool still maintains a faint resemblance to the previous one thanks to its visual likeness: the two extremes, the middle point, and the graduated scale.

But new elements combine to complicate the overall picture. One of these is the fact that the very last treatise from *MC* to appear, published in 1631, is dedicated to the human pulse. In it, the weather-glass is heavily employed, but for a short passage the 'ancient' monochord reappears, and one finds for a fleeting moment the two metaphorical instruments on the very same page; this demonstrates Fludd's consciousness of the link between the two. Nevertheless, as Fludd himself admits, "we prove all this, and in a way which the common people understand better, with our

experimental 'mirror'".[1] The weather-glass makes Fludd's theory more accessible to common people, thanks to its increasing popularity in early seventeenth-century England. Chapter V of this dissertation delves into the *Pulsus*. I argued that its examination allowed us to better place that treatise, and with it Fludd himself, in the wider European context of pulse lore. In fact, no previous studies ventured into a detailed analysis of that treatise, and as yet no scholar has recognised the uniqueness and originality of Robert Fludd's account of the connection between the heartbeat and music.

Once Fludd realised that the weather-glass is the most explicative metaphorical tool for his philosophy, he did not stop there. He was not content with just using the weather-glass for illustrating the properties of cold and heat, expansion and contraction. He significantly 'inscribed' his tool into his pyramidal *scientia*. In so doing he linked the weather-glass to the monochord. In 1629 he had already stressed the fact that the graduated scale needs to have a middle point, as if it were the octave.

My rediscovery of the *Pulsus* places the English physician in a new position. The Fluddean treatise on the music of the pulse is far from being a secondary essay about confusing, obscure and difficult matters; it is far from being an account by an eccentric philosopher detached from reality. On the contrary, and if looked at in perspective, it shows a Robert Fludd clearly inscribed into a precise musical/medical tradition which by the beginning of the seventeenth century had lasted almost two millennia, and had, in fact, reached one of its highest peaks: that which witnessed the introduction of mensural notation as taken from contemporary musical practice, replacing the ancient Herophilian poetic metres.

Moreover, Fludd's account of the connection between heartbeat and music was the first and probably the only treatise entirely dedicated to that subject ever published by an English writer. All the contributions to the pulse lore, in fact, came from the Continent – mainly from Italy, Germany, Poland, Spain, and France. With his *Pulsus*, as with many other pages of his work that I have surveyed, Fludd demonstrated once again his European awareness.

With Fludd's posthumous work, the *De philosophia moysaica*, there seems to be less and less room for the musical metaphor that was so strong in the earlier works. The stress on experiments, with the weather-glass and the newly-introduced

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[1] "Hoc totum et meliori vulgaribus intellectu per speculum nostrum experimentale sic comprobamus". *Pulsus*, p. 57.

magnets, is predominant, and makes one wonder which direction Fludd would have taken if he had continued to write.

What happened after Fludd's death? William Huffman, who perhaps followed the 'Yates thesis' too closely,[2] stated that

> Fludd was integrally a part of a cultural tradition which died with him: that thread of the Renaissance stemming from the Florentine Academy, which encompassed the Latin translations of Plato and Hellenistic Neoplatonist works by Marsilio Ficino, and from Pico della Mirandola's attempt at a grand synthesis of all philosophy and religion.[3]

Nevertheless, I mostly agree with John Henry when he observes that

> [...] as Fludd's polemic with Kepler shows, there were some major aspects of Christian Neoplatonism which Fludd simply did not understand and prominent features of Fludd's philosophy which were anathema to other Neoplatonic thinkers. Fludd was not, therefore, as representative of Renaissance thinking as Huffman and earlier writers on Fludd would have us believe. Where Kepler and other Neoplatonic thinkers tried to discern in the so-called "Book of Nature" the attributes of its divine author, Fludd preferred a more mystical and theosophical way to gaining knowledge of his god.[4]

Though surely part of that 'thread of Renaissance' to which Huffman referred, Fludd's original synthesis claims its own place. Fludd might not have gone down in history as the most important philosopher or someone who changed history. But his multi-faceted philosophy, his ability to translate into images his visions of the cosmoses and the use he made of philosophical experiments and mechanical models is perhaps something that grants him a place amongst more important names. As Gouk argued, "as an indicator of current developments in musical technology, and as a model for later authors [...], Fludd's work was highly important.[5]

Among these later authors one can count Gaspar Schott and Athanasius Kircher, who both copy from Fludd many engravings of musical instruments and automata.[6] Schott's *Magia universalis* marked "an important milestone in the creation of a coherent and self-contained discipline of acoustics",[7] and

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[2] According to Frances Yates, "the Hermetic Age begins at the end of the fifteenth century with Ficino's legitimation of medieval magic by giving it a metaphysical grounding in Neoplatonic philosophy. At the other boundary of the Hermetic Age, the line of demarcation is drawn at Isaac Casaubon's dating of the Hermetic writings and his blow to the grandiose claims for Hermes' respectability as a pre-Mosaic, Egyptian prophet". Westman and MCGuire, *Hermeticism and the Scientific Revolution*, p. 10. On Isaac Casaubon see chapter II of this dissertation.

[3] Huffman, *Robert Fludd*, p. 1.

[4] J. Henry, 'Review of Robert Fludd and the End of the Renaissance', *Medical History*, 34, 2, 1990, p. 220.

[5] Gouk, *Music, Science and Natural Magic*, p. 101.

[6] Schott, *Magia universalis*; Kircher, *Musurgia universalis*.

[7] Gouk, *Music, Science and Natural Magic*, p. 108.

> Lawrence Rooke, then Gresham Professor of Astronomy, was asked at one of the earliest meetings of the Royal Society to examine the 'sounds of Schottus' and to consider 'what experiments are worth trying out of him, and so propose them to the Society'.[8]

Johann Heinrich Alsted, whose famous *Encyclopædia septem tomis distincta* published in 1630 presents a classification of the knowledge close to Fludd's, mentions, together with other previous encyclopaedist by whom he is inspired, Robert Fludd.[9] Alsted's *Encyclopædia* would be the model for the work of Comenius, an enthusiast of Fludd's philosophy.

Ideas very similar to those of Fludd would still reverberate, for instance, in William Davidson of Aberdeen (*c*. 1593-1669), an eminent Scottish chemist and physician who lectured on chemistry in Paris. Davidson, like Fludd, was critical about the academic 'Aristotelian' establishment, and called for a new philosophy of nature founded on Paracelsian, Biblical, and alchemical elements combined with medical knowledge. His metaphysical and Neoplatonic speculations, together with the strong belief that the microcosm participated in the macrocosm, leave little doubt about the fact that he was part of Fludd's cultural tradition.[10]

William Lilly published his *Christian Astrology* in 1647. In 1651, fourteen years after the death of Robert Fludd, the English physician John French (*c*. 1616-1657) wrote that a true natural philosophy founded on Paracelsian chemistry should replace "that empty naturall philosophy which is read in the Universities";[11] he also translated into English Agrippa's *De occulta philosophia*. The Scottish physician William Maxwell, of whom very little is known,[12] published in 1679 a treatise titled *De medicina magnetica*, which "provides the clear and systematic account of how to practise magnetical medicine that is lacking in Fludd's writings".[13] An anonymous tract covering similar topics and entitled *The Way to Bliss* was compiled by Elias Ashmole in 1658.

According to the English schoolmaster and physician John Webster (1611-1682), a reformation of the universities was due, and the study of alchemy and

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[8] Ibid., p. 109.
[9] Alsted, *Encyclopædia*, fol. 3^{v}.
[10] On Davidson, see J. Shackelford, *A Philosophical Path for Paracelsian Medicine: The Ideas, Intellectual Context, and Influence of Petrus Severinus (1540/2-1602)*, Copenhagen, 2004, pp. 403-453.
[11] J. French, *The Art of Distillation*, London, fols A2^{v}-A3^{r}.
[12] On Maxwell, see F. C. B. Avé-Lallemant, *Der Magnetismus mit seinen mystischen*, Leipzig, 1881, pp. 24-36.
[13] L. Kassell, 'Magic, Alchemy and the Medical Economy in Early Modern England: The Case of Robert Fludd's Magnetical Medicine', in *Medicine and the Market in England and its Colonies, c. 1450–c. 1850*, Basingstoke, 2007, pp. 88-107 (100).

natural magic should be included in the *curricula*. For Webster, the reform of learning must be founded upon the philosophical systems of both Francis Bacon and Robert Fludd.[14]

Christopher Simpson (1602/6–1669), musician and composer, showed acquaintance and agreement with Fludd's philosophical tenets in his *The Division-Viol, or The Art of Playing ex tempore to a Ground* (1665):

> [t]his Mysterious number of seven, leads me into a contemplation of the Universe, whose Creation is deliver'd unto our Capacity (not without some mystery) as begun and finished in seven days, which is thought to be figured long since by *Orpheus* his seven stringed Lyre. Within the Circumference of this great Universe, be seven Globes or Spherical Bodies in continual Motion, producing still new and various figures, according to their diverse positions one to another. When with these I compare my seven Gradual Sounds, I cannot but admire the Resemblance of their Harmonies, the Concords of the one so exactly answering to the Aspects of the other; as a Unison to a Conjunction, an Octave to an Opposition; the middle Consonants in a Diapason, to the middle Aspects in an Orb; as a Third, Fifth, Sixth, in Musick, to a Trine, Quartile, Sextile in the Zodiac. And as these by moving into such and such Aspects transmit their Influences into Elementary Bodies; So those, by passing into such and such Concords, transmit into the Ear an Influence of Sound, which doth not only strike the sense, but even affect the very soul, stirring it up to a devout Contemplation of that Division PRINCIPLE from whence all Harmony proceeds; and therefore very fitly applying to sing and sound forth his Glory and Praise.[15]

The Czech educational reformer John Amos Comenius (1592-1673) frequently referred in terms of high praise to Fluddean philosophy in his works, especially in his highly influential *Didactica magna* (1657). Furthermore, it has been speculated that Fludd could have been a source for Milton, a hypothesis which is as fascinating as needing of further investigation.[16] Tom Dixon has recently drawn attention to the 'silent music' of the English theologian Peter Sterry (1613-1672), who followed the idea of cosmic harmony as described by Marsilio Ficino and Francesco Zorzi Veneto.[17] Penelope Gouk has convincingly shown how the extraordinary overlapping of music, natural magic and proto-science, certainly part of Fludd's cultural heritage, was still present in the thought of pivotal figures such as Francis Bacon, Robert Hooke (who owned Fludd's works)[18] and Isaac Newton.[19] For these and other late seventeenth-

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[14] J. Webster, *Academiarum Examen, or the Examination of Academies*, London, 1654, pp. 40 ff and 74. On Webster and the place of Fludd's theories in the education wars in 17th century England about the right foundation of education see Kenklies, *Wissenschaft als Ethisches Programm*.

[15] C. Simpson, *The Division-Viol, or The Art of Playing ex tempore to a Ground*, London, 1665, pp. 23-4.

[16] See D. Saurat, 'Les Sources anglaises de la pensée de Milton: Robert Fludd (1574-1637)', *Revue Anglo-Américaine*, 2, 1925, pp. 515-523; and W. Brennan, 'Robert Fludd as a Possible Source for Paradise Lost, V. 469–470', *Milton Quarterly*, 15, 3, 1981, pp. 95-97.

[17] Dixon, ''Meditation is the musick of souls''.

[18] See J. C. Kassler and D. R. Oldroyd, 'Robert Hooke's Trinity College 'Musick Scripts', his music theory and the role of music in his cosmology', *Annals of Science*, 40, 6, 1983, pp. 559-595; and P. Gouk, 'The role of acoustics and music theory in the scientific work of Robert Hooke', *Annals of Science*, 37, 1980, pp. 573-605.

century scientists the idea of a musical order in the universe helped them to shape and fine-tune their understanding of the natural phenomena into which they were enquiring. Finally, one can trace interest and research into so-called 'occult' matters up to William Blake, Rudyard Kipling, Aleister Crowley, W. B. Yeats, the physicist Wolfgang Pauli, and the psychiatrist Carl Gustav Jung.

There is surely room for further research, as for instance a quick comparison between the *De philosophia moysaica* and its English counterpart has suggested. For reasons which sound sensible – the principal ones are perhaps both the challenges that Fludd's verbose and intricate prose pose to the modern reader and his wide-ranging topics –, the vast majority of studies that the work of Robert Fludd has given rise to is all scattered in dozens and dozens of fragmented works, essays, articles. All those studies have been, beyond any doubt, of fundamental value for the establishment of a process of re-assessment of the Fluddean figure. Without the inspiring insights of Pagel, Debus, Ammann, Yates, Gouk, and many others it would not be possible nowadays to evaluate fully the complex place that a complicated figure like Fludd fulfils in the equally complicated early seventeenth century period. I hope to have added a small contribution in this area. Perhaps the area in which further discoveries are likely to be made lies in further close analysis of the entirety of Fludd's output: in the search for consonances and dissonances, sympathies and antipathies.

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[19] On Isaac Newton see Gouk, *Music, Science and Natural Magic*; P. Gouk, 'The harmonic roots of Newtonian science', Fauvel et al. (eds), *Let Newton Be!*, Oxford, 1988, pp. 101-185; P. Gouk, 'Newton and Music: From the Microcosm to the Macrocosm', in *International Studies in the Philosophy of Science*, 1, 1986, pp. 36-59; Westman and MCGuire, *Hermeticism and the Scientific Revolution*, pp. 93-133; P. M. Rattansi and J. E. MCGuire, 'Newton and the Pipes of Pan', *Notes and Records of the Royal Society of London*, 21, 1966, pp. 108-143; A. Lashem, *Newton on Mathematics and Spiritual Purity*, Dordrecht, 2003, and Pesic, *Music and the Making of Modern Science*, pp. 121-129.

Appendix

A manuscript held by the Music Library of Yale University (USA) contains works by French, Italian and English composers, and also includes eleven pieces of music dating 1635/65 ascribed to a Dr Fludd.[1] This manuscript, which was copied or owned by a 'Francis Block', was purchased intact in 1945 from the estate of the last Baronet Filmer in Kent. These musical compositions are very simple dances for two treble instruments and basso continuo, with the exception of one which has only the first treble.

In his article on Robert Fludd published for the first time in 1980 in *The New Grove Dictionary of Music and Musicians*, and now available through the *Grove Dictionary Online*, Andrew Ashbee wrote:

> 13 trite dances for two trebles and a bass by 'Dr Fludd' (US-NH Filmer 3) come from the Filmer home at East Sutton, a few miles from Bearsted. The manuscript dates from the later years of Fludd's life and the pieces may reasonably be assumed to be by him.[2]

Though the fact that the Filmer house is close to the Fludd house, where Robert was born, strengthens indeed the link between the manuscript and our Fludd, this remains so far only a conjecture. Even though Fludd wrote a treatise on practical music and invented several musical automata, there is unfortunately no clear proof that Robert Fludd ever composed musical pieces. They could have been associated for some reasons with Dr Fludd at a later time, and this would not necessarily mean that Robert Fludd is the composer.

If the eleven dances contained in the Filmer manuscript were really by Robert Fludd they would be very precious, since they would give one of the very few insights into seventeenth-century English consort music as seen, and heard, by an amateur. Two of the compositions, i.e. *Dreame* and *Caranto*, have been transcribed by Todd Barton in 1978.[3] In 2009, Paul Ferguson transcribed all of them, Adam MCLean inputted the scores in a synthesiser and then put the corresponding audio on a CD.[4]

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[1] Miscellaneous MS 170. Briefly described in R. Ford, 'The Filmer Manuscripts: A Handlist', *Notes*, 34, 4, 1978, pp. 814-825 (817).
[2] A. Ashbee, 'Fludd, Robert', *Grove Music Online. Oxford Music Online*, Oxford, online edn [http://www.oxfordmusiconline.com/subscriber/article/grove/music/09883, accessed 19 September 2014]. The dances are actually eleven and not thirteen.
[3] D. T. Barton, *Robert Fludd's Temple of Music: A Description and Commentary*, MA dissertation, University of Oregon, 1978.
[4] R. Fludd, *On the Music of the Spheres*, ed. and tr. by Paul Ferguson and A. MCLean, Magnum Opus Hermetic Sourceworks Series n. 36, Glasgow, 2009.

Though the work of Barton and Ferguson certainly contributed to the field and increased awareness about the Filmer manuscript, I thought it necessary to have a fresh look at the scores and transcribe them into modern notation starting afresh. The result is often rather different if compared with what has been obtained by the previous transcribers. Four of the dances I transcribed (*A Toy*, *Changes*, *Second Pavane*, *The May Game*) have been performed in world première at the 2011 Gregynog Festival in Wales.

Original mensuration signs, often incorrect, are given above the staves. The edition retains the original note values and beaming. Pieces are given in the order in which they appear in the manuscript. The numbers '2' which often appear above the double bars, and which I have retained in my transcription, are probably indication of repeats.

