The Alphabet of Nature

by F.M. van Helmont

Translated with an introduction
and annotations by
Allison P. Coudert & Taylor Corse



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The Alphabet of Nature

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Portrait of van Helmont in his cell in the dungeons of the Roman Inquisition

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On the cover: Portrait of van Helmont in his cell in the dungeons of the Roman Inquisition

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To Polly and Reed

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INTRODUCTION

In 1667 Francis Mercury van Helmont (1614–1698), a Flemish doctor, alchemist, and student of the Jewish Kabbalah,[1] published his first book entitled *A Short Sketch of the Truly Natural Hebrew Alphabet*. In this work he argues that Hebrew was not only the original language, or *Ursprache*, but that it is also a "natural" language inasmuch as Hebrew words exactly mirror things. He further argues that the very naturalness of Hebrew enabled him to construct "a method for teaching those born deaf not only to understand others speaking but to speak themselves," as he says in the full title of the small volume.

Van Helmont was the son of the famous Paracelsian chemist Jan Baptista van Helmont (1579–1644). He was born in October, 1614, shortly after his father claimed he had successfully transmuted base metal into gold. Hence the name Mercury, hardly common, but redolent with alchemical associations, for mercury was an essential agent in transmutation and brought to mind the reputed founder of alchemy, Hermes, or Mercurius, Trismegistus. Like the wandering planet, whose name he bore, the younger van Helmont appeared to follow an erratic path. Born a Catholic, he was accused in middle age of "judaizing" and of becoming a Jew, for which the Inquisition duly imprisoned him. Later he joined the Quakers, but soon left when George Fox, their founder, rejected his kabbalistic brand of Christianity. Van Helmont was a reformer who so insistently sought to foster the best in human nature and society that one cannot but have sympathy with his ideals. He tended the sick and tried to reform the medical profession; he wove his own clothes and developed weaving projects to employ German peasants left destitute by the Thirty Years' War. He invented a chair to straighten crooked backs, and along with his good friend Gottfried Wilhelm Leibniz (1646–1716) drew up designs for a more efficient wheel barrow, better cooking pots, and even shoes with springs for "fast get-aways."[2] Van Helmont must have been a most attractive and engaging character. The thought of his goodness once brought tears to the eyes of his good friend Henry More (1614–1687), a key figure among England's Cambridge Platonists. Only a pint of ale and a glass of canary wine could calm More's "passion," as he described it, and he excused himself by saying that as a chemist van Helmont could draw

moisture from flint.[3] Leibniz shared More's respect and admiration. When van Helmont died, he wrote his epitaph and said in the last two lines, "If such a man had been born among the Greeks,/ He would now be numbered among the stars."[4]

The unifying motif behind van Helmont's activities came from his untiring effort to find a comprehensive reform of the Christian religion in an age of bitter and bloody religious controversy. He was convinced that a union of the mystical teachings of the Jewish Kabbalah and Christianity offered the foundation for a truly universal religion that would embrace Catholics, Protestants, Jews, Moslems, and pagans. This conviction is very much in evidence in his book on the natural Hebrew alphabet.

van Helmont's *Short Sketch of the Truly Natural Hebrew Alphabet*

While van Helmont's book offers a practical method for teaching the deaf to speak, it is primarily a philosophical work arguing that Hebrew was the divine language of creation in which words exactly expressed the essential natures of things. But as we shall see, the two themes were intimately connected in van Helmont's mind. Van Helmont contended that while time and ignorance had led to the corruption of Hebrew he had rediscovered its original form. He expected great things from this, believing it would bring an end to the religious controversies that had precipitated the Reformation and embittered its aftermath. He envisioned a natural Hebrew alphabet that would enable men to converse without rancor and solve disputes rationally.

Like many philosophic works, ancient and modern, van Helmont's *Short Sketch* is cast in the form of a dialogue between two speakers, who drive the argument forward by questioning and answering each other. The dialogue form was especially common in the early modern period.[5] It was a favorite of van Helmont, and he made frequent use of it in his subsequent works. It fit well with his approach to knowledge and method of inquiry. He was not didactic but preferred to make his points by leading his reader on with questions and answers. One of his admirers describes this essentially Socratic method:

> From the conversation we for some time had with him we had observed that he made use of an ancient Philosophical way of discoursing, propounding all his Matters in Queries, and that very dexterously; inasmuch

> that when any one according to his own pleasure, thinks of something in his mind, be it what it will, he, by means of his Queries, concerning the circumstances of the thing, all depending upon one another as the links of a chain, and the Answers returned to his Questions, would infallibly find out and name the thing, the party had concealed in his mind and thought of.[6]

By following this method van Helmont actually wrote very little himself. Instead he found people willing to ask him questions and record his answers. He continued this practice to the end of his life. Four years before his death, his good friend Benjamin Furly wrote to John Locke that he feared he would never see van Helmont again, for he had left Rotterdam "to find men that will ask him questions, or answer his, which he always complains he cannot find."[7]

Dialogue is inherently dramatic—a literary fact that van Helmont clearly appreciated. His countryman Erasmus wrote brilliant dialogues; and his English friend and colleague, Henry More, used the same format for many of his treatises. Dialogue can give the impression of an actual conversation taking place between two or more people; it can create tension and suspense, as well as convey a sense of informality and immediacy. Since van Helmont's great theme is the power of speech, he needed effective speakers to advocate his cause: the revival of ancient Hebrew as a "living" language.