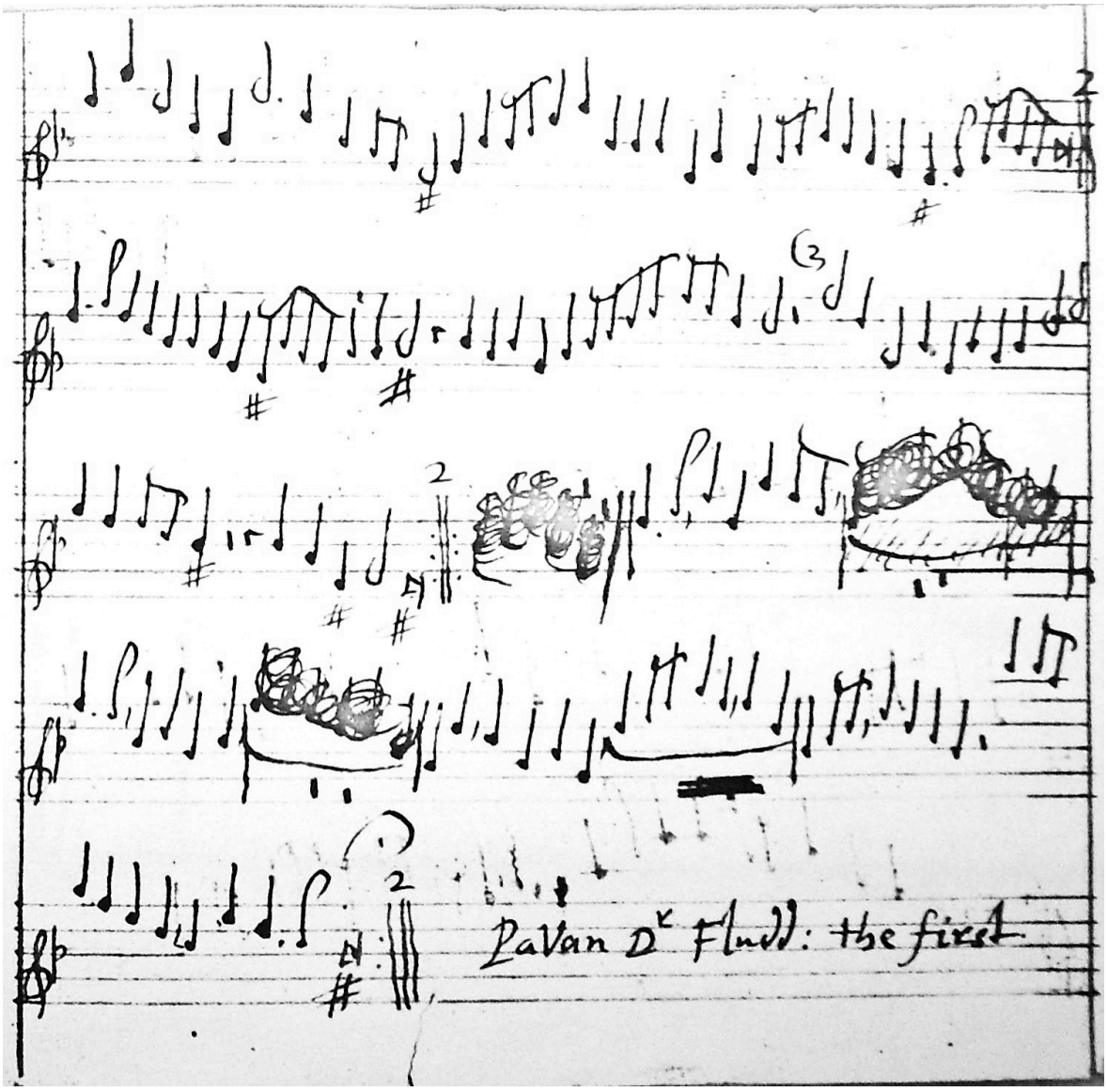
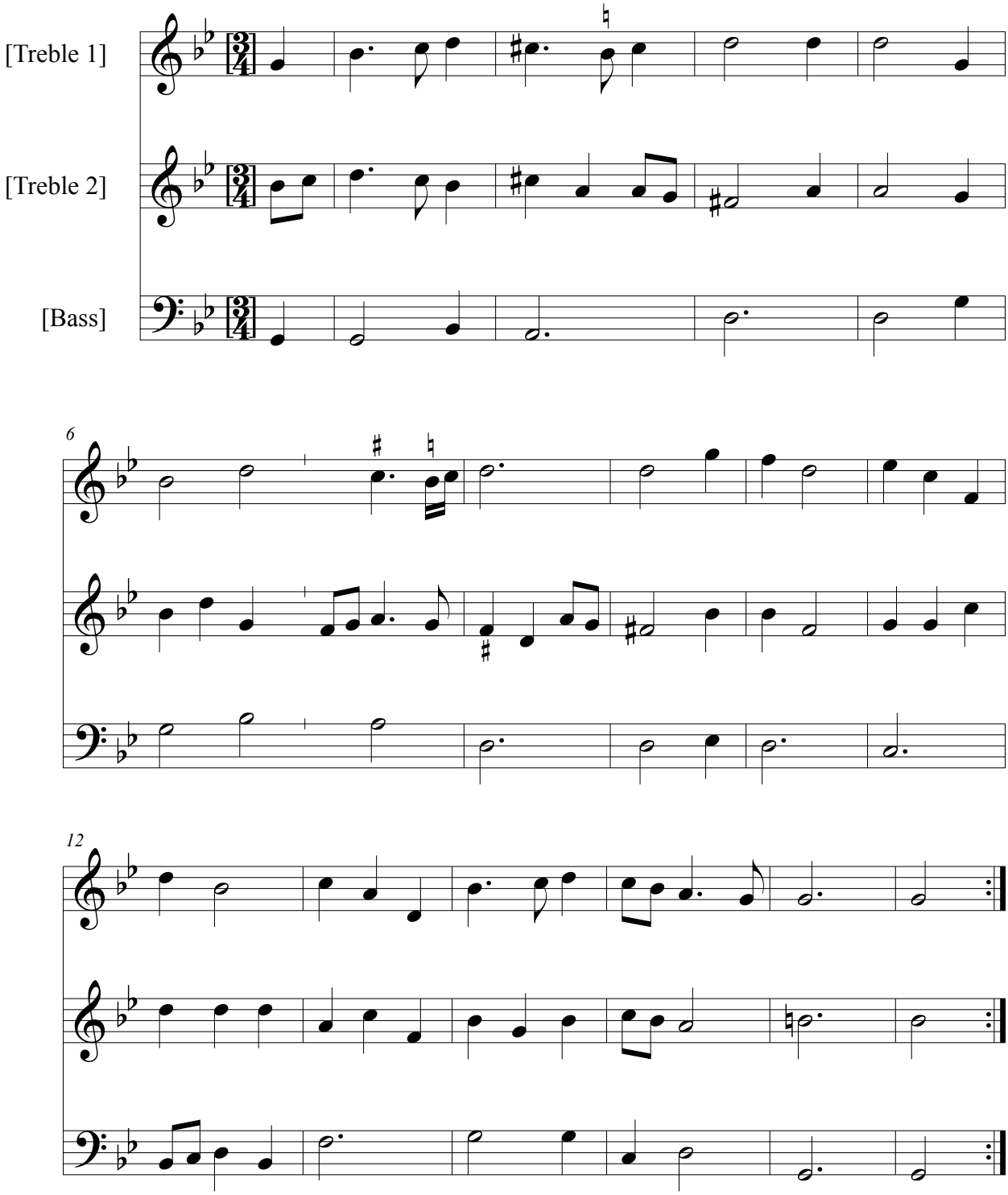
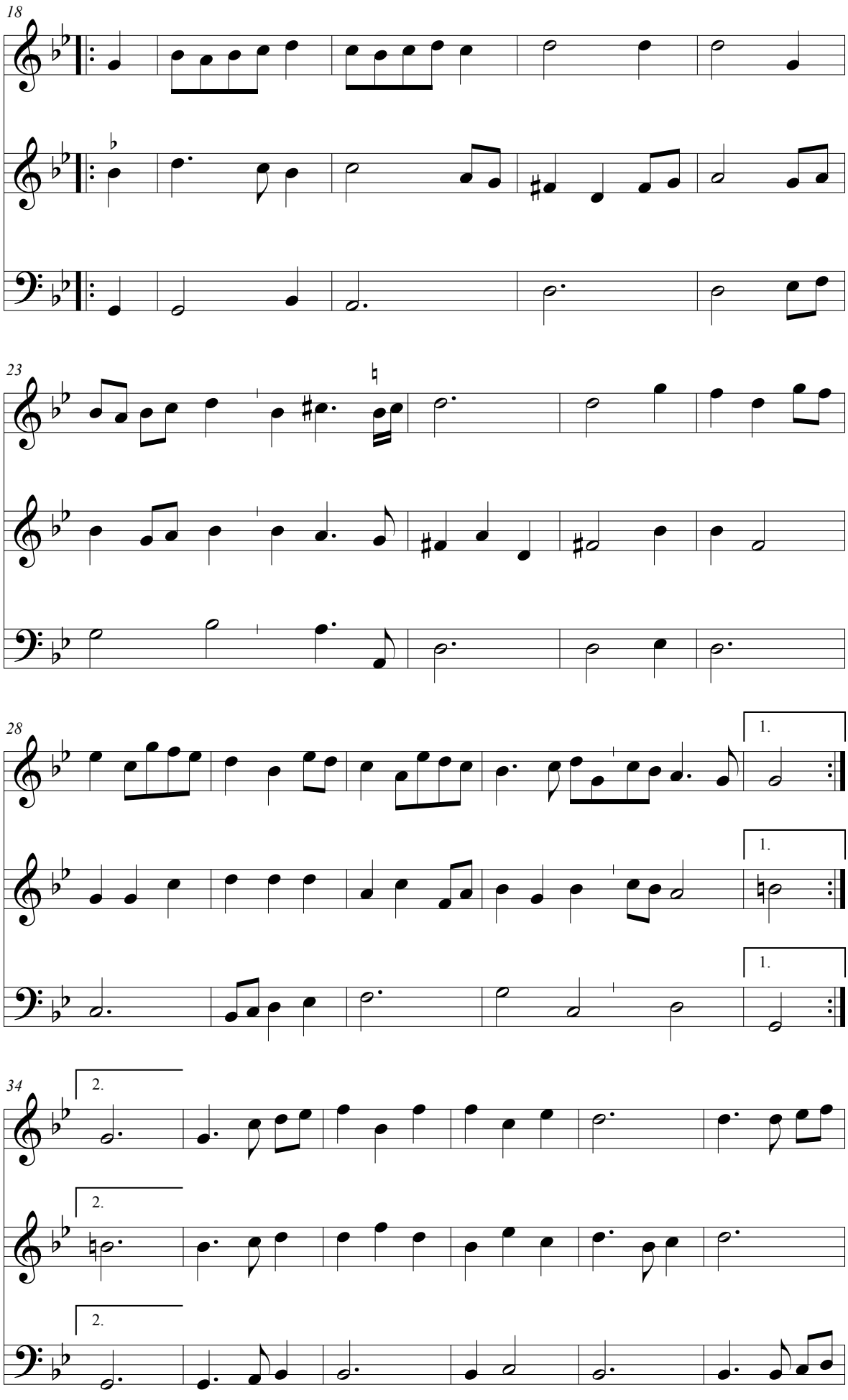


Figure 138: sample page from Miscellaneous MS 170, fol. 6^{r}

The Dreame

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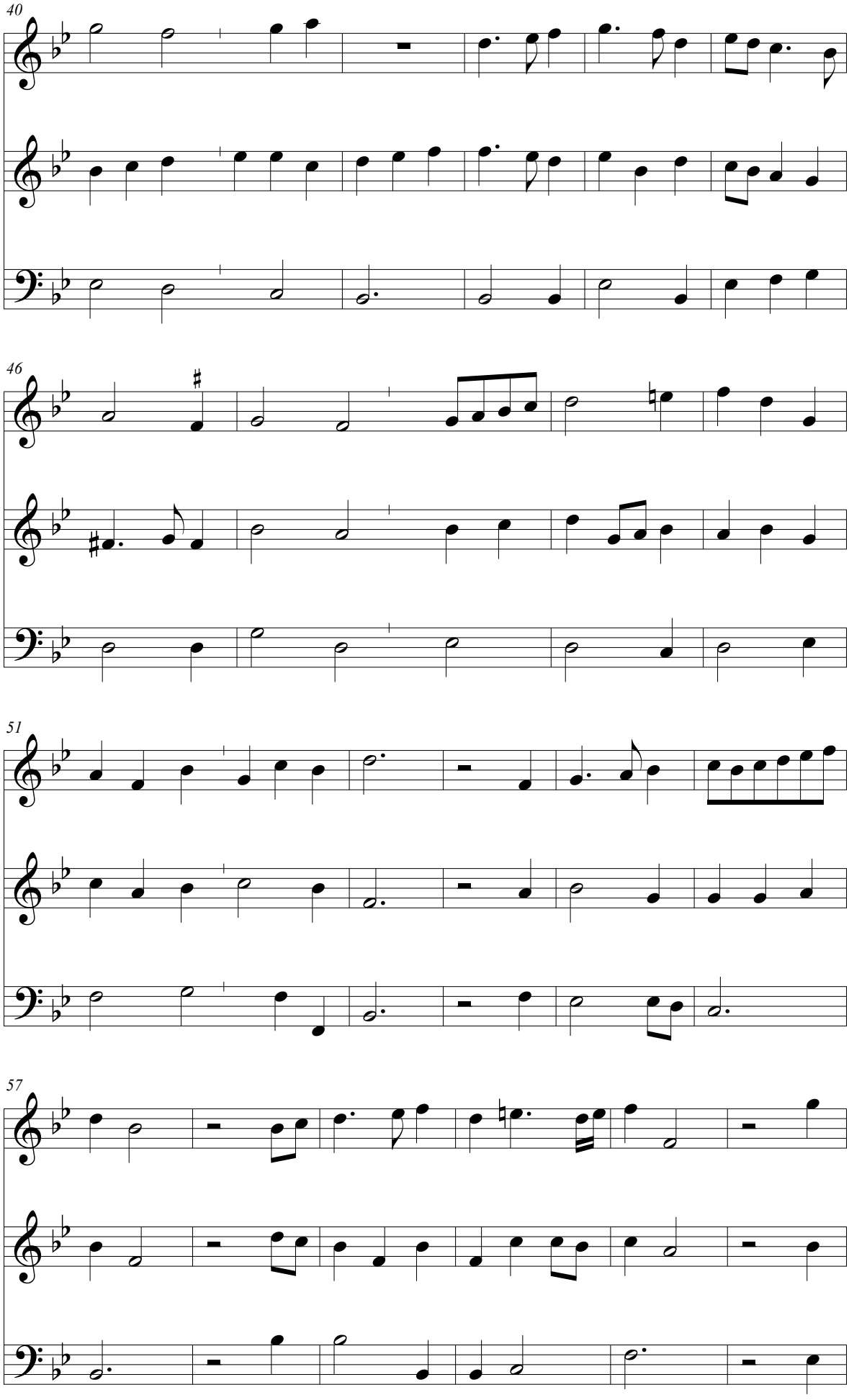
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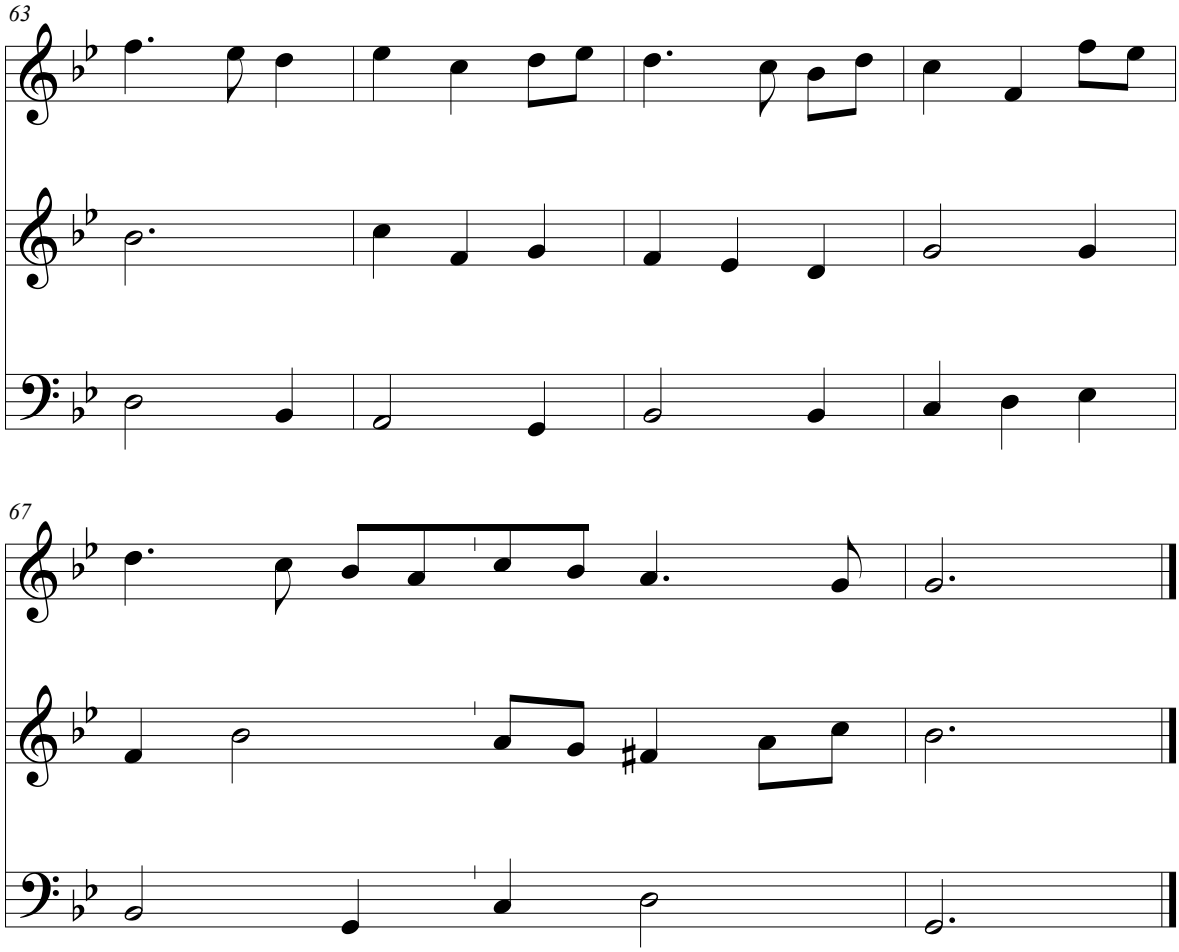
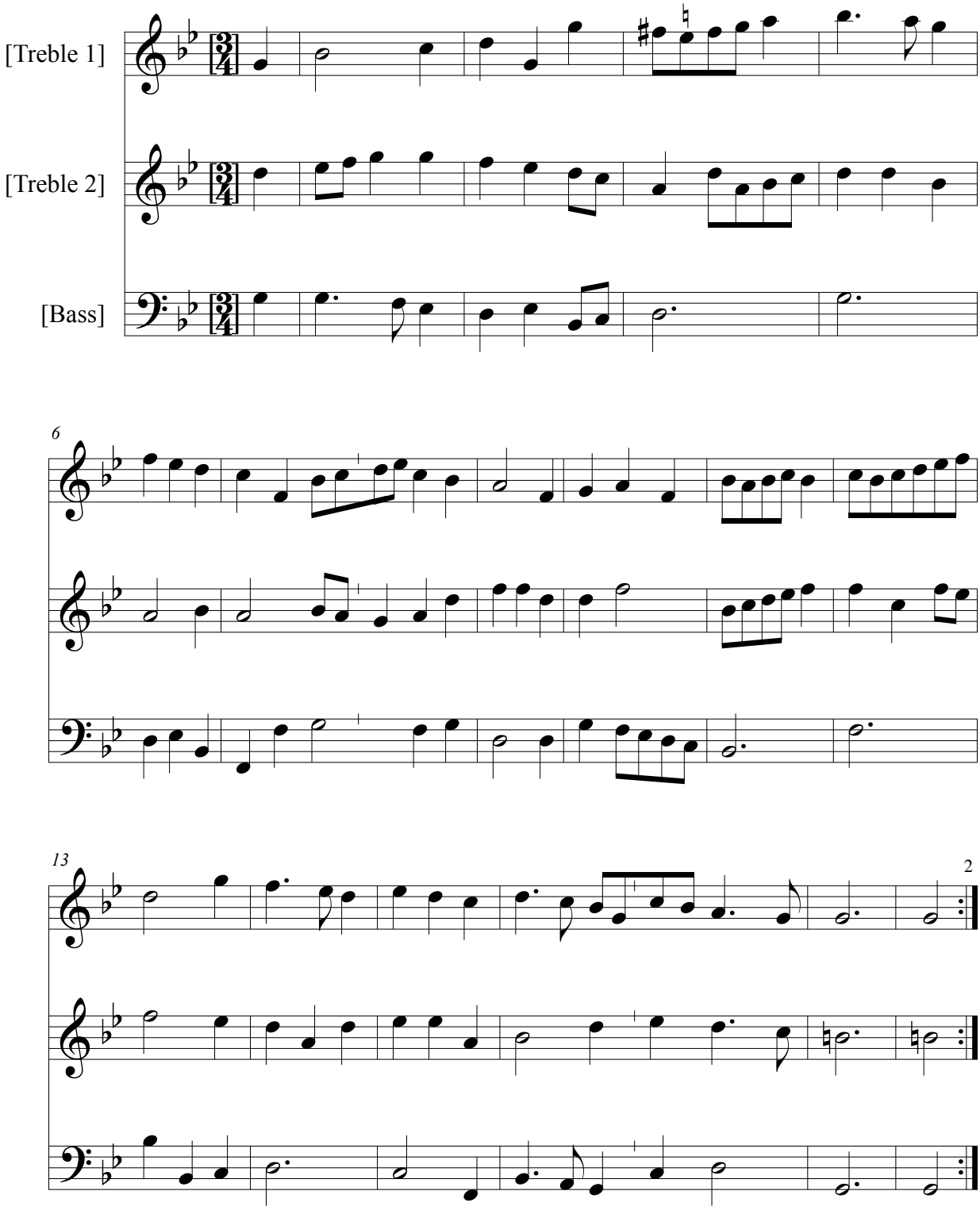


*

Treble II, bar n. 5: first crotchet (*a*) amended to a minim; third crotchet (*f*) amened to *g*.
Treble II, bar n. 45: first two quavers (*e*-*b*) amended to *c*-*b*.

Scale



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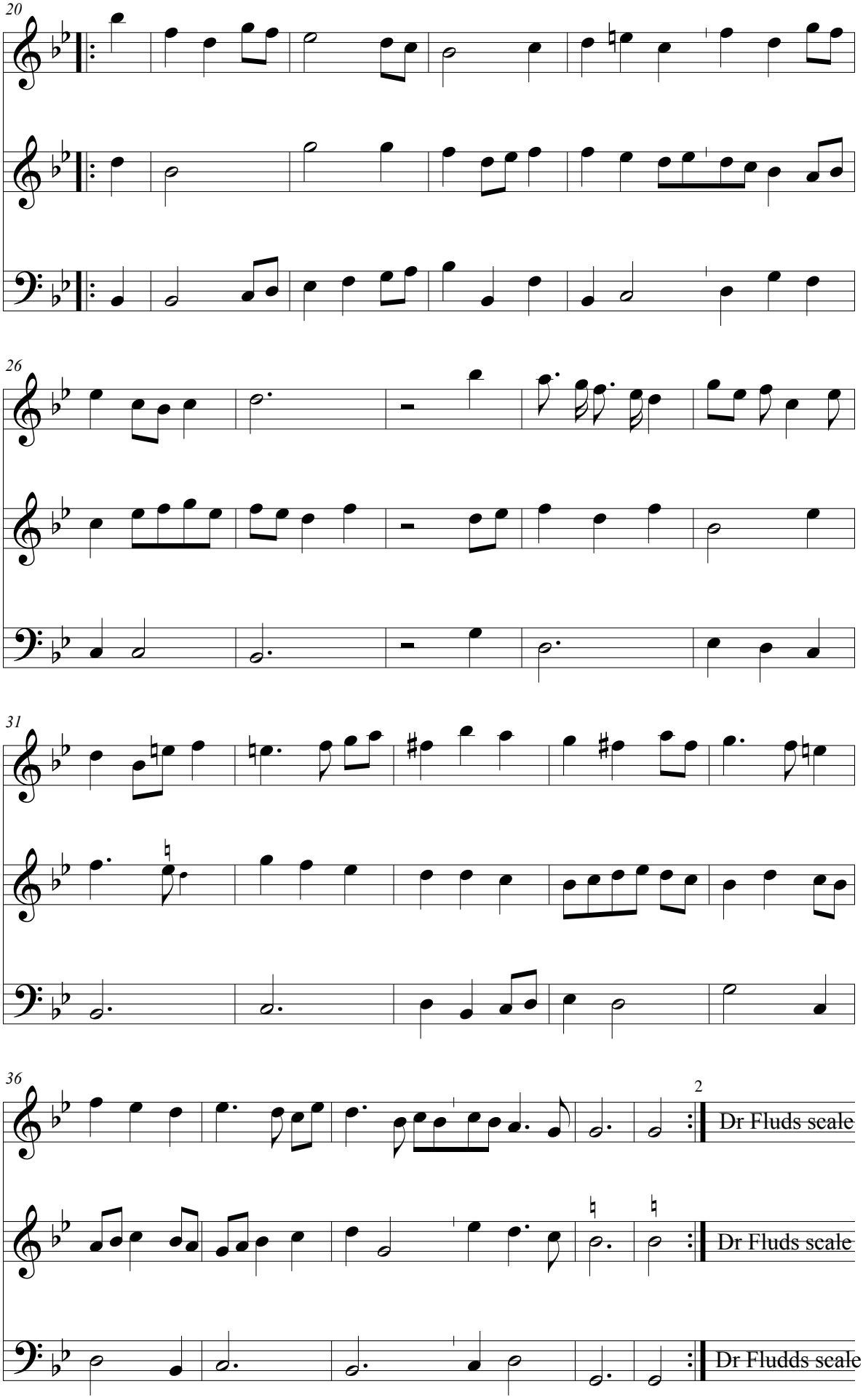
Bar 31 Treble II: last crotchet missing in the manuscript.
Bar 37-38 Treble II: all notes quavers in the manuscript, three beats of music are missing.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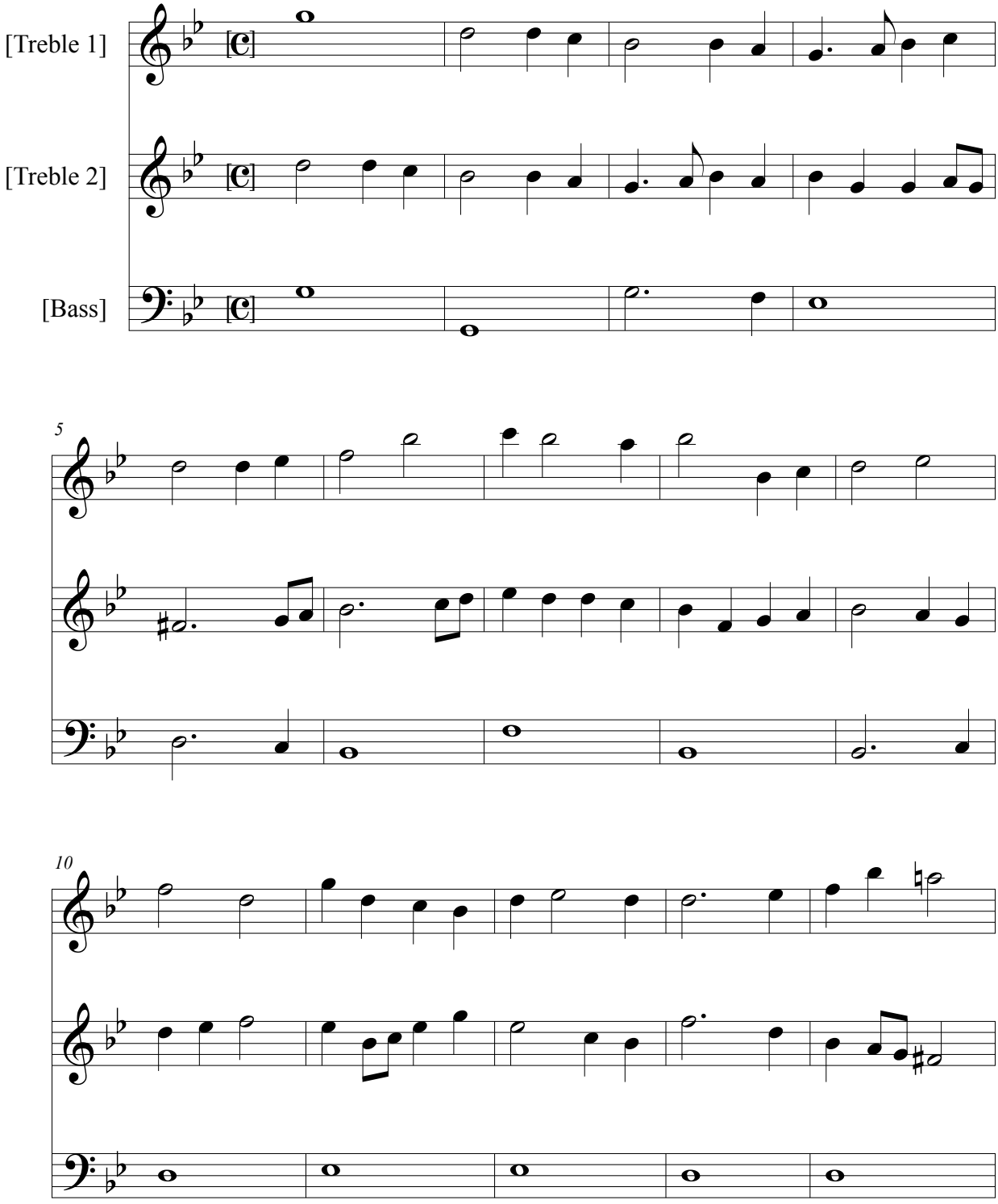
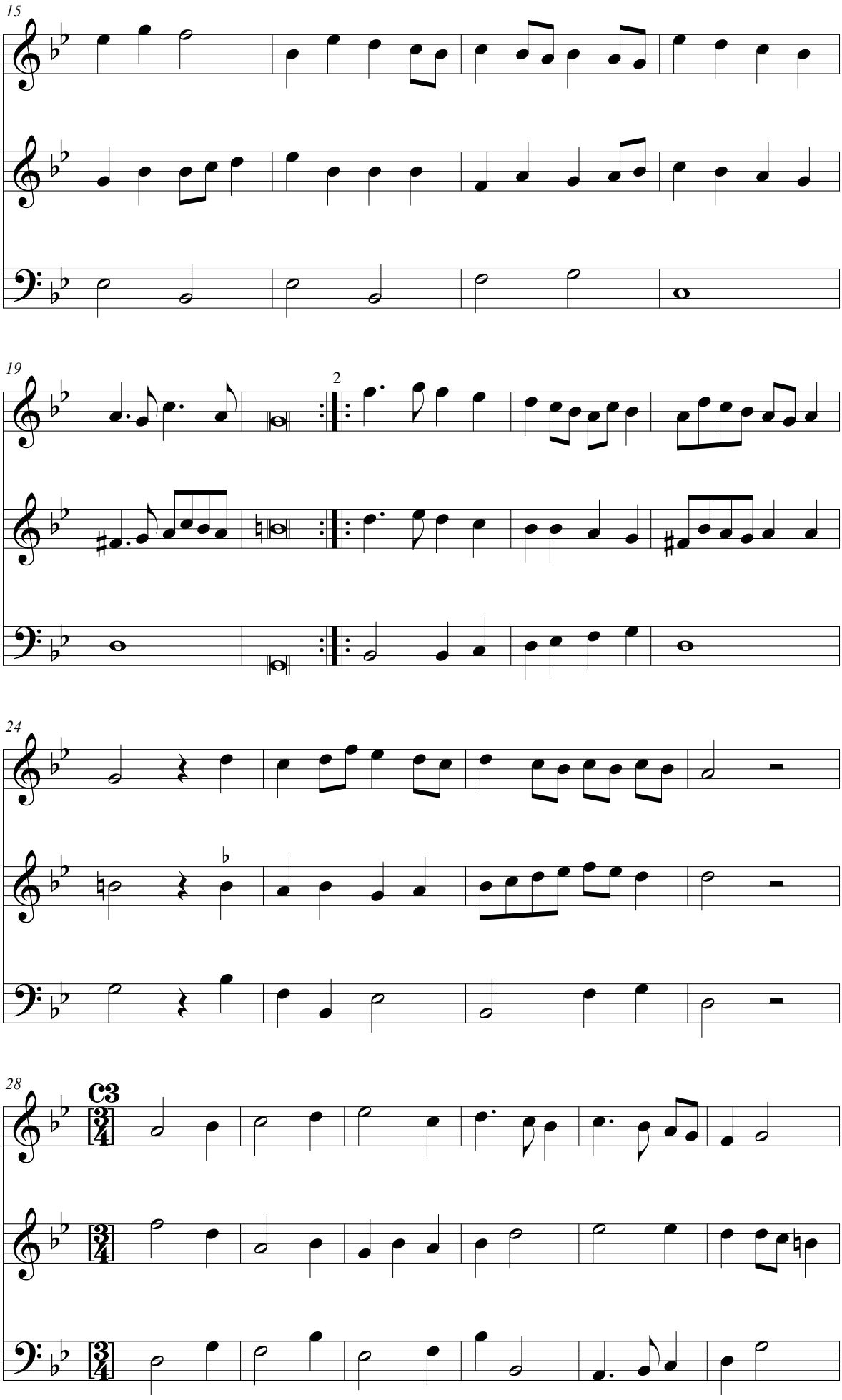
31
36
2
Dr Fluds scale
Dr Fluds scale
Dr Fludds scale