Although the speakers in this treatise do not come to life as fully realized literary characters, van Helmont does individuate them in certain ways. For example, he designates one as H, the other as M. These, of course, are the author's own initials, and it is likely that van Helmont intended for H and M to represent different aspects of his personality, as well as different sides of his inquiry into the origin and nature of language. Generally speaking, H plays the role of the cautious but curious skeptic, who poses questions ("How do infants learn to speak?"), raises objections ("I am not satisfied with these remarks"), and asks for further clarification ("Can this be more clearly explained with a more concrete example?"). M, on the other hand, supplies all the answers and explanations, as, for instance, in the long Sixth Conversation which describes the various motions of the tongue and mouth in forming each and every letter, consonant, and vowel, of the Hebrew alphabet. M has other qualities: we find him praising the pioneering work of some scholars (such as Hutterus on Hebrew roots), quarreling with other authorities (such as Kircher and Walton), telling anecdotes (including the horrific story about two soldiers who copulate with a

corpse), relating personal experiences (his striking success in teaching a deaf musician how to read and speak Hebrew), promoting concord between Jews and Christians, and everywhere displaying his dazzling erudition about different subjects (modern science, comparative linguistics, biblical and classical scholarship, ancient history, and so on).

Throughout his dialogue, van Helmont employs a "vitalist" rhetoric that matches his vitalistic views on language, human society, and the natural world. No descriptive term occurs more frequently than the Latin word *vis* (which we render sometimes as "force," sometimes as "power"). In one typical sentence, we are told that "the tongue, driven upwards with force, also descends with force to a lower position."[8] On another page, we read about the tongue rebounding "forcefully from the palate," striking "violently in its descent," cleaving "strongly to the palate," and falling "swiftly back again."[9] Speech is an energetic activity that requires constant exertion and conscious vigilance; nothing about it is simply passive or receptive. Time and again, we hear about the "power" of individual letters to produce unique effects, such as the letter *Jod*, which gives "a living sense of the pain of childbirth," or the letter *Schin*, which "carries the sound of a silent man ruling with authority."[10] Richly figurative, van Helmont's dialogue shows the influence of the ancient rhetorical idea of *enargia*, a generic name for a variety of techniques aiming at lively description. The vivid and energetic style of *A Short Sketch* also reflects van Helmont's belief in a cosmos that is fully animated and interconnected. Central to this doctrine is the notion that "every man radiates from himself his entire vital power without stop."[11] Hence the many fascinating digressions on such topics as the secret power of the human hair, "the menstrual blood of the moon," or the sorry fate of a transplanted nose.[12] Nothing is irrelevant. Thus the various organs of speech (breath, tongue, lips, mouth, palate, epiglottis, and windpipe) cooperate vitally and instrumentally with every other organ and faculty of the human being, the natural world, and God.

Van Helmont wrote his *Short Sketch* under rather unusual circumstance, during the eighteen months he was imprisoned by the Inquisition in Rome.[13] His isolation and lack of books left him with nothing to do but think. Given this situation, he embarked on a train of thought that began with musing about living on an island inhabited by deaf mutes and concluded with the conviction that Hebrew is a "natural" language:

> This, among other things, is what a plain and simple meditation suggested to me when I was in a certain place, where I was deprived of all the

> help necessary for an accurate elaboration of this matter [of a natural language], and the only relief left to me was thinking. For I had the opportunity to consider by meditating with myself what I would do if I had to live on an island inhabited only by people born deaf in order to lead a most pleasant life with the best conversation. So now I wish to deliver all this to the freest judgment of everyone, and I give infinite and eternal thanks to God, who has placed the mouth and tongue in man.[14]

From the frontispiece, we can see that the "certain place" was van Helmont's cell. Van Helmont sits at a table in a dark, vaulted room, the stone walls and metal bars illuminated by the light of a single candle. In elegant dress and comfortable slippers, he stares into a mirror, calipers in one hand and pen in the other. Clearly his dreamy speculations about his island adventure have taken a more practical turn. He realizes that a deaf person is not mute, except in rare cases, because of any physical deformity of the speaking organs, and he knows that deaf people can learn to understand words by lip-reading. These general considerations led him to the mirror and calipers. As one of the speakers in the dialogue reasons, if a deaf mute can learn to read words merely in the course of being spoken to, how much more quickly might he learn to understand and speak words from diagrams, especially since diagrams have been used to teach people all kinds of things from violin playing to food carving:

> Surely, if it is possible for someone to learn to play the violin by seeing the finger movements illustrated on the strings of a violin, the art of dancing through depictions of the order and placement of the feet, the art of flag waving through illustrations of gyrating flags, and finally, if the art of jousting, gunnery, and building and other similar things can be learned in this way, is it not possible for someone to learn and teach human speech through the various configurations of the tongue and mouth?[15]

His alter ego concurs, "I have no doubt whatsoever about these things."[16] In fact, he somewhat surprisingly says that he has used precisely this method with great success on a "deaf musician . . . suffering from weak vision and trembling limbs."[17] What is even more surprising is that there was actually such a person at Sulzbach, the composer Peter Meyer.[18]

By proving he could teach the deaf and dumb to read and speak Hebrew through pictures, van Helmont attempted to discredit the arguments brought against the concept of a "natural" language. Thomas Erastus (1524–1583), the Swiss doctor and forceful critic of Paracelsus, was one of many who maintained that language was wholly a matter of convention. To prove this he cited the case of deaf mutes. Erastus reasons that if language is natural, meaning that if words and things

are intimately connected, then deaf mutes could speak from birth. They would automatically know the names of things and hearing would be of no importance in learning a language.[19] By showing that deaf mutes could easily learn to speak Hebrew, van Helmont thought that he could demonstrate the two premises on which his theory of the natural alphabet was based: first, that there were such things as innate ideas in the human mind that had only to be activated to come into consciousness, and second, that the Hebrew language perfectly represented these innate ideas. Thus the case of deaf mutes was used by both those arguing for and against the conventional nature of language. The topic continued to generate endless debates in the following centuries.[20]

The first conversation ends with van Helmont's contention that he could teach the deaf to speak. The second leaves the subject of the deaf and dumb and turns to van Helmont's great interest and the main subject of the dialogues, the Hebrew language. There is, however, a continuity between the two dialogues, for the second opens with the provocative question: "does the most holy script of the Hebrews have any similarity to the motions of the human tongue?"[21] The protagonist in the dialogue answers with a forceful affirmative: "In itself it is nothing other than the artificial representation of the various motions of the human tongue.... And certainly if it were not for this fundamental fact, would it not be just as arbitrary, vain, and changeable as every script of every other language without exception?"[22] There are two interesting points in this statement. First, it implies that there is an exact correspondence between the movements made by the tongue sounding Hebrew letters and their written form. The written symbol is thus a picture of the tongue movements, and simply by reading the picture one can make the sound. Van Helmont actually draws the Hebrew letters as concatenations of tongues. Secondly, for some reason not yet apparent, this aspect of the Hebrew language places it above all other languages, which are "vain" and "dumb" in comparison.