First Pavan

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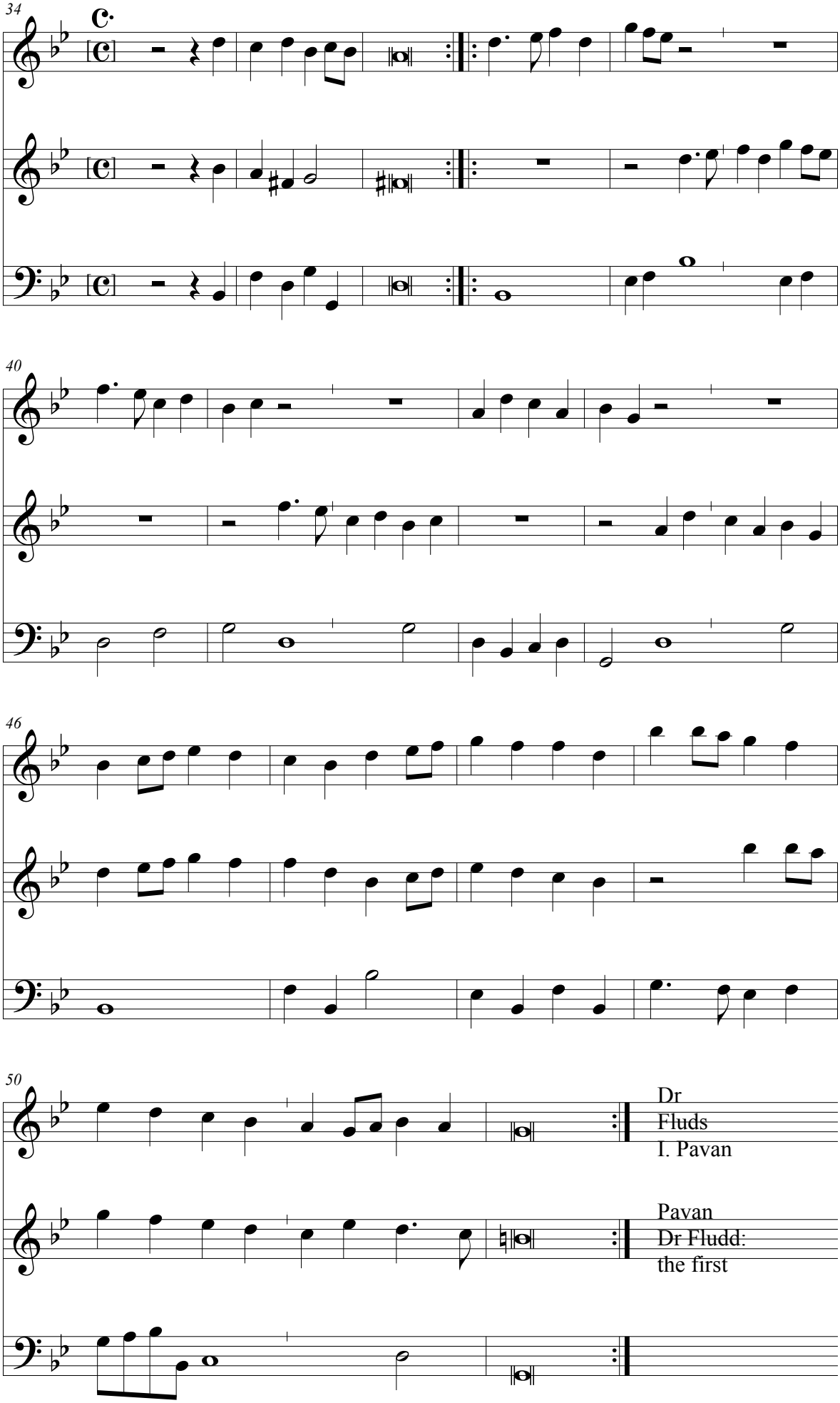
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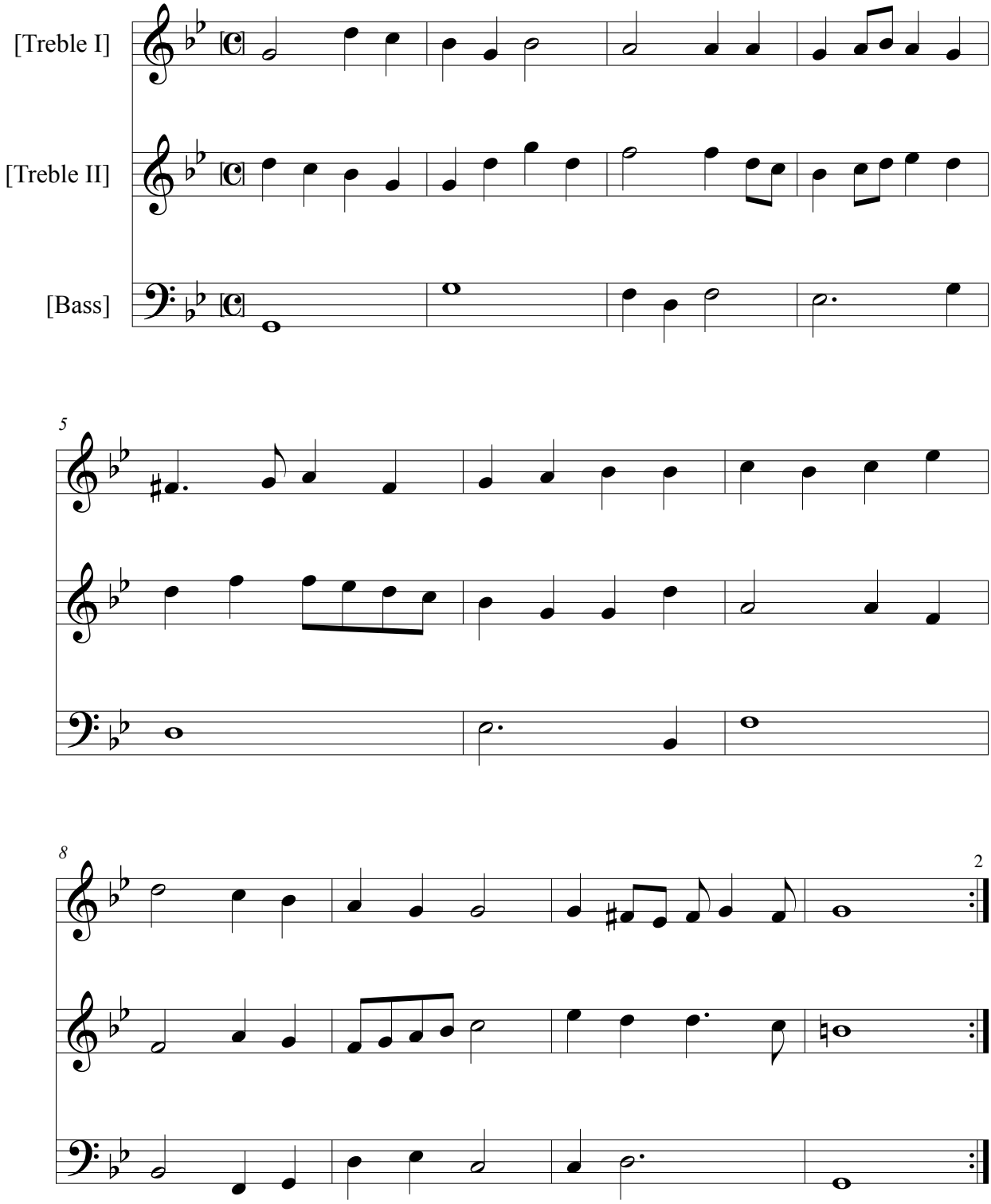
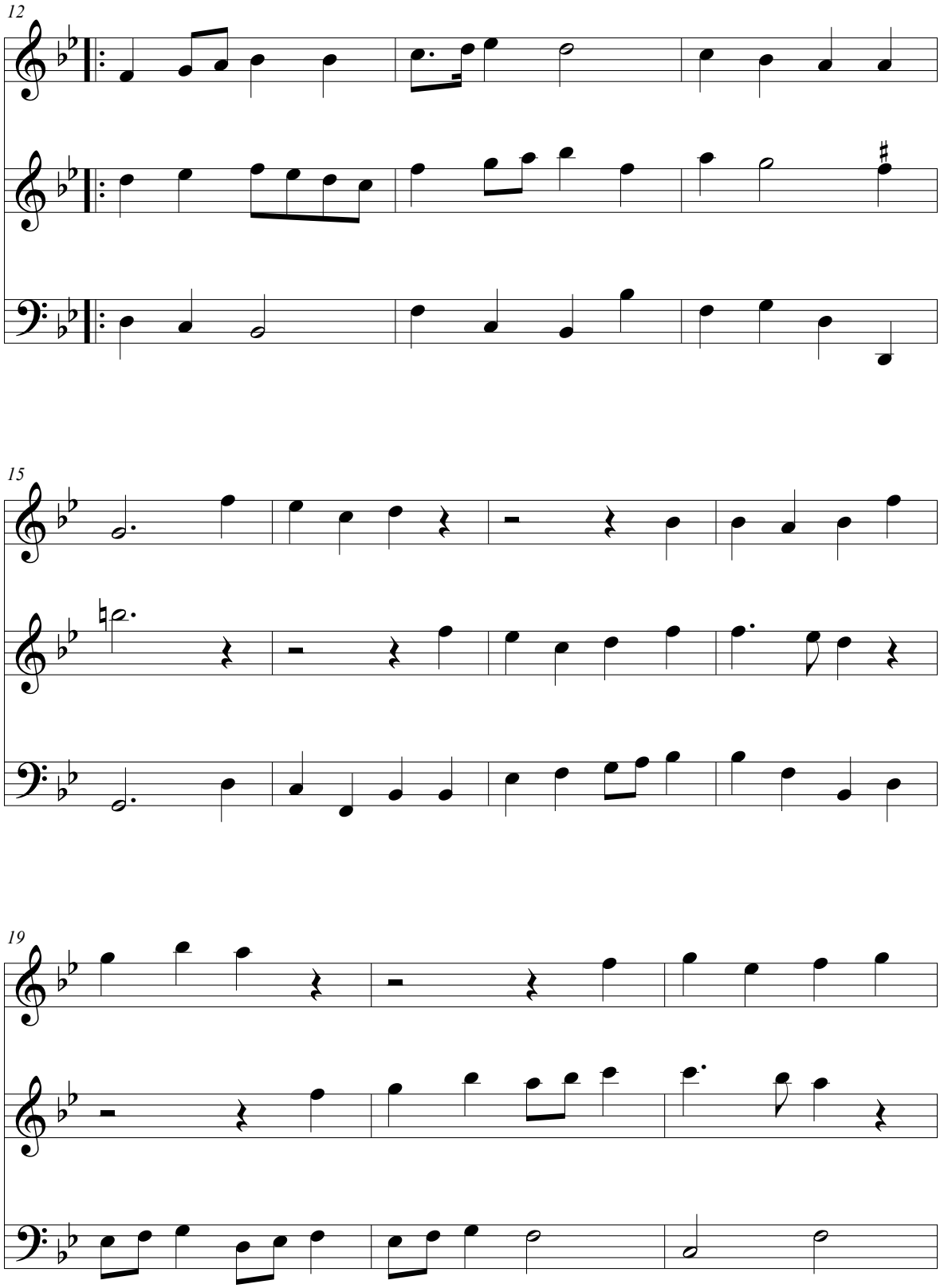
the first

Second Pavan

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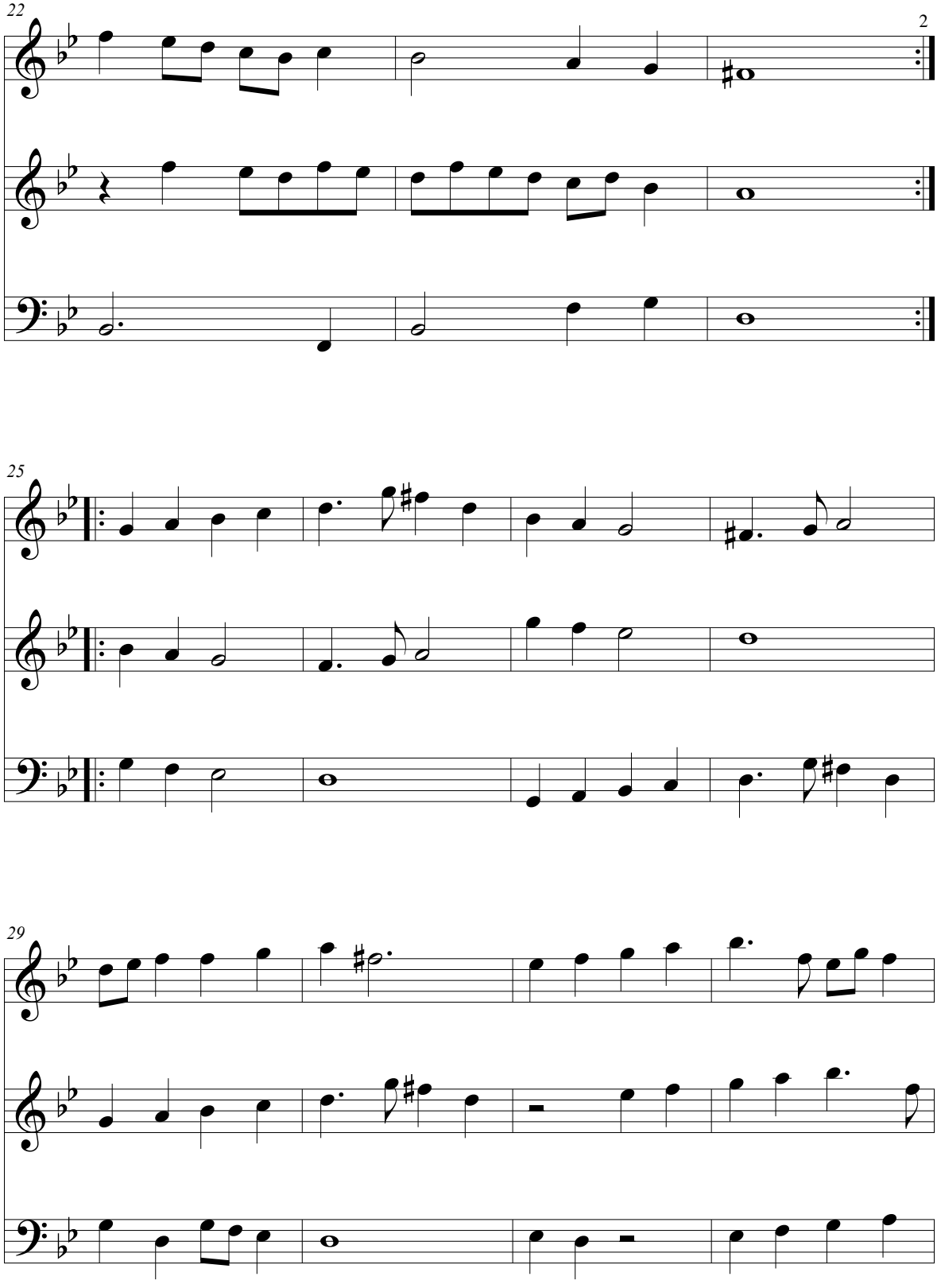
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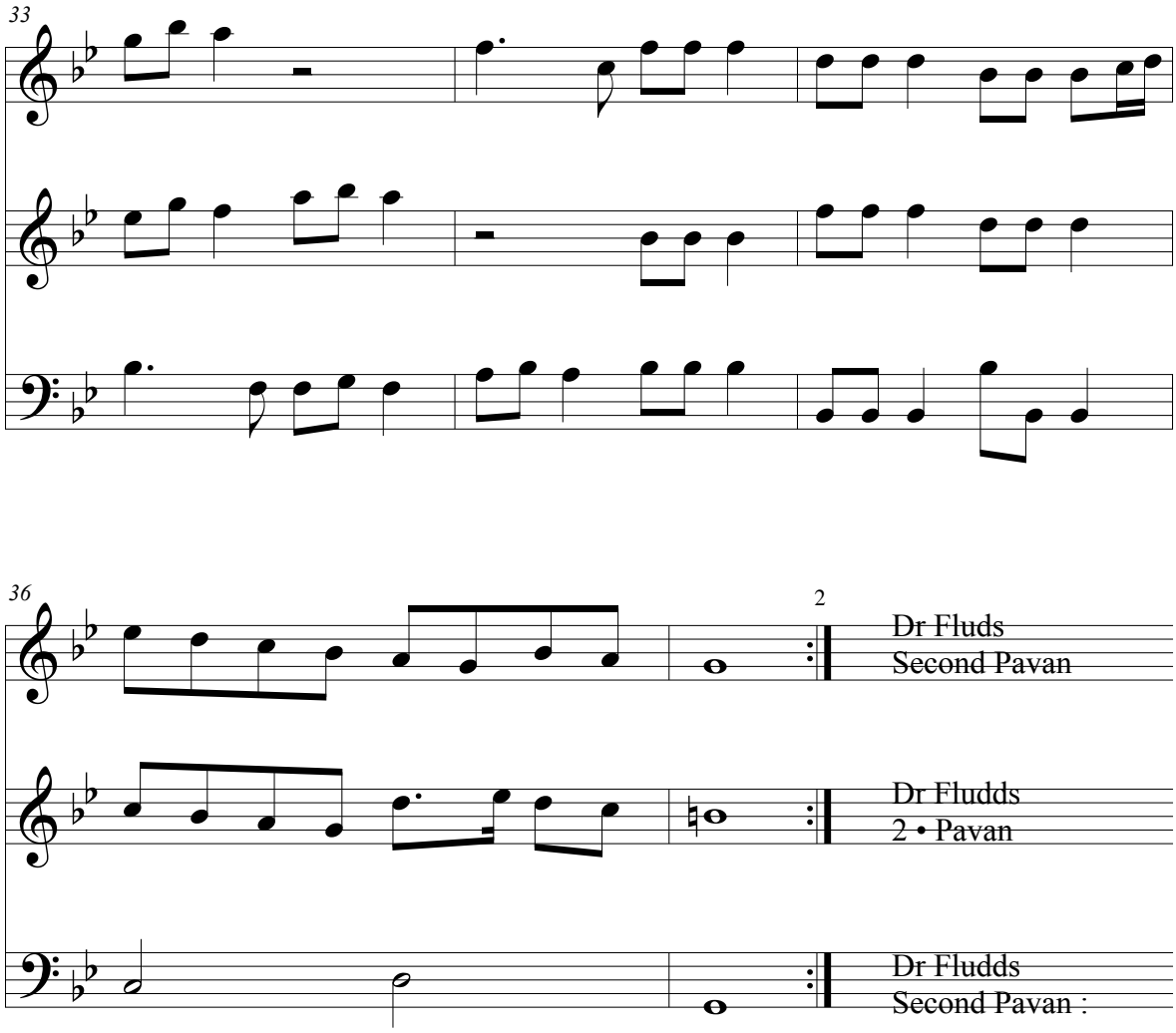
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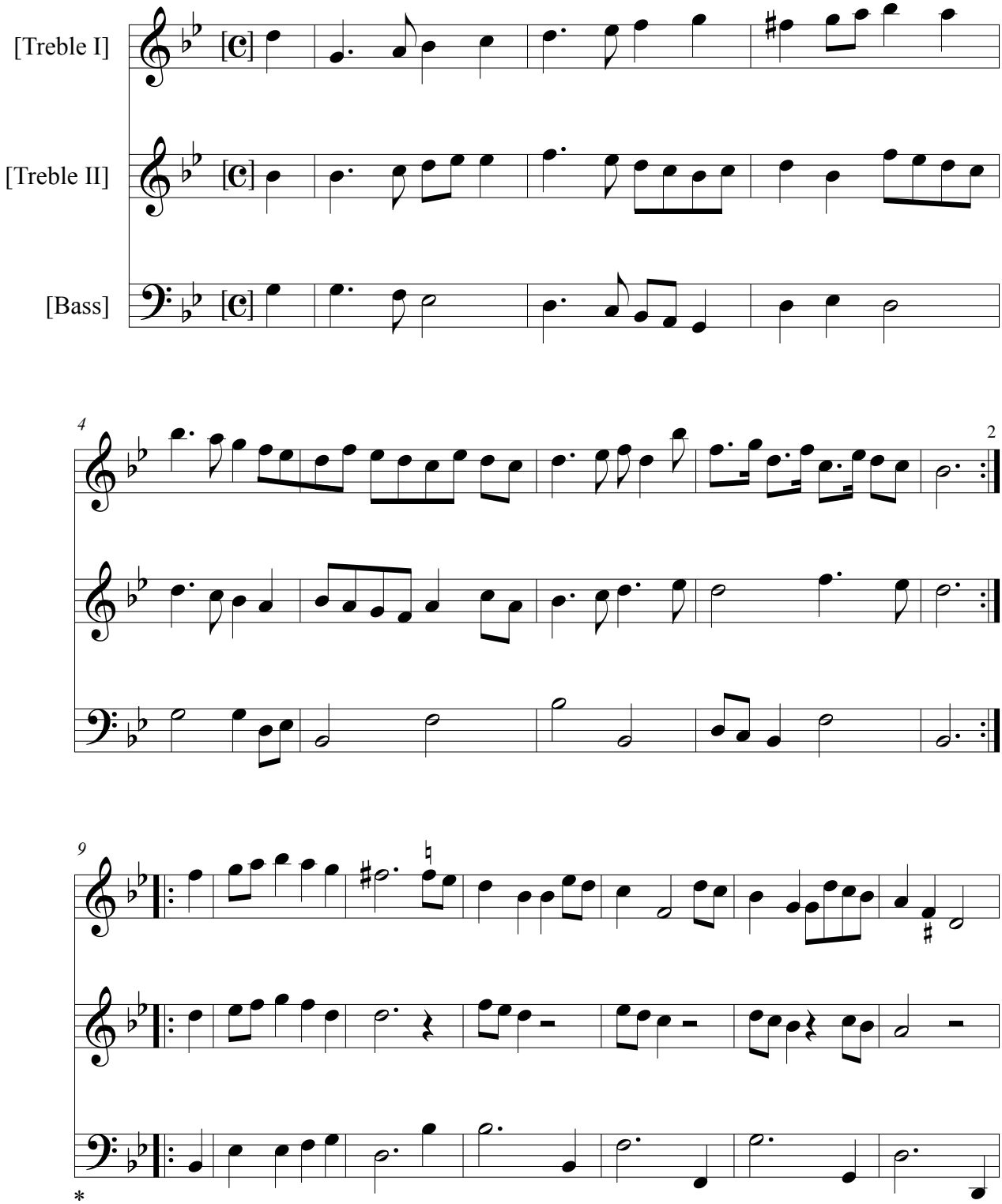
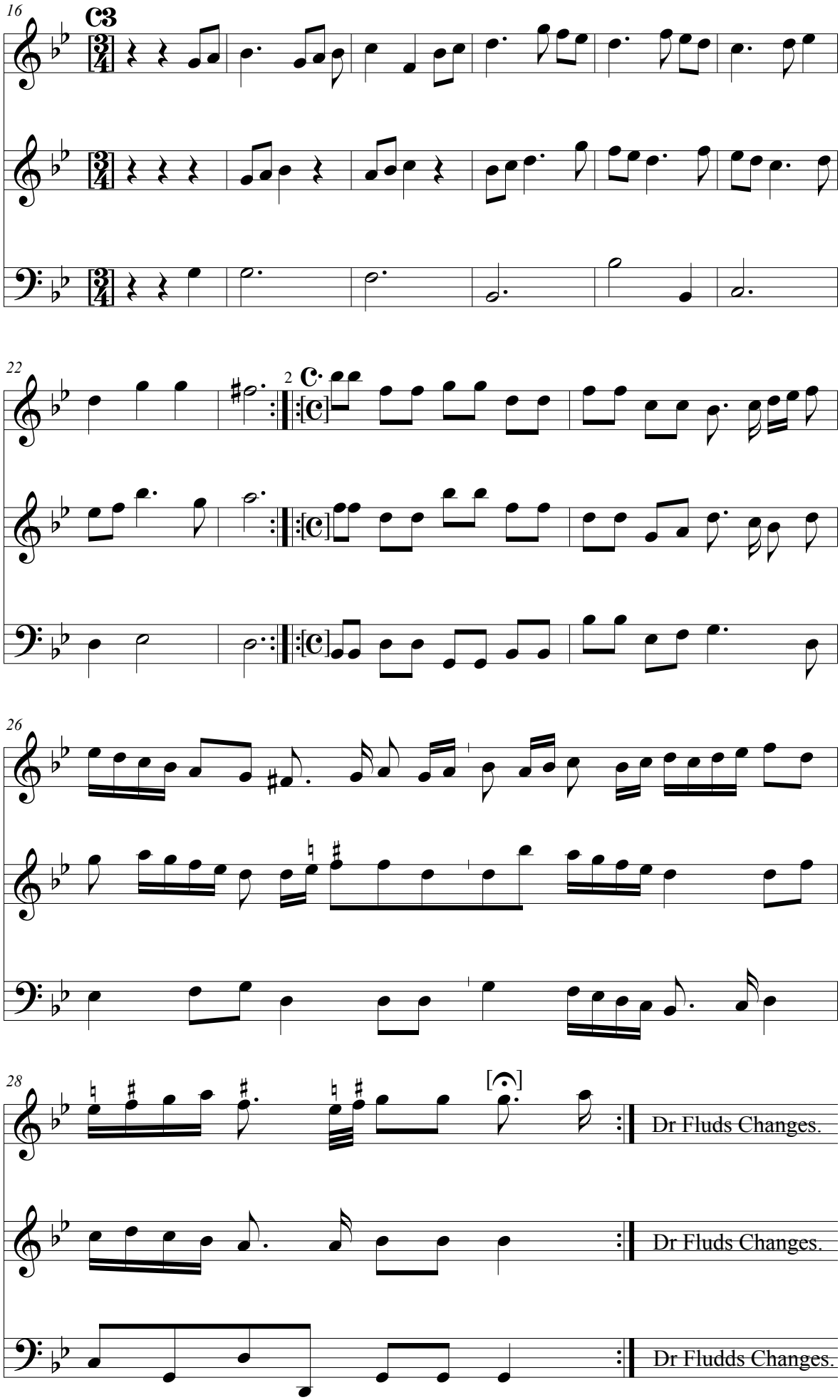
Changes



*

In the manuscript, from bar 24 the note values in the Treble I are doubled compared to the notes in the other two parts, and the mensuration time is ⊙ ; I have therefore halved them in order to match the Treble II and Bass parts.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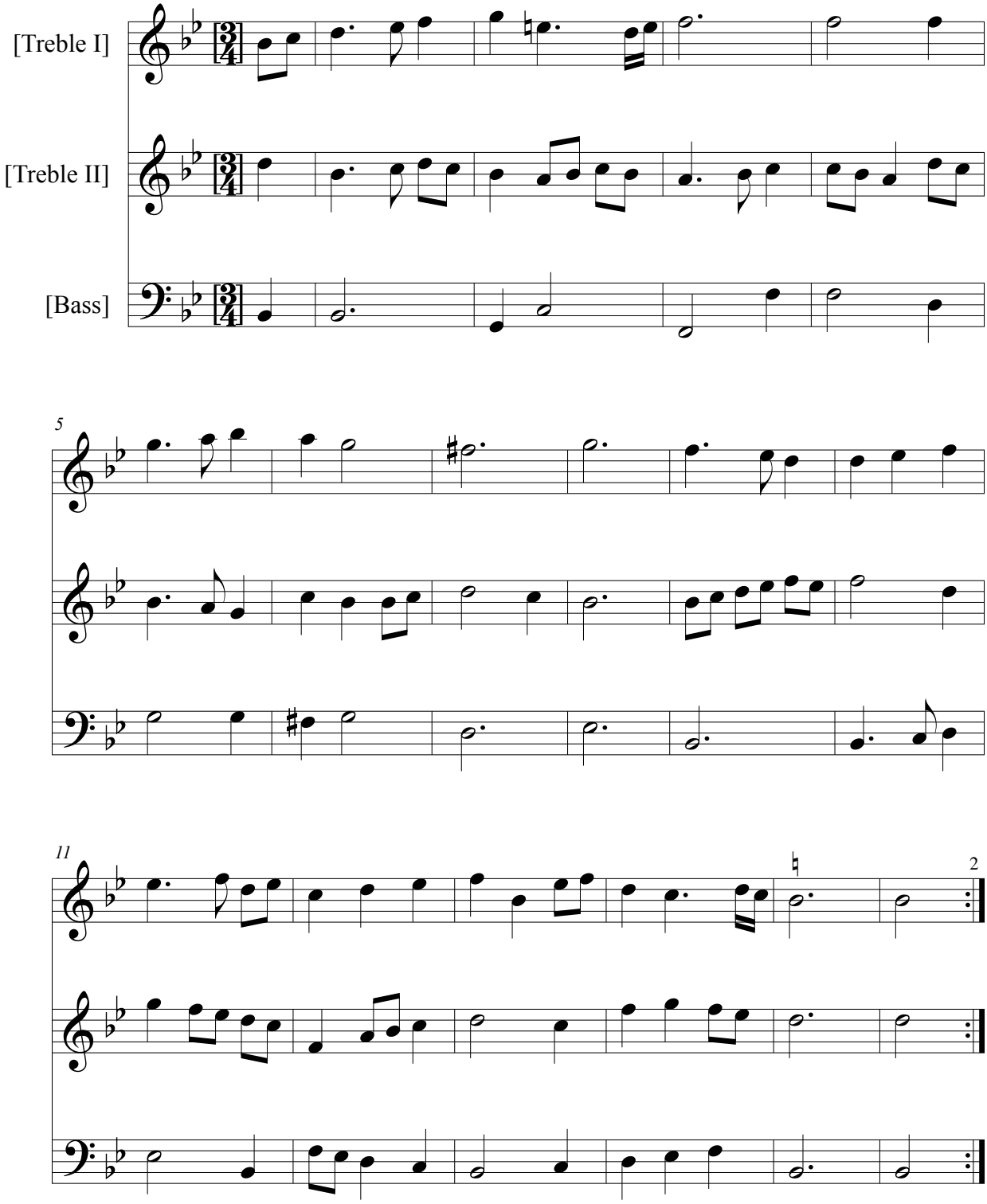
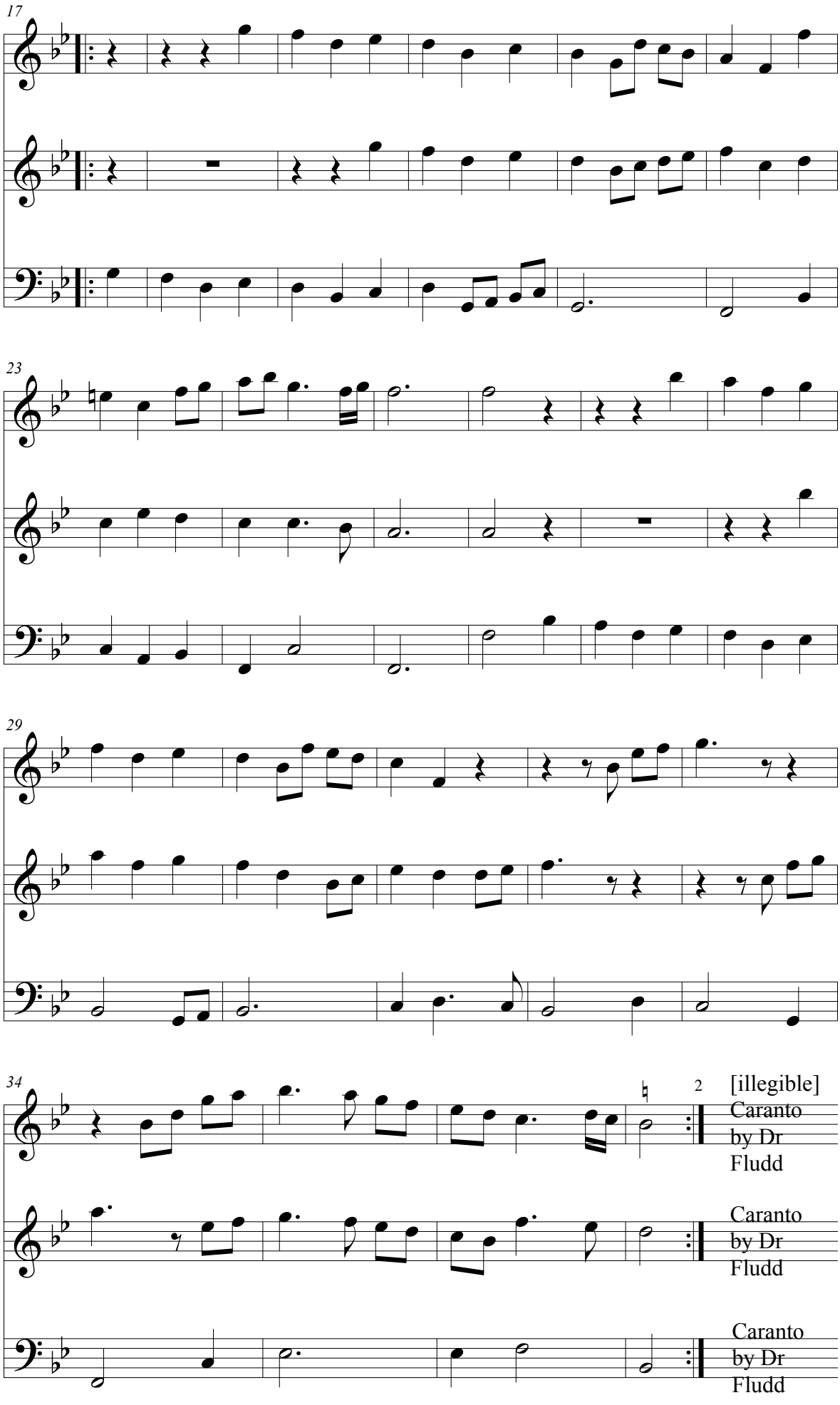
Caranto