Van Helmont was not a cautious man. At the very time he was in the dangerous position of a suspected heretic, he sat down to write a book reiterating the unorthodox opinions for which he was being held. Truth was more important to van Helmont than life, and the truth he thought he had discovered went something like this: if Catholics, Protestants, Jews, and Moslems agree in accepting the Hebrew Bible as the revealed word of God, why do they disagree so fundamentally and murderously about its meaning? For van Helmont the only possible explanation was that the text had been corrupted and people no longer understood it.

Ignorance had led to disagreements, disagreements to divisions, and divisions to intolerance, persecution, war, and bloodshed. These would vanish, van Helmont believed, once the bible was understood according to the principles of his natural Hebrew alphabet.

But this was not all that van Helmont expected from his discovery. Like many people he was convinced that Hebrew was the divine language of creation. After all, when God said, "Let there be light," there was light. In both the Old and New Testaments speech is a powerful creative force. It "comes," it "abides," and as Psalm 33 clearly says, "by the word of the Lord were the heavens made; and all the host of them by the breath of his mouth." The idea that the Hebrew language was a powerful creative force is reiterated in the prologue to the Gospel of John with the concept of Christ as the *logos* or "word" of God, through whom the world was created. To van Helmont these statements were the literal truth. In his opinion creation was a process that began with the thoughts in God's mind and ended with the articulation of these thoughts. This explains why he retranslated the first sentence of Genesis to read, "In the Head *Aelohim* created the Heavens and the Earth," instead of the usual "In the beginning," on the plausible grounds that *bereshit*, the meaning of which has always puzzled translators, was derived from the Hebrew word *rosh*, which means "head."[23]

Because Hebrew was the language of creation, it was also a "natural" language in which words indicated the essential nature of the things they both produced and represented. To substantiate this, van Helmont, like many other authors, referred to the passage in Genesis where Adam names the animals. He did not believe the animals existed until Adam named them; before that time they were simply ideas in his mind. By imposing names on the thoughts in his mind, he brought the animals into physical existence, "because," as van Helmont says, "to call Things by their Names is to give them their Nature."[24] Thus, for example, when a horse was brought before Adam and he said *sus* (the Hebrew word for horse), he expressed the essence of "horseness."

Although convinced that Hebrew had originally been natural and divine, van Helmont thought that over the centuries the Jews had forgotten the secret wisdom inherent in their language. His goal was to revive this knowledge by carefully considering the significance of the shapes and sounds of Hebrew letters. He believed that his analysis provided a key to unlock the original meaning of Hebrew words. A passage in van Helmont's last book *Quaedam praemeditatae & consideratae*

Cogitationes super Quatuor priora Capita Libri Primi Mosis, Genesis nominati (Some premeditate and considerate thoughts on the first four chapters of the first book of Moses, called Genesis) provides a good example of the use to which he put his natural alphabet. In this passage he discusses the Hebrew name for God אלוהים (Aelohim, in van Helmont's spelling). He was convinced that the shapes and sounds of the individual letters, when correctly understood, contributed qualities and characteristics that perfectly describe God. For example, the first letter *Aleph* signifies (both by its shape and sound) infiniteness or multitude; the second letter *Lamed* (because it is a tall letter) signifies virtue and power; *He* (undoubtedly because it is a spirant) signifies respiration, breath, life, vegetation, growth, and fruitfulness; *Yod* because it "has a Sharp or Shrill Sound" "signifies the strong Life that produces the manly Member";[25] the final *Mem* (because of its closed shape) signifies a womb, hence birth and multiplicity.[26] Thus, the essence of God lay in the shapes and sounds of the individual letters that made up his name. What is remarkable about this passage is that it comes from a book that was actually ghosted for van Helmont by Gottfried Wilhelm Leibniz.[27] Leibniz's authorship emphasizes how much more complex early modern thought was than appears in the conventional division of thinkers into progressive rationalists and empiricists (Leibniz) versus benighted mystics and occultists (van Helmont).

In his *Short Sketch* van Helmont describes each Hebrew letter in terms of the significance the shape and sound have for its intrinsic meaning. He was certain that once people really understood the letters in this way, they would gain "a living" understanding of the Scriptures. Such an understanding was crucial for several reasons: not only would it lead to religious peace and unity, but it would provide a key to unlock the secret wisdom, arts, and sciences that van Helmont, like many of his contemporaries, believed were encapsulated in the biblical text. The author of the preface to van Helmont's book, his friend and collaborator Christian Knorr von Rosenroth (1636–1689), emphasizes this point:

> If we examine the writings of the Old Testament, what do we find in them but a gold mine of all good arts and knowledge and a treasure chest in which all the gems of philosophy, all the riches of the Divine Law, and, what is most excellent, all the treasure of Divine and Holy wisdom are hidden.[28]

Like van Helmont, von Rosenroth was convinced that the key to unlock this treasure-chest lay in van Helmont's natural alphabet. With this key Eden could be recovered and Babel restored.