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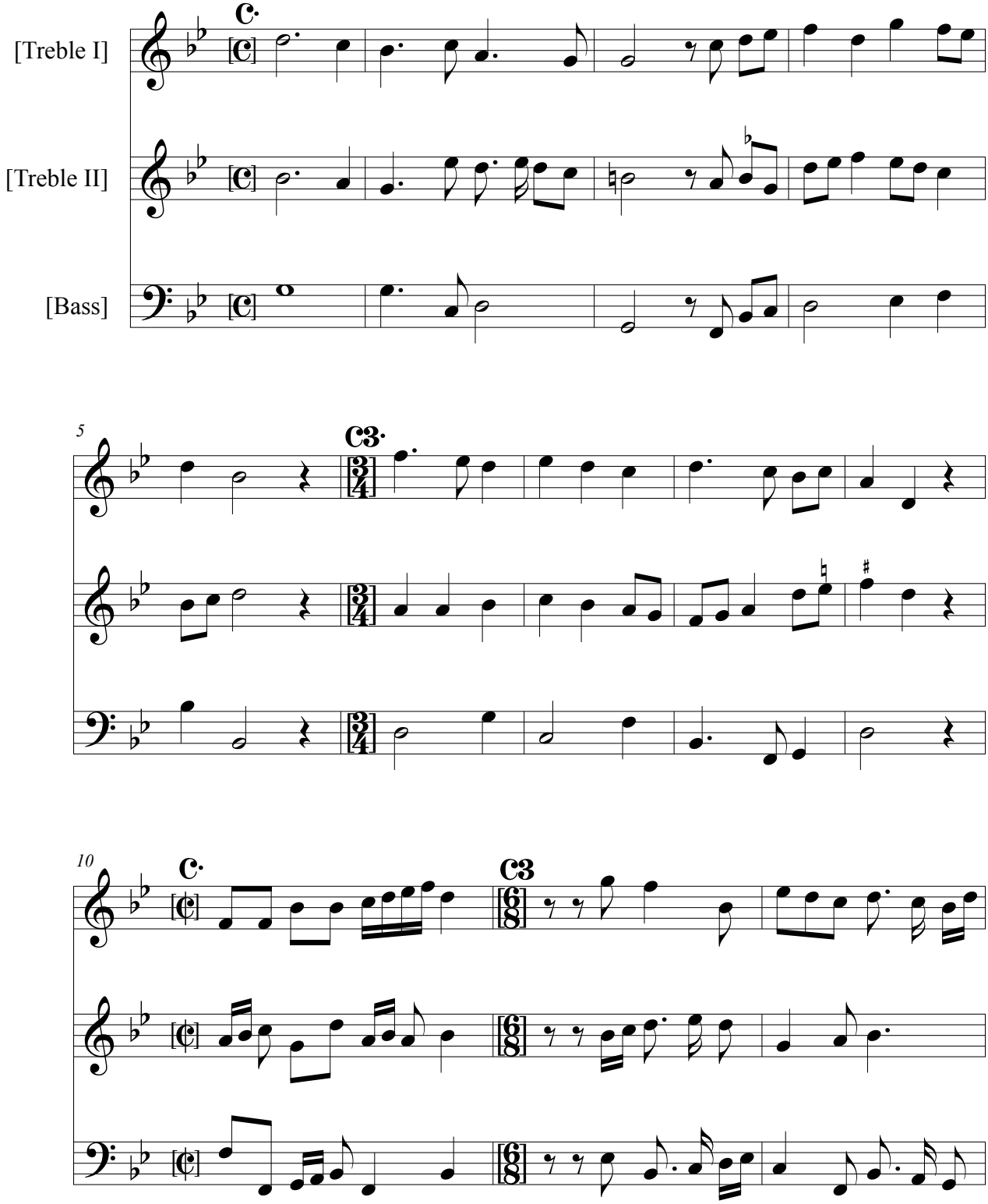
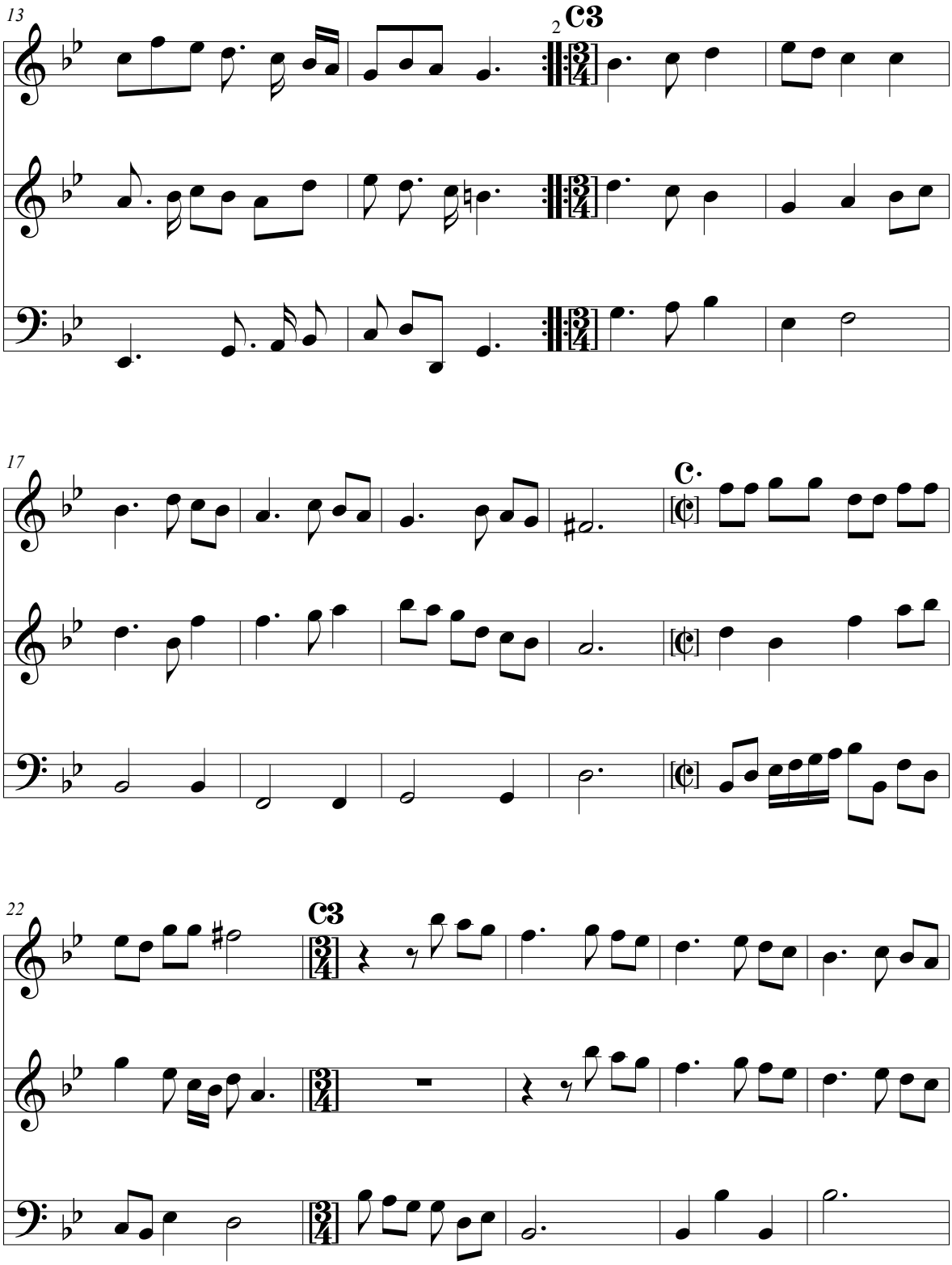
First Almayne or Mottle

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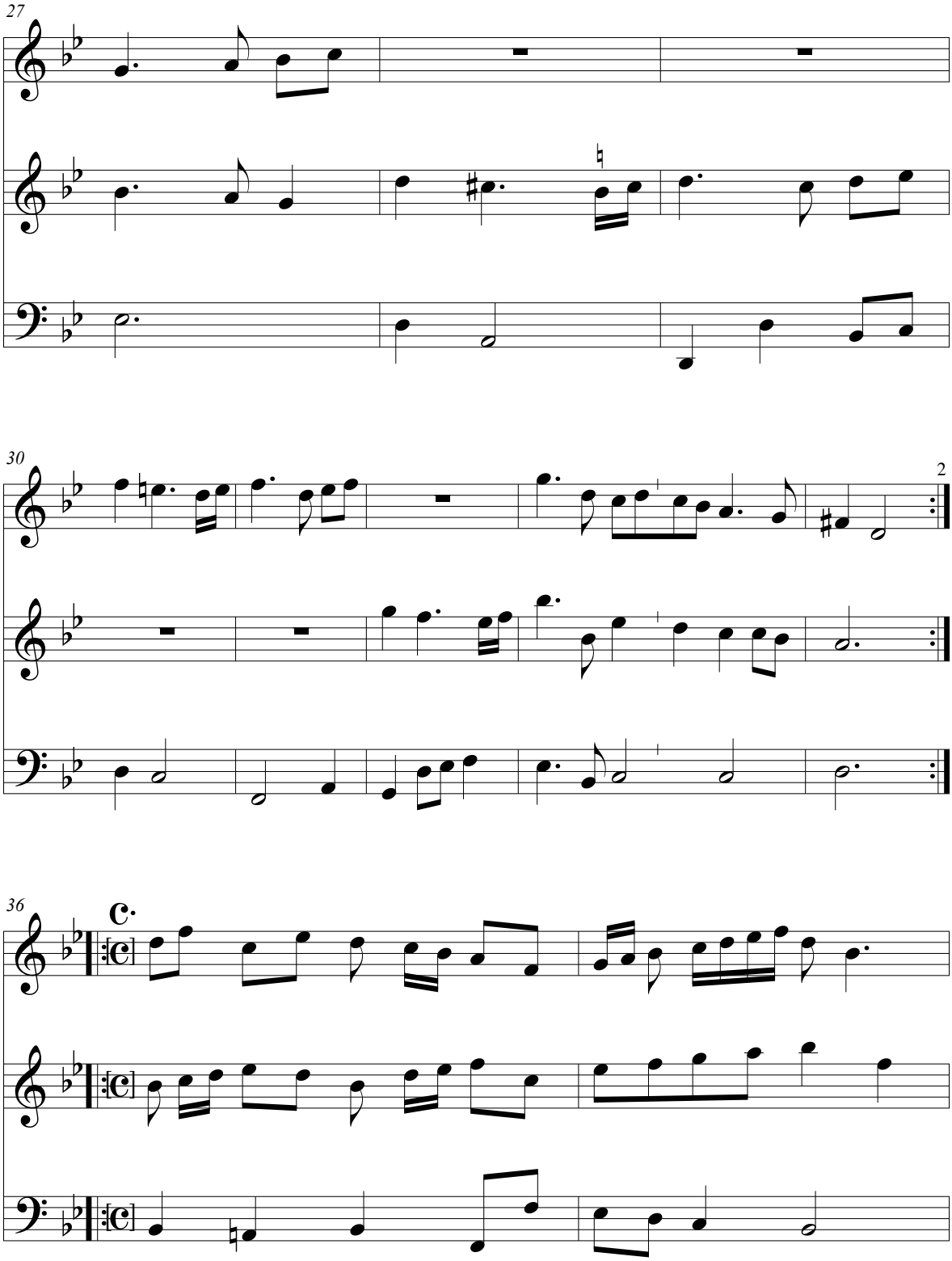
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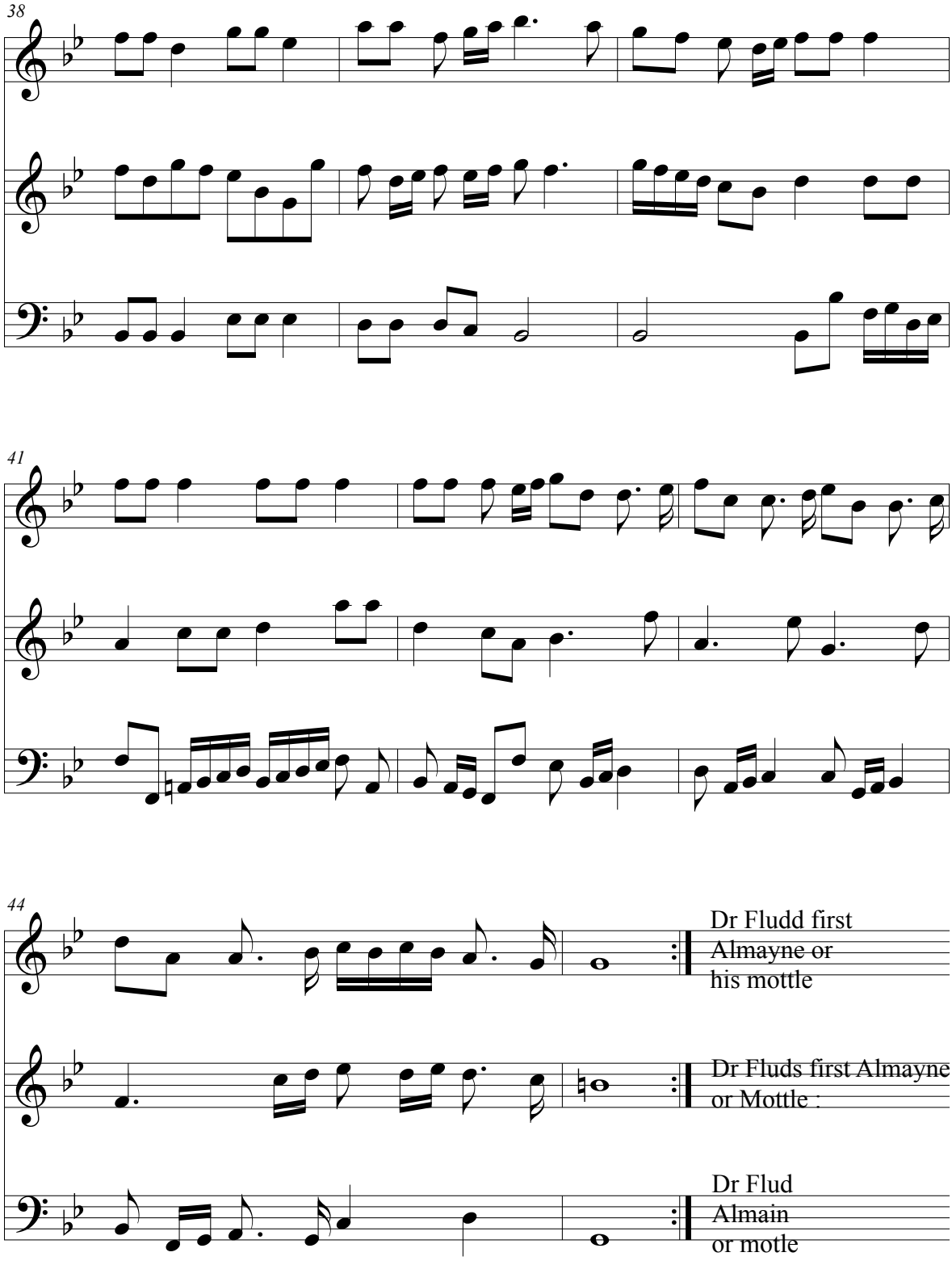
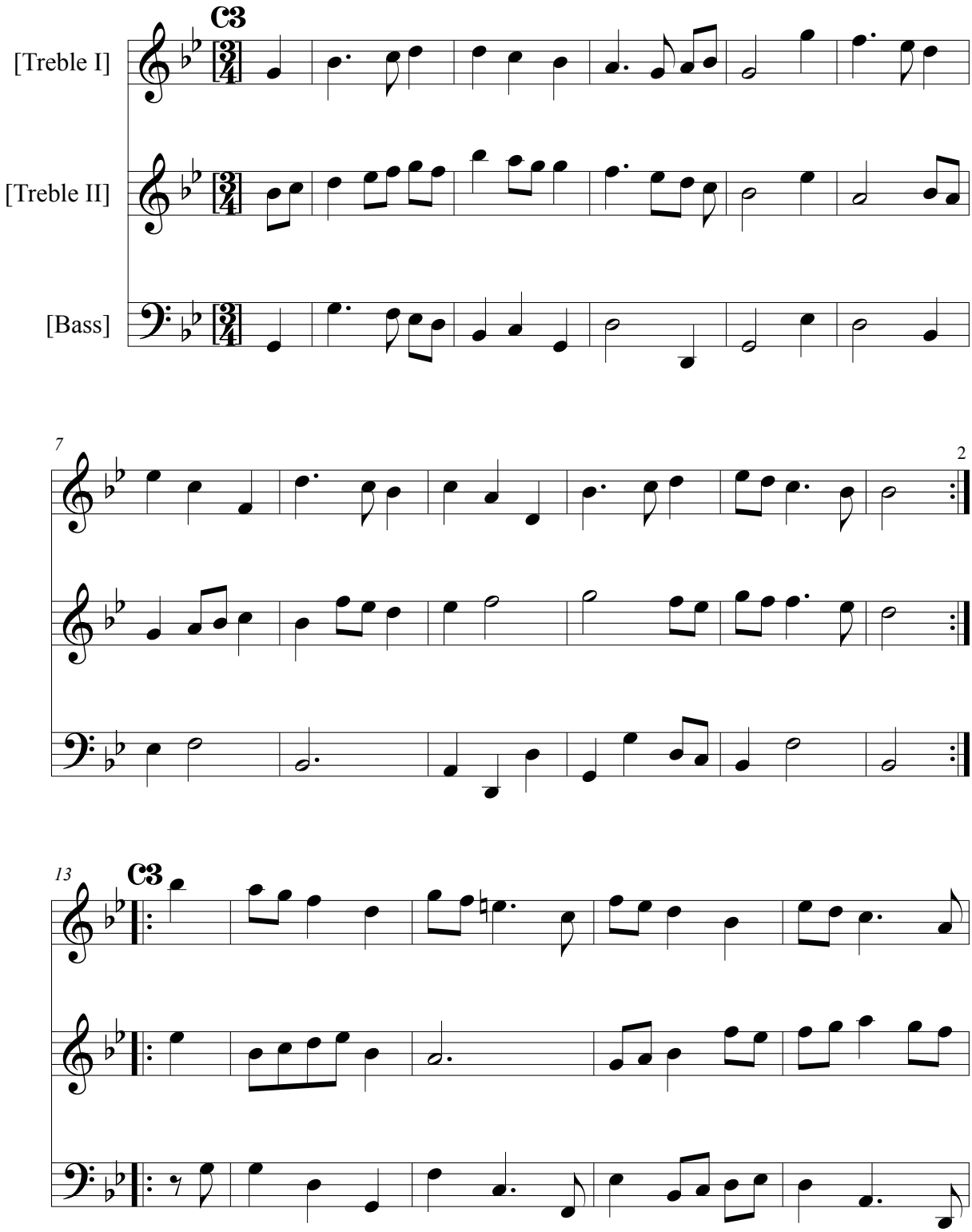
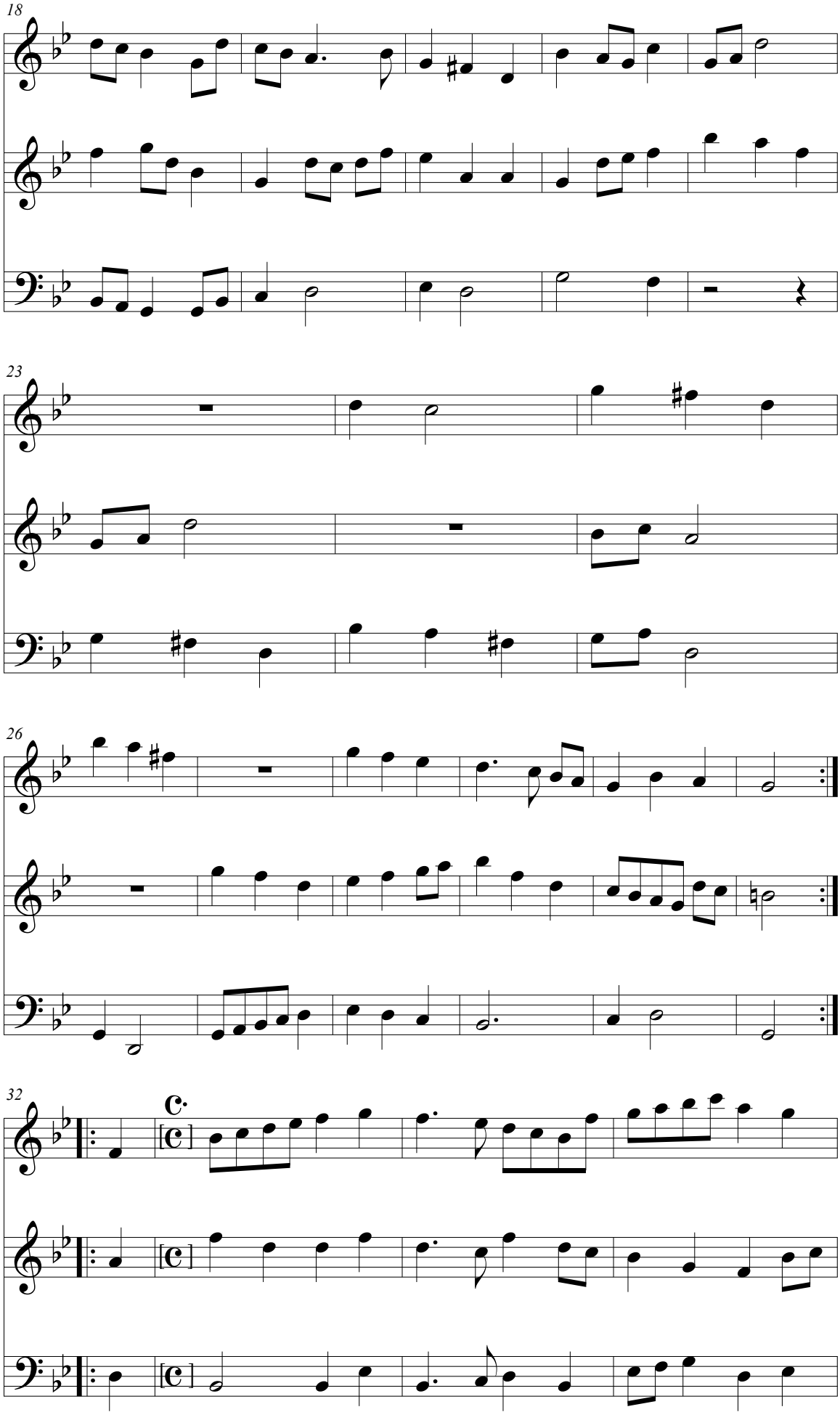