The Magical Aspects of van Helmont's Theory of Hebrew as a "Natural" Language

There is another important aspect of van Helmont's theory of a natural language with decidedly unorthodox implications. The power to create did not reside simply in Hebrew words *per se*. They would have been powerless unless linked to what he describes as an "inward power" emanating from God. Van Helmont explains this in connection with the creation of light:

> Indeed, when Aelohim said, let there be light, then there was light; that is, when Aelohim conceived of light, by a powerful word of the mind he created for himself an object of thinking, into which he might send forth his inward power, and he externalized this or produced it and gave existence to something separate from himself.[29]

This inward power was not restricted to God—man shares it; but in an attempt to protect himself against charges of magic and heresy van Helmont quickly adds that men have lost most of this power through the Fall. Had it not been for the Fall, men would have propagated themselves spiritually by thought and speech, not as they do now in a manner fit only for those "coated with a gross earthly shell."[30]

Van Helmont discusses this inward power in detail. It is a spiritual force radiating from every individual and formed from a combination of the *spiritus* inhaled from the air and the *spiritus* contained in the semen.[31] Van Helmont accepted the common view that air contains a spiritual force. He calls this a "noble essence" or "noble spirit."[32] His father had called this same spirit the "Magnall, or sheath of the air,"[33] borrowing Paracelsus' term, which was itself a variation on the neoplatonic *anima mundi* and the platonic and stoic idea of the *pneuma*.[34] To demonstrate the existence of this spirit, van Helmont performed the Torricellian experiment of inverting a tube filled with mercury into a dish containing mercury. As one would expect, a partial vacuum appeared at the top of the tube. When van Helmont tilted the tube, however, it entirely filled with mercury. Convinced that a vacuum could not exist in nature, the experiment proved to him that a subtle, non-material, but extended, essence existed in the air that was distinct from the "grosser" part of the air and filled the space at the top of the upright tube. This subtle essence had to be extended but could not be material because then the mercury would not have been able to take its place. Van Helmont concluded that this spirit existed throughout

the world, providing the force regulating and moving material objects: "From this it is easy to see what a noble spirit God has implanted in the air since it can so easily move and regulate all heavy bodies."[35] In rejecting the possibility of a vacuum van Helmont was in the good company of most philosophers and scientists, including Leibniz and Descartes, who also performed the Torricellian experiment, denied the possibility of a vacuum, and postulated the existence of a fine dust which fills the interstices between larger corpuscles. The rejection of a vacuum was a basic aspect of Aristotelian philosophy and therefore the accepted teaching of the Catholic Church.[36]

Van Helmont describes the process by which the noble essence in the air is drawn in by all parts of the body, particularly by the lungs, from where it passes through holes in the abdomen and circulates through every limb and organ before it is exhaled. In the course of its passage through the body this spirit absorbs the living force of an individual, including his reproductive power.[37] Van Helmont subscribed to the normal Renaissance medical theory that sexual ejaculation and speech involved the emission of *spiritus*; and he shared the view that if semen was not physically emitted, it would be transmuted into a spiritual force that preserved its reproductive capacity and vivified the breath emitted in speech. In answer to H's query, "How does the seminal fluid flow into the human voice?" M replies:

> This can be easily understood if one considers that the aforesaid semen, in which the essence of the entire human being is hidden, must vanish and dissipate into a most subtle spirit unless it is expelled in the act of generation. For, since the semen always increases, what rule can be established in the human body—because the semen matures to the highest degree—unless it is always distributed again in due order? But when the seed is not distributed through generation, then this reproductive power must be circulated and distributed evenly and indivisibly.[38]

The association of speech and procreation was ancient and widespread. This explains why, for example, in pictures of the Annunciation the Holy Spirit is often depicted as a beam of light directed at Mary's ear.[39] As George Steiner has said, "Eros and language mesh at every point. Intercourse and discourse, copula and copulation.... Sex is a profoundly semantic act.... Ejaculation is at once a physiological and a linguistic concept."[40] It is not speech alone, however, that was connected with sex; thought was as well. Because William Harvey could find no traces of semen in the female deer he dissected (a problem with deer, apparently), he concluded that they "conceived" in much

the same way thoughts are conceived in the brain. Just as the verb "to conceive" can be taken in both a physical and a mental sense, so too does the verb "to know," albeit in somewhat old-fashioned English, signify both thinking and copulation. The association between thought and procreation and, more specifically, the connection drawn between the brain and the genitals had the backing of thousands of years of medical theory and religious speculation in both the East and West.[41] In Indian yogic traditions a primary aim is to sublimate and redirect the flow of semen to the top of the head to enhance the power and perspicuity of the practitioner.[42] In the *Timaeus* (90e–91d), Plato remarks that semen is produced in the brain and descends to the penis via the spinal cord. This idea became commonplace in the Middle Ages among both Christians and Jews. The *Zohar* contains explicit descriptions of the physiological process through which the semen flows from the brain, through the body into the penis and from there into the female.[43] Leonardo da Vinci illustrated the supposed canals through which the semen was transmitted from the brain to the testicles.[44] The great sixteenth century surgeon Ambrose Paré accepted this idea, asserting that "a great portion of semen cometh from the brain." This belief continued into the nineteenth century, providing the rationale for the masturbatory theory of insanity. Van Helmont was therefore in no way unusual in associating sex, thought, and speech.[45] These commonplace associations accounted in his mind for the difference between the voice of an adult male and that of boys or eunuchs. Here we come upon an original example given by van Helmont to show that the Hebrew language exactly mirrors reality. Only adults, he says, can pronounce the Hebrew letter *Resh* (R) because this letter expresses the ability to procreate. Thus, if one compels a young boy or eunuch to make the sound, "we often see him grow pale and sick."[46] One wonders how van Helmont would have explained the common inability of many people to pronounce R![47]

Van Helmont offers another argument to prove that the voice shares the reproductive capacity. He says that in order to speak "a sweet-tasting, white, viscous phlegm"[48] is necessary. Coughing this up not only causes a loss of voice but can be fatal, "[f]or the principal part of human strength—indeed, of life itself—exists in this phlegm, which in a case of gonorrhea is utterly diminished"[49] He identifies this phlegm with semen: "It is enough that one show that our voice depends significantly on the nature of our reproductive power, and that this reproductive strength comes from nothing but the semen."[50] For this reason van

Helmont considers man's words like his children, "offspring," who are alive, vital, and full of *spiritus*. Words are consequently powerful forces, and men are accountable for each word they utter:

> for as much as the voice and word of man are his off-spring and children, viz., his out-flown spirits and Angels which continually (from the beginning of his life until death) go out from him, and make up the whole man; must not man give an account of his words, which do follow him, as well as his acts or thought?[51]

In a curious book published almost thirty years after van Helmont's *Short Sketch*, Johann Conrad Amman, a Swiss doctor practicing in Haarlem, discusses the voice in almost identical terms. Although Amman denied any knowledge of van Helmont's ideas before he had published his own book, what he wrote was so similar that van Helmont was delighted with the work and had it translated into English and published in London.[52] Like van Helmont, Amman was interested in teaching the deaf to speak. He employed the same method, using illustrations showing the movements of the mouth organs while pronouncing different letters. Amman's approach seems more straightforward, however—for instance the figures he proposes to help a deaf man see how the tongue moves are not related to any specific language—but on closer inspection one sees that he shares van Helmont's mystical, even magical, thoughts about the voice:

> There is nothing which floweth forth from us, which carrieth with it a more vivid character of the Life, than our Voice doth.... Yea, so full is the voice of Life, which immediately flows from the Heart, that to talk long, extremely wearieth us; but especially the sick, who oftentimes can scarce utter three or four words, but they faint away. Therefore, to comprehend much in a few words, the Voice is an Emanation from that very Spirit which God breathed into man's Nostrils, when he created him a living soul. Hence, also, the Word of God, the Son of God, the Omnipotence of God, etc. are in Holy Scripture oftentimes homonymous, or of the like and same import.[53]

Van Helmont also attributed physical weakness to the loss of the "life force" contained in the voice. As he says in his *Short Sketch*, too much crying in childbirth causes a loss of the breath, or "life force," and consequently results in great weakness. On the other hand, by holding one's breath, one can gain great strength. He gives the chilling example of the rack to prove his point—an example that must have been constantly in his thoughts given the situation in which he wrote his *Short Sketch*:

> whenever someone wishes to show off his strength and exert his arms and legs, he must hold his breath; otherwise he strives in vain. On the contrary, whoever loses his breath by screaming too much suddenly becomes weak in all his limbs. This appears in those subject to physical torture, who, if they betray their pain by too much screaming gradually grow tired and soon confess everything.[54]

Amman's book helps to explain why van Helmont considers words the "off-spring" and "children" of an individual. The biblical parallel Amman drew between the "son" of God and the "Word" of God was both ancient and highly suggestive. It played an important part in stimulating the belief that words are powerful, creative forces, entities in their own right with the power for good and evil.

For van Helmont, then, the breath is a vital force that contains the life of an individual. In his view every single thing in the universe, organic and inorganic, constantly gives off radiations of vital energy and in this sense "breathes": "Many examples demonstrate that ideas flow forth not only from a man, either through his voice or through the emanations of his entire body, but from stones and other similar things, and these ideas have remarkable power on whatever receives them."[55] If words are impressed onto this natural force it can be turned to specific ends connected with the meaning of the words. All speech is forceful, but Hebrew, as the one language in which words exactly correspond to things, is the most powerful and creative of all.

van Helmont's Place in the Contemporary Debate Over Scripture

Van Helmont's *Short Sketch* was a comparatively late entrant into the acrimonious debate about the Scriptures that gathered momentum during the Renaissance, erupting in full force in the sixteenth and seventeenth centuries. The increase in the number of scholars equipped with the three Holy languages (Hebrew, Greek, Latin) and skilled in textual criticism highlighted the discrepancies between biblical texts and brought to the fore the problems of translation and interpretation.[56] The growth of biblical scholarship created a dilemma for both Protestants and Catholics. The rallying cry of the Protestants had been for a return to the original texts (*sola scriptura*); but as the study of these texts revealed more and more textual problems and ambiguities, the Protestants were at a loss for an ultimate authority. They had rejected the Pope and turned away from the Church Fathers and Schoolmen, putting their

faith in the Hebrew text alone.[57] If these were found deficient, on what were they to base their doctrine? The Catholics were more fortunate, but only apparently so. They could rely on their Popes, councils, and patristic tradition to guide them safely through the shoals of biblical exegesis; but these were themselves based on the unsure foundation of Jerome's admittedly imperfect Vulgate.

The controversy over the "corrupt text" became a favorite theme in the debate between Protestants and Catholics in the early modern period. Catholics tried to discredit the Hebrew text in an effort to unsettle Protestants, while Protestants were anxious to defend Hebrew at the expense of Latin and Greek. Van Helmont's *Short Sketch* reflected this controversy, in which scholarship often became highly charged with emotion. He was convinced that his discovery of the natural Hebrew alphabet would put an end to controversy among Christians and even bring non-Christians within the Christian fold. For once everyone understood the meaning of the Hebrew letters according to his natural alphabet there would no reason to debate the meaning and significance of Hebrew words; everything would become immediately and incontrovertibly clear.

In stating his case van Helmont tried to steer a middle course between Protestants and Catholics. He leaned towards the Protestants with his belief that the scriptural texts available in his own day were essentially those Moses and the Prophets had handed down from God to the Jews. However, he accepted the Catholic contention that differences and errors, attributable to scribal omissions and embellishments, had crept in; and although he was convinced these were minor, they had nonetheless distorted the true character of the Hebrew language.[58]

Van Helmont accepted the view put forward by the French Hebrew scholar and professor at the Calvinist academy of Saumur Louis Cappel (1585–1658) that the Jews had two sorts of writing in ancient times, the Mosaic script, brought into Canaan by Abraham, taken to Egypt by Jacob, and used by Moses, and the Canaanite script, which the Jews had borrowed from the Canaanites after their flight from Egypt.[59] Unlike Cappel, however, van Helmont did not think the Jews had eventually discarded the divine Mosaic script in favor of the conventional Canaanite one. Drawing a parallel between modern habits and ancient practice, he says that the Jews have always been good at adapting to circumstances, but not at the expense of their birthright. When Ezra made a new copy of the Scriptures after the Babylonian captivity, van Helmont contended that he used the Mosaic script, leaving the profane

Canaanite script for the Samaritans. Thus, the texts of the Scriptures known in the seventeenth century were in the Mosaic script, which had only been slightly corrupted.[60]

Having established to his satisfaction that the Hebrew letters had only suffered slight corruption that could be easily corrected, van Helmont turned his attention to the vowel points and accents. The Hebrew language was, and still is, generally written with consonants alone, the reader interpolating the vowels for himself. A diacritical system does exist in which the vowels are indicated by various points and symbols below and above the letters and a series of accents indicate syntax, but most Hebrew manuscripts of the Scriptures, as well as other texts, generally do not include these. Their conspicuous absence led people to question both their antiquity and reliability.[61] Because the vowels are often decisive factors in determining exact meanings, their dubious historical provenance cast suspicion on the reliability of the Hebrew Scriptures as a whole, a consequence Catholics were eager to point out. Van Helmont had to prove that the vowel points and accents were natural elements of Hebrew, and not corrupt additions, in order to substantiate his contention that the Hebrew language had not been altered and distorted beyond recognition and repair. He was able to do this by accepting the conclusions reached by the Hebrew scholar Elijah Levita (c. 1468–1549) a century before in his brilliant and controversial *Massoreth Ha-Masoreth* (1538). While Levita concluded that the vowel points were relatively modern inventions, he argues that they were in no way arbitrary but accord perfectly with the nature of the Hebrew language.[62] Van Helmont accepted Levita's conclusions. Like the letters, the vowel points are natural because their written form corresponds to the movements made by the mouth and breath in pronouncing them.[63]

As for the accents, van Helmont again accepted Levita's conclusion and freely admits that "it is clear that the ancients did not use them."[64] He proposes numerous reasons showing why they could not possibly have been part of the Hebrew language from its inception. Nonetheless, he is convinced that, like the vowels, the accents are simply modern expressions of eternal aspects of Hebrew. Those who invented the accents, he says, based them on traditions handed down since the time of Moses; therefore no one could question their legitimacy.[65]

Thus, despite its many vicissitudes, Hebrew had remained close to its original form. Even so, the errors that had crept in had masked the

divine secret of this natural writing—a secret which had remained buried in oblivion up to van Helmont's time. Even the Jews had lost the secret, for "those very places in the Talmud where letters are discussed can give them no satisfaction, as many people have often confessed to me."[66] According to van Helmont the Jews themselves realized this. He quotes a passage in which Rabbi Abraham de Balmis laments the ignorance of the Jewish people and calls on God to reveal once again the secrets of the holy Hebrew alphabet:

> May the omnipotent God in his compassion and mercy hasten our redemption and let us live, and may he enlarge our hearts and minds to understand the secrets of the letters of the divine scriptures and their points and accents. For whoever properly understands these things would need no other explanation. But we lack this, and it will be hidden until our redemption, which may be soon. Amen.[67]

Van Helmont believed that his natural alphabet answered Balmis's plea. He considered it the *Ursprache* spoken by God, Adam, and all men before the building of the tower of Babel. With his mirror and calipers van Helmont believed he had corrected Hebrew and purged it of any corruptions. Only by understanding the language in which the Scriptures were written could men gain a "living understanding" of the great mysteries and profound knowledge they contain.[68]

The Sources of van Helmont's *Short Sketch of the Truly Natural Hebrew Alphabet*

When we turn to the sources of van Helmont's theory of Hebrew as a natural and divine language, we are brought as in so many cases back to Plato and Aristotle, who presented, or were thought to present, diametrically opposed views about language that were a subject of intense controversy at the time van Helmont wrote his *Short Sketch.* In the *Cratylus*, Plato (through Socrates) begins by considering the idea that there might be a natural language in which the shapes and sounds of letters indicated the essential nature of things. He proceeds to show, however, that such a language could not exist. First, if it did, words would be indistinguishable from things; and second, there are too many concepts which cannot be related to language, for example, numbers. Although Aristotle took a more positive view than Plato about the ability of signs to accurately reflect and denote reality, he rejected the idea

that words had or could have any essential connection with things and contended that language was based on convention.[69]

In the following centuries many people forgot Socrates' conclusion and overlooked Aristotle's view of the conventional nature of language. They isolated statements in the *Cratylus*, the *Republic*, the *Laws*, and other platonic dialogues to the effect that sounds and symbols can in some measure indicate things, stimulate moods, or inspire ideas and applied them more specifically than Plato ever had. The Neoplatonists Plotinus (204–270 CE) and Iamblichus (245–326), for instance, accepted the idea that there were such things as divine languages in which words expressed the essence of things.[70] The Hermetic dialogues, written in late antiquity, maintained that Egyptian was superior to Greek because it was patterned after reality and offered insights into divine truths.[71] The Jewish Neoplatonist Philo of Alexandria (30 BCE–45 CE) applied this idea to the Greek Septuagint, which he considered verbally inspired: "with Moses the names assigned are manifest images of the things, so that name and thing are inevitably the same from the first and the name and that to which the name is given differ not. . . ."[72] According to Beryl Smalley, Philo's attitude towards the language of the Scriptures became "an underlying assumption of medieval exegesis."[73] It can be found earlier in the writings of certain Church Fathers. For example, in his book *Contra Celsus* Origen (185?–254? CE) discusses the power of Hebrew names, a power he claims is lost through translation.