*

Last dotted crotchet of bar 22: *b* amended to *a*.
Treble I, third quarter of bar 44: *c*-*b*-*c*-*b* are notated as four quavers in the manuscript; I have halved them.

Second Almain

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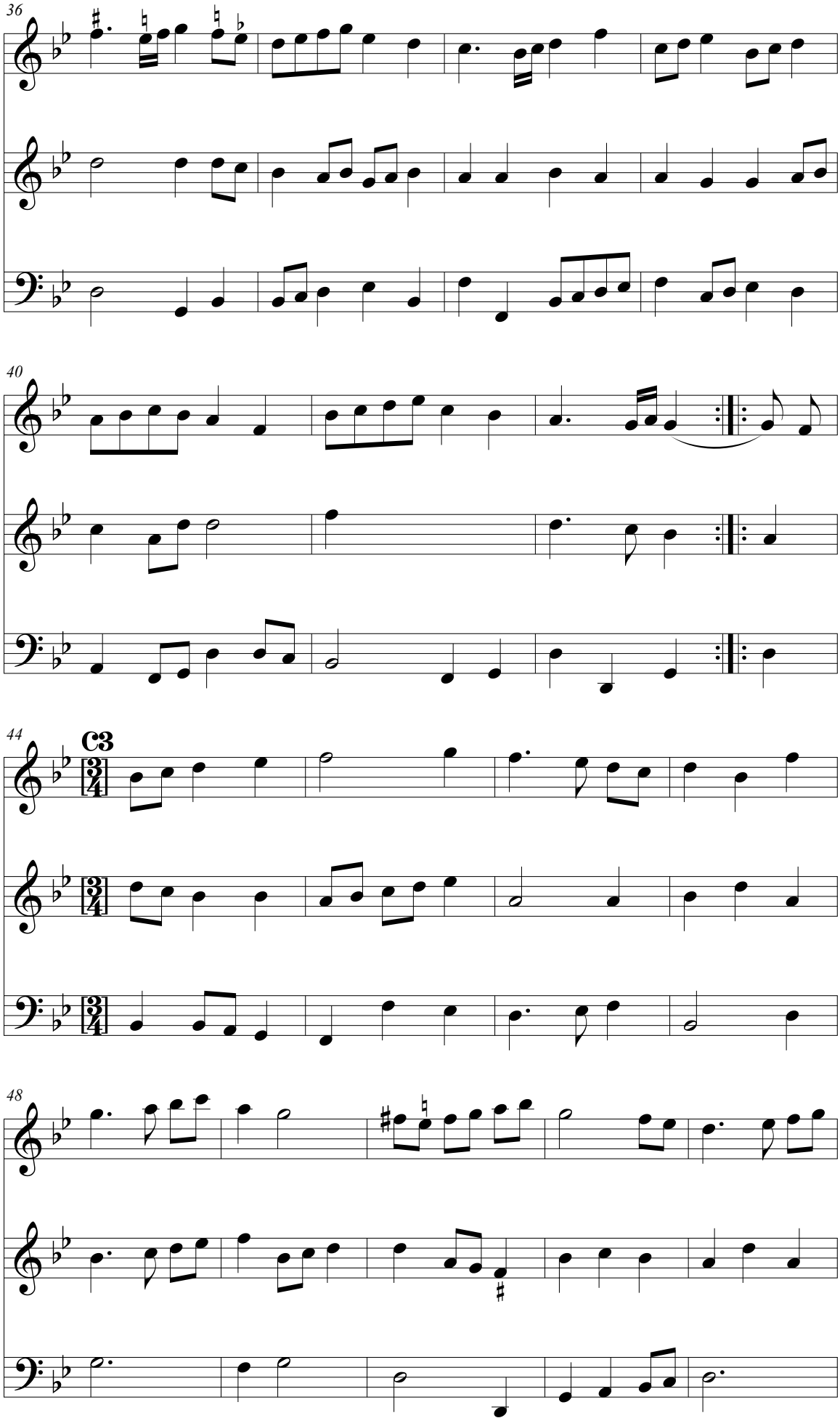
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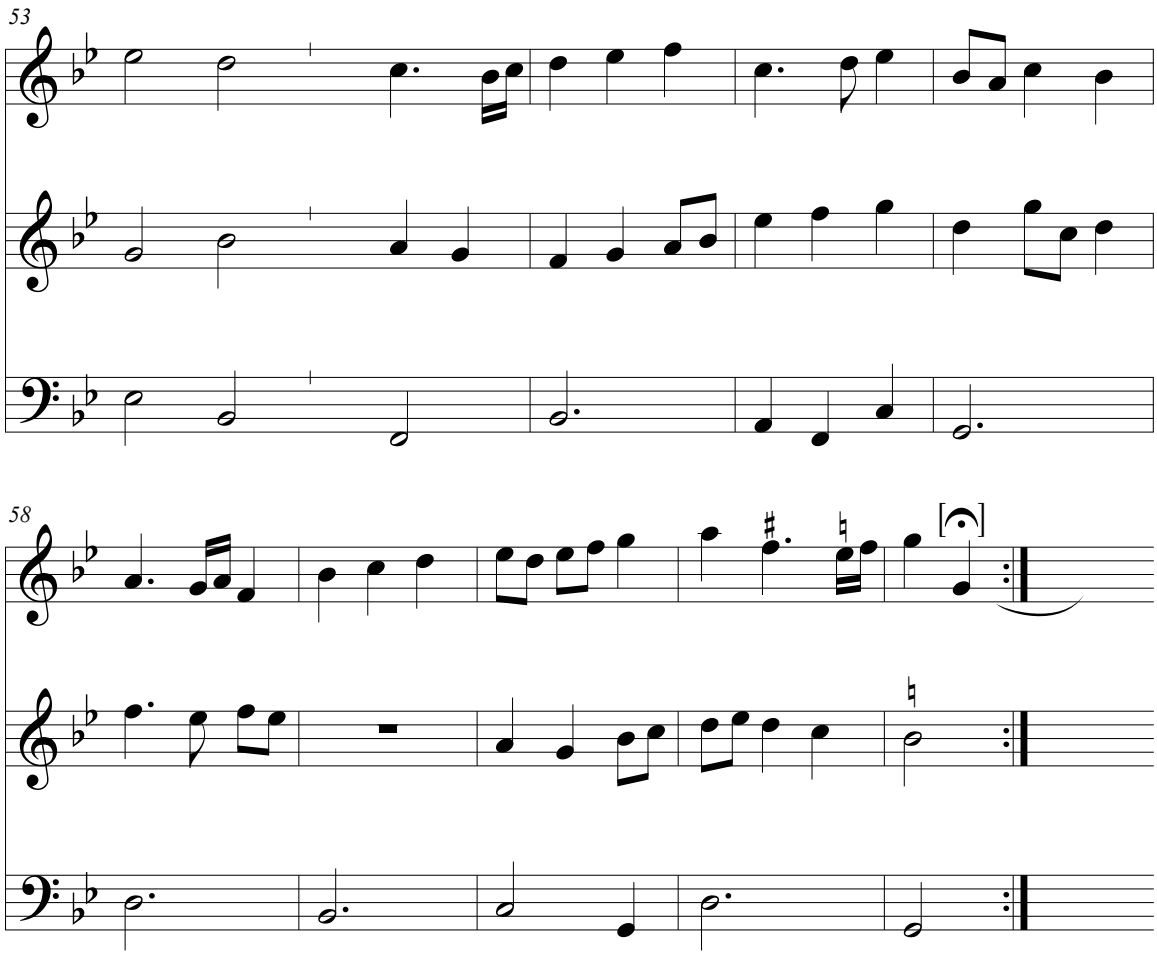
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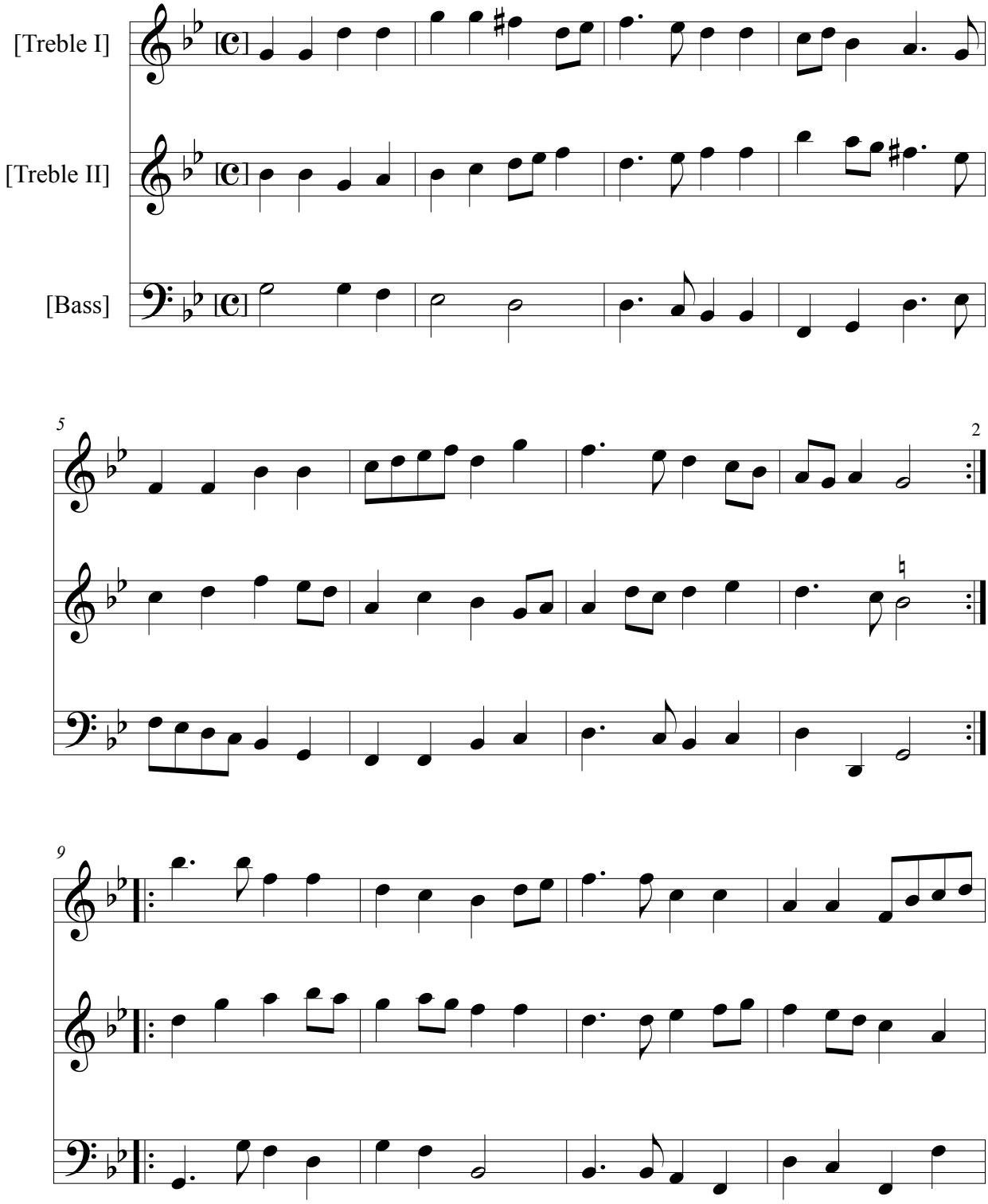
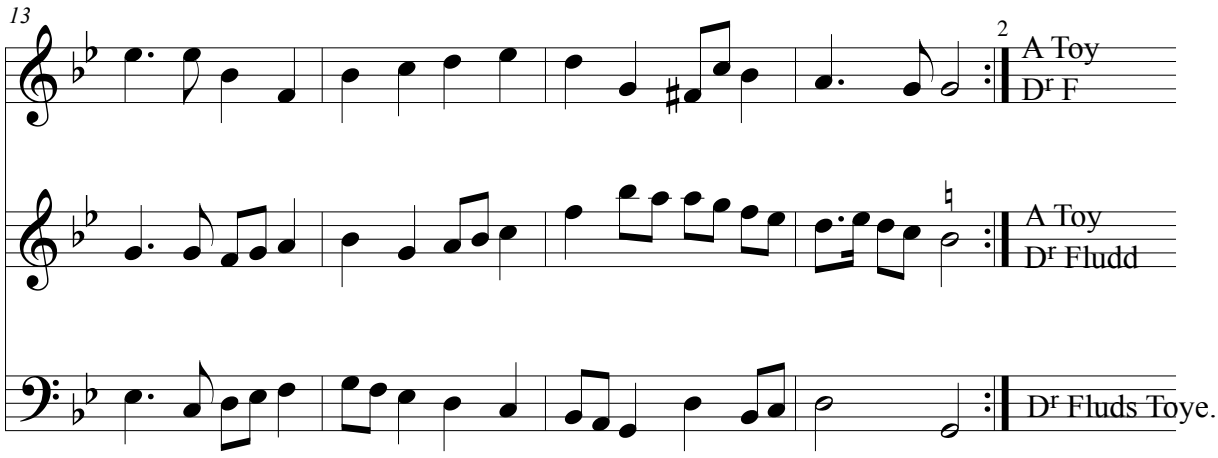
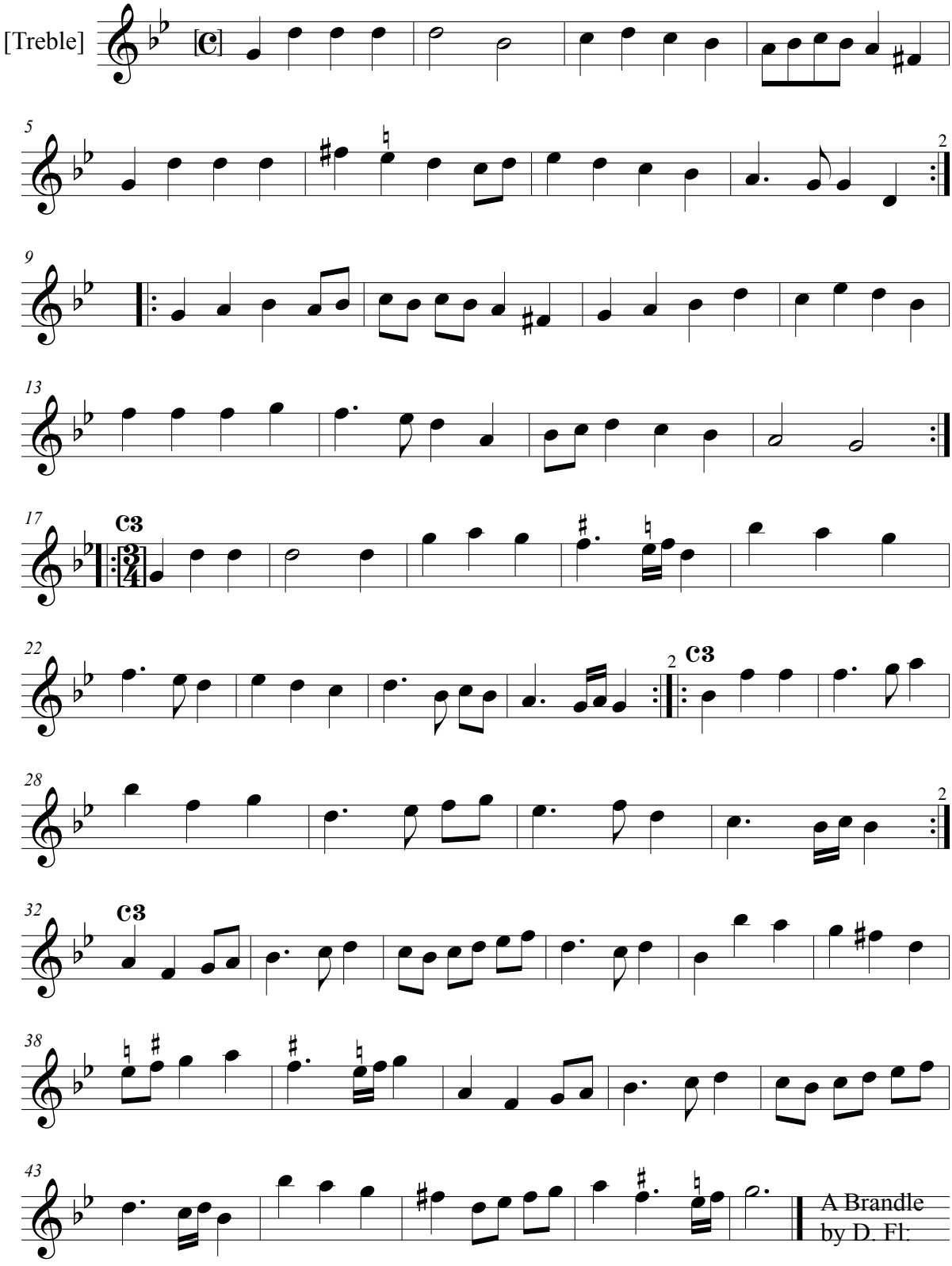
A Toy