These ideas about the power and reality of letters, words, sounds, and symbols became especially prevalent in the Renaissance with the revival of Neoplatonism and the discovery and translation of the Hermetic texts and the hieroglyphics of Horapollo.[74] Behind the Renaissance interest in astrology, magic, talismans, emblems, and devices was the belief that symbols were natural rather than conventional. Astrological and magical charms were thought to contain the influences of the heavens and "be" what they represented. Emblems and devices were considered expressions of deep and hidden truths.[75] Marsilio Ficino (1433–1499), the Renaissance Neoplatonist and court philosopher of Cosimo de' Medici, thought, for example, that the hieroglyph of a winged serpent biting its tail (the *ouroboros*) mysteriously expressed the idea of time.[76]

While is it probable that van Helmont drew upon all these sources, the major source from which he derived his natural Hebrew alphabet was the writing of Jewish Kabbalists.[77] The Kabbalah was so important

to van Helmont that he collaborated with Knorr von Rosenroth in the publication of the *Kabbala denudata*, or Kabbalah unveiled (1677, 1678, 1684), the largest collection of kabbalistic texts published in Latin up to that time. Many of the ideas in van Helmont's *Short Sketch* were derived from texts later included in the *Kabbala denudata*.

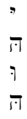
Kabbalists described the process of creation in terms of two metaphors, the emanation of divine light and the unfolding of divine speech. The great Kabbalah scholar Gershom Scholem maintains that in general the Kabbalists preferred the speech metaphor because of the prohibition the Jews placed on figurative imagery.[78] God could not be seen but he could be heard. In the fertile minds of the Kabbalists this voice began to take on strange shapes. As Scholem says, they began to see the mystical form of God in his very names and words.[79] Even the smallest, most insignificant word in the Torah revealed something about God. This way of thinking followed its own logic until the Torah was seen as a single divine name and equated with the other mystical and mysterious name of God, the *Tetragrammaton*, the four-letter Hebrew name that many Christians read as "Jehovah" or "Yahweh." The Kabbalists believed without question that names are natural and not conventional. So deep-rooted was this conviction that it was deemed blasphemous to try to pronounce the *Tetragrammaton*; for if it could be pronounced, God's essence would be known.[80]

The Kabbalists took many of their ideas about language from the *Sefer Yezirah* (Book of Creation), written in Palestine between the third and sixth centuries CE. The *Sefer Yezirah* was widely known and available to Christian Kabbalists through several Latin editions and commentaries.[81] The unidentified author of *Sefer Yezirah* considered the individual letters of the Hebrew alphabet to be the building blocks of the universe. He takes each letter in order and separately combines it with the other letters, obtaining 231 basic "roots" or "gates," from which he claims all created things developed.[82] The most extraordinary part of the *Sefer Yezirah* is the equation made between the different letters of the alphabet and various principles in the world. The letters are divided into three groups: 1) the three "mother" letters, *Aleph, Mem* and *Shin*; 2) the seven "double" letters,[83] *Bet, Gimmel, Dalet, Kaph, Pe, Resh* and *Tav*, and 3) the twelve "simple" letters,[84] *He, Vav, Zayin, Chet, Tet, Yod, Lamed, Nun, Samech, Ayin, Tsade* and *Qof*. The "mother" letters stood for the three elements, air, water and fire, or for the three principles, moisture, cold, and heat. The seven "double" letters stand for the principles of life, peace, knowledge, wealth, beauty, fecundity and power; but because

they are "double" they can also be converted into their opposites: death, war, ignorance, poverty, ugliness, sterility, and servitude. From these God created the seven days of the week, the seven "doors" of the human face, the seven seas, the seven rivers, the seven deserts, the seven skies, the seven climates, and the seven planets.[85] The twelve "simple" letters stood for an extraordinary medley of senses, actions and passions: vision, hearing, smell, speech, taste, intercourse, work, walking, anger, laughter, thought, and sleep. By manipulating these twelve letters and the principles they represent, God is supposed to have created the twelve signs of the zodiac, the twelve months of the year, and the twelve main parts of the body (the hands, feet, kidneys, liver, gall bladder, spleen, colon, stomach, heart).[86] By combining and arranging these letters in speech God created the entire universe. The author of the *Sefer Yezirah* suggests that the letters were placed on a revolving sphere, wheel, or circle and that creation occurred through the process of revolution:

> The twenty-two letters, the foundation, were arranged on a sphere with the two hundred and thirty-one gates. When the sphere was rotated forwards, it signified good, when backwards, the opposite. He weighed *aleph* and every letter and every letter with *aleph* thus each one. Thus by rotating each with all, the two hundred and thirty-one gates were produced. And every language and every creature [comes] from these.[87]

One of the major treatises in the *Kabbala denudata* depends heavily on the *Sefer Yezirah*. It was called the *Valley of the King* and was written by the sixteenth century Lurianic Kabbalist Napthali ben Jacob Bacharach. Following the *Sefer Yezirah* Bacharach describes the Hebrew letters as "building blocks" of the universe. Even man was created through the mystery of the letters.[88] As the microcosm which contains all things man is pictured in the shape of the *Tetragrammaton*. By a happy coincidence, if the letters of the *tetragrammaton* are arranged on top of each other, the stick figure of a man emerges. Strange conclusions for an iconoclastic religion!



Bacharach brings out the theurgical implications in the *Sefer Yezirah*. He includes a recipe for making a three-year-old heifer, probably a covert reference to the making of an artificially created human being endowed

with supernatural powers known in Jewish folklore as the *golem.*[89] He is understandably reticent about the exact process, but he describes how each part of the heifer's body will be produced from a combination of one Hebrew letter with the others and with the divine *Tetragrammaton.*[90] The *Valley of the King* is of interest to van Helmont and his theories in another important way. Bacharach suggests that the shapes of Hebrew letters are significant in themselves. He gives the example of the letter *Pe* (פ) and says that it resembles the figure of a penitent man who bows his head and extends his hands. It thus signifies the mystery of conversion.[91] This is the kind of observation Helmont constantly makes throughout his *Short Sketch*.

Bacharach was not the only person writing along these lines. His belief that tangible objects could be created by speech was shared by many other Kabbalists and appears in another treatise included in the *Kabbala denudata.* In *Concerning the Revolution of Souls*, Hayim Vital describes how just and pious men can create angels and spirits through prayers:

> If a just and pious man applies himself to the law and prays with attention, from these utterances going forth from his mouth, angels and sacred spirits will be created, who will always last and persist.[92]

Van Helmont agreed, describing a man's words as "his out-flown spirits and Angels," which meant that a person was fully responsible for every word he uttered.

Moshe Idel has emphasized the important role of theurgy in kabbalistic thought. Human beings are not only held responsible for maintaining the connection between God and the world but they are entrusted with the task of restoring the world to its original divine perfection through the process of *tikkun*, or "restoration." Idel labels this kabbalistic view of man's function in the universe "Universe Maintenance Activity!"[93] One of the principle ways available to Kabbalists for accomplishing this enormous task was by pronouncing various combinations of Hebrew letters. Abraham Abulafia (1240–1291), a Kabbalist who perfected this technique, describes the process as well as the effects. He directs the would-be adept to bathe, don white garments, and sequester himself at night in a lonely house illuminated by many candles. At this point, the adept should:

> take ink, pen and a table to thy hand and remember that thou art about to serve God in joy and gladness of heart. Now begin to combine a few or many letters, to permutate and combine them until thy heart be warm. Then be mindful of their movements and of what thou canst bring forth

> by moving them. And when thou feelest that thy heart is already warm and when thou seest that by combinations of letters thou canst grasp new things which by human tradition or by thyself thou wouldst not be able to know and when thou art thus prepared to receive the influx of divine power which flows into thee, then turn all thy true thought to imagine the Name and His exalted angels in thy heart as if they were human beings sitting or standing about thee.[94]

The idea that the Kabbalist must prepare his limbs for the indwelling of the divine spirit or *Shekhinah*, and that once he has accomplished this he will have super-human understanding and power to restore the world to its prelapsarian perfection is common in kabbalistic thought.[95] As Idel comments:

> The focus of Kabbalistic theurgy is God, not man; the latter is given unimaginable powers to be used in order to repair the divine glory or the divine image; only his initiative can improve Divinity… the Jew is responsible for everything, including God, since his activity is crucial for the welfare of the cosmos.[96]

It is instructive to compare this kabbalistic view of man with Luther's and Calvin's insistence on man's utter depravity, powerlessness, and worthlessness.[97]

Van Helmont was not solely dependent on Jewish Kabbalists for these ideas about the nature of Hebrew and the role it played in perfecting the world. The Kabbalah penetrated Christian circles long before van Helmont wrote his *Short Sketch*. It became part of the Neo-platonic-Hermetic-Kabbalistic synthesis that characterizes the thought of many Renaissance and early modern writers, for example, Pico, Reuchlin, Agrippa, Postel, Paracelsus, and Boehme.[98] But in the writings of van Helmont and von Rosenroth one can observe most clearly the contributions that the kabbalistic notion of *tikkun*, or restoration, together with the theory of Hebrew as a natural language, made to the modern concept of scientific progress. It may seem a wild stretch from esoteric practices involving mystical alphabetics to modern science, but as historians have increasingly realized from the 1960s onwards, the idea that good science developed with the defeat of benighted religion and bad occultism fails to address the complexity of early modern thought and the strong hold that religious and esoteric thought had on many of the supposedly most modern and progressive giants of the scientific revolution.[99]

Van Helmont's *Short Sketch of the Truly Natural Hebrew Alphabet* was only one of many books written about language in the seventeenth century. During the early modern period more books were written

on this subject than in any previous period. Every major figure, and these include Reuchlin, Rabelais, Paracelsus, Agrippa, Postel, Boehme, Kircher, Hobbes, Descartes, Comenius, Spinoza, Locke, Boyle, Newton, and Leibniz, as well as many lesser ones were fascinated by the idea that a "natural" language or "real" character could be devised in which words would unambiguously indicate the nature of things.[100] But van Helmont took for granted ideas that were the focal point of fierce controversy. He believed without question there was a transcendental order of reality derived from God that lay behind the changing world of appearance. This assumption was the main issue in the debate between realists and nominalists that began in the twelfth century, reaching a climax in the seventeenth. On one side were the skeptics, who argued on the grounds of history and psychology that there was no such thing as absolute and a priori truth. Thomas Hobbes had made this point in his *Leviathan* some sixteen years before van Helmont published his *Short Sketch*. Hobbes argued that human conceptions arise from sense impressions and the signs human beings arbitrarily assign to them. Words are therefore conventional and have no inherent relation to things. And since scientific and philosophical propositions consist of conventionally defined words to form sequences of arbitrarily defined concepts, there is no guarantee that such concepts tell us anything about reality. Knowledge will always be hypothetical and conditional. John Locke reached similar conclusions in his *Essay Concerning Human Understanding*. To anyone deluded enough to think that words had intrinsic meanings he says in an amusing aside, "Let him try if any words can give him the taste of a pine apple, and make him have the true idea of the relish of that celebrated delicious fruit."[101]

Totally opposed to this way of thinking were the realists, who argued that a divinely ordained order of truth and reality guided human action and thought. These men were appalled by the conclusions of the skeptics and nominalists and considered them dangerous threats to the social order and political stability. For if there are no incontestable truths resting on universal consent to which human beings can turn amid the doubts of theology and philosophy, how could one trust or judge anything? The search for a "natural" language became involved in the conflict between nominalists and realists, for the concept of such a language rested on the assumption that there was an objective correspondence between human reason and nature that could be expressed in meaningful, self-explanatory symbols.

As historians have increasingly come to realize, language was a central issue throughout western history, as it is indeed today. Nancy Struever argues that the history of rhetoric is nothing short of cultural history writ large in terms of two competing models of what language is and how it functions: one, in which language reflects an ideal realm of eternal truths