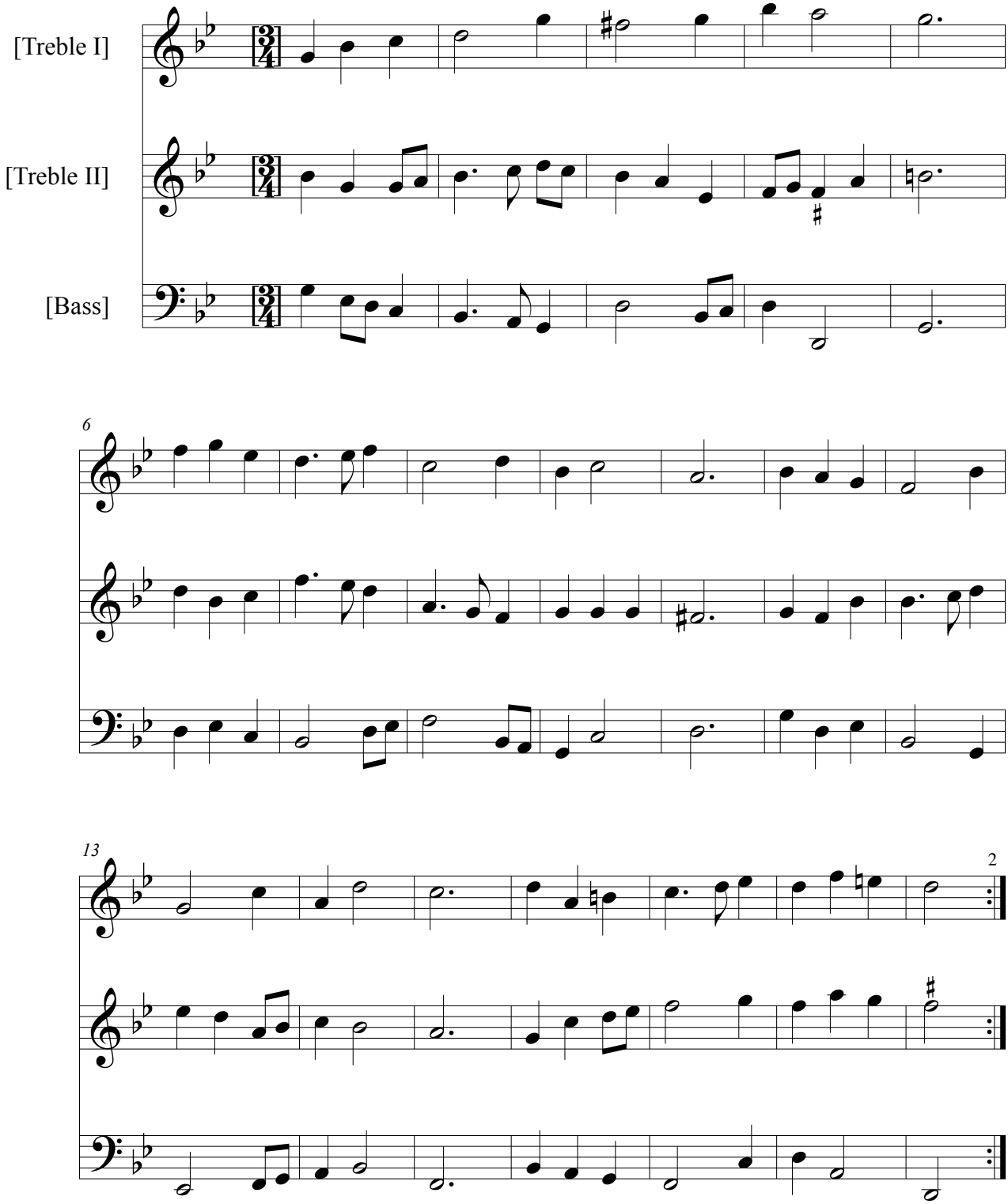


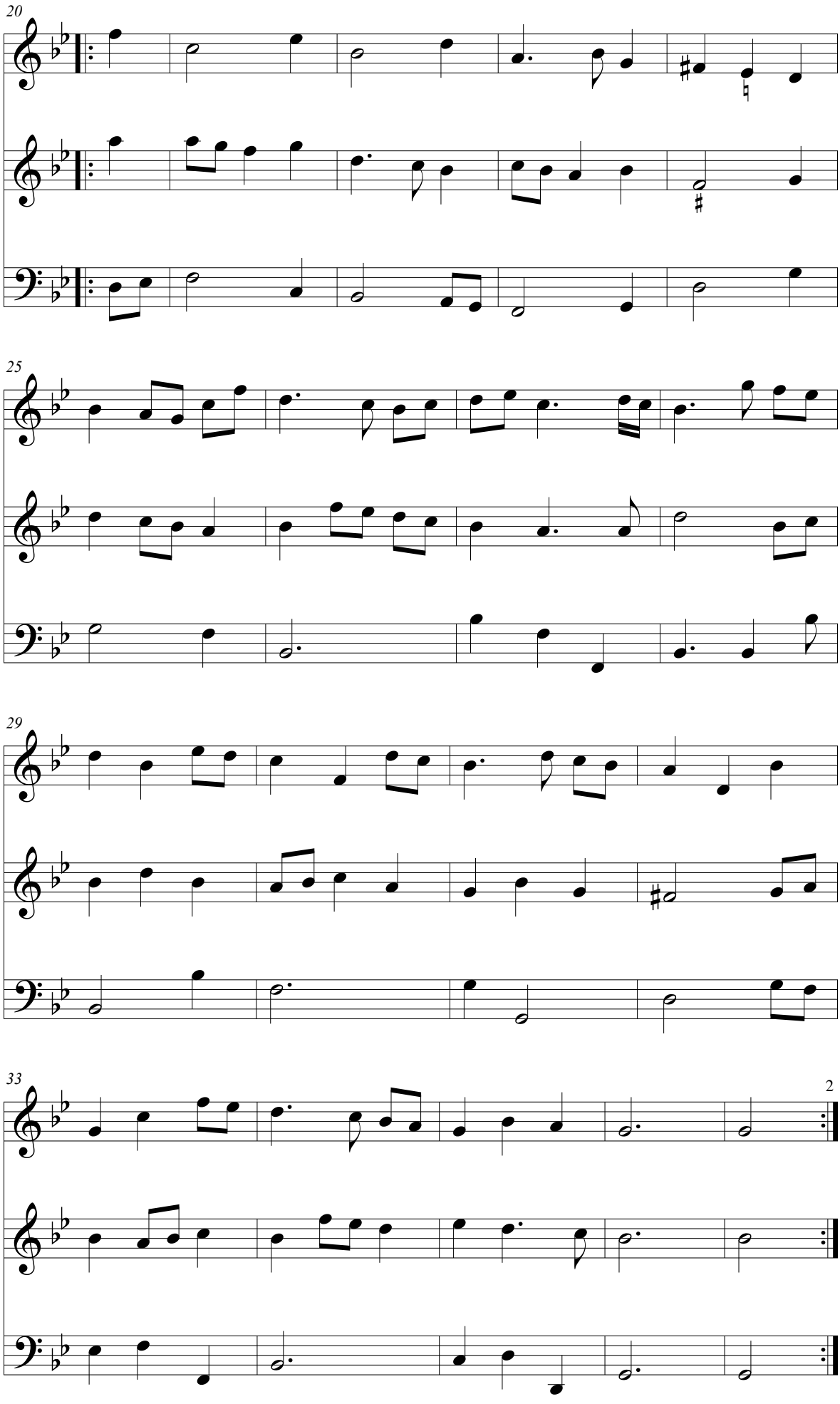
*
Bar 4, Treble II, first three notes are crotchets in the manuscript.

A Brandle



The May Game

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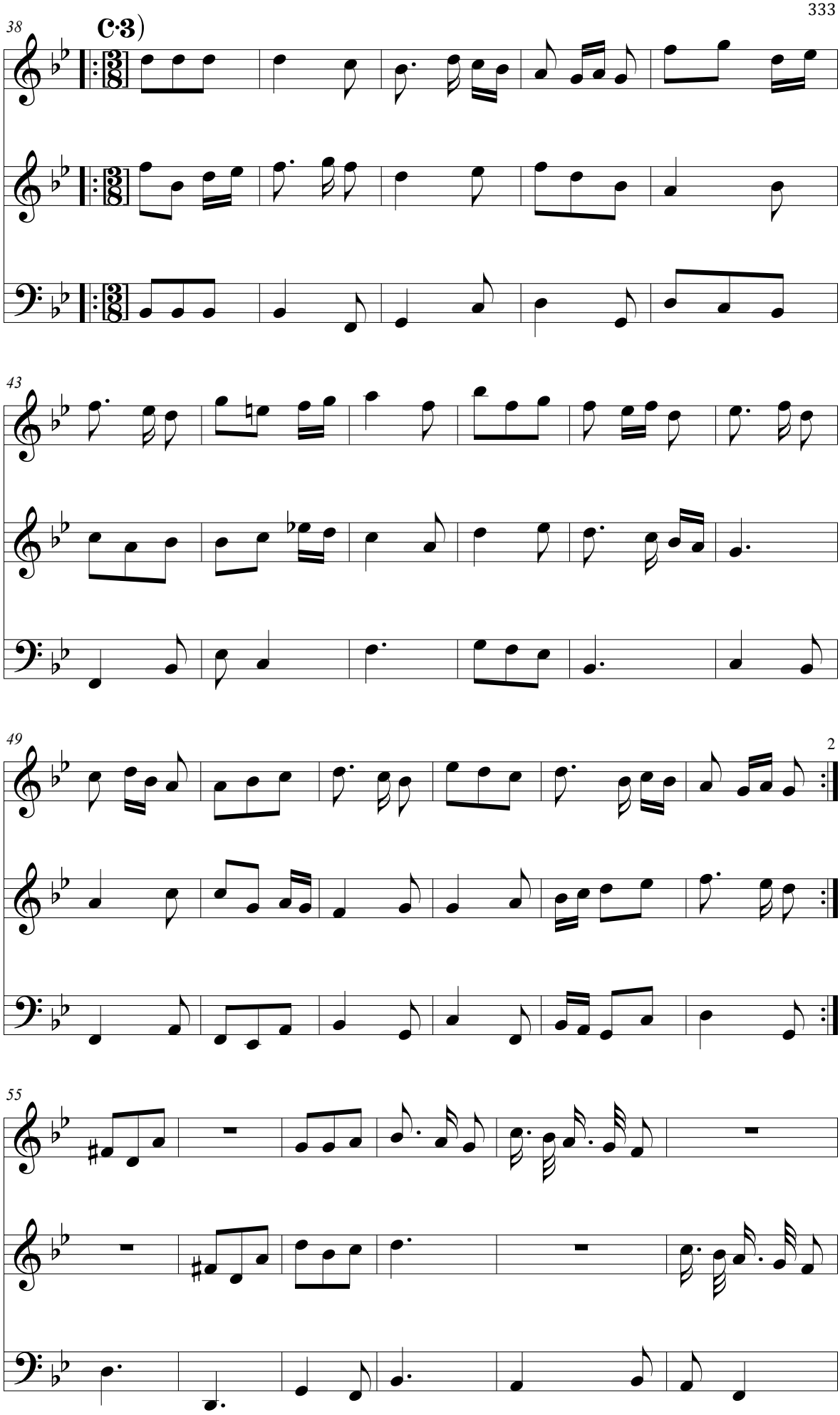
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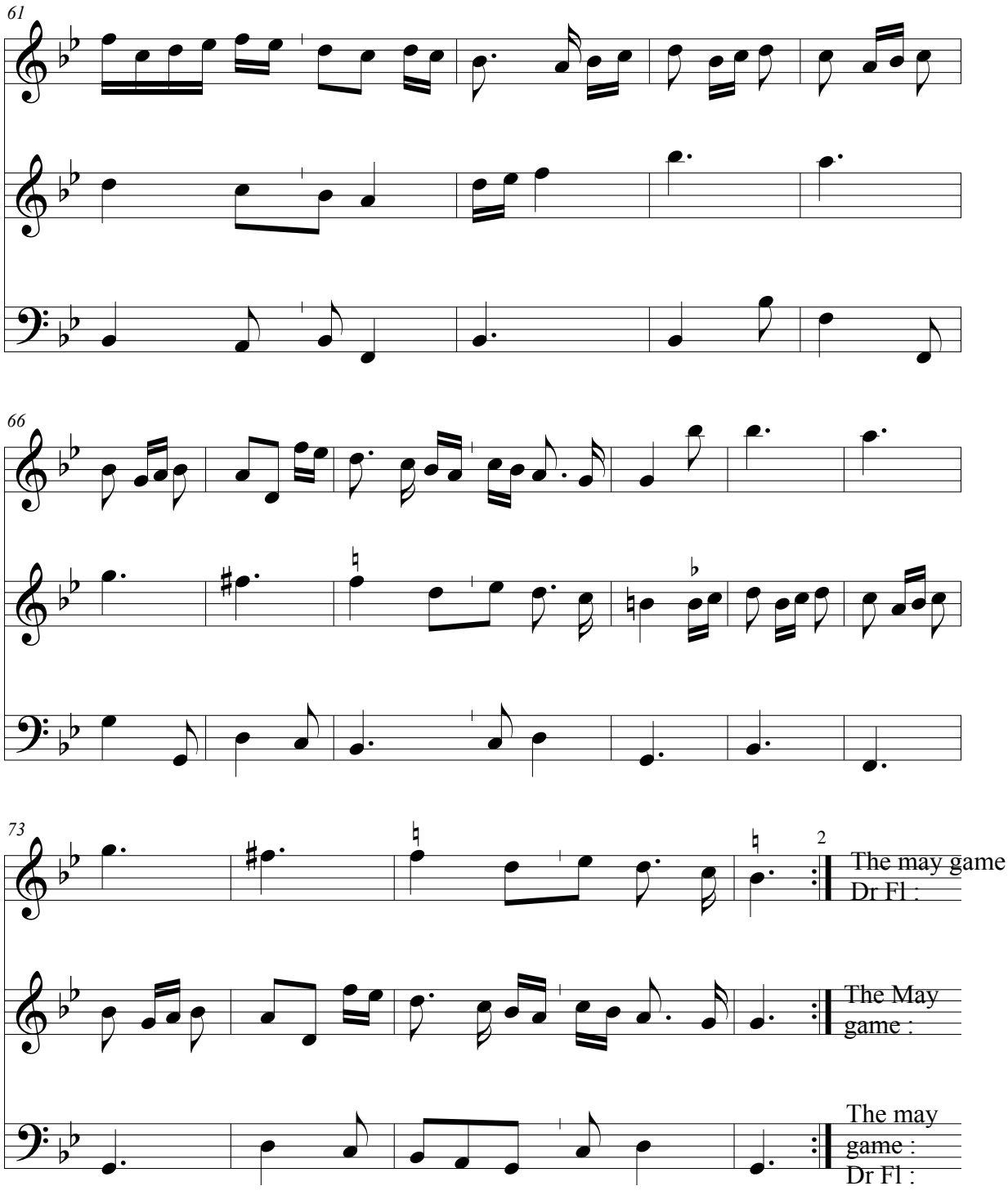

*

All parts, bar n. 10: the original notes are all undotted.
Treble II, bar n. 16, first crotchet: *f* amended to *g*.
All parts, bar n.19: the minims are all dotted; I have taken the dot out for consistency with the following upbeat.
Treble I, bar n. 39, first crotchet: noted as dotted in the manuscript.
Treble I, bar n. 49, last quaver: *b* amended to *a*; treble II, same bar, last quaver: *d* amended to *c*.

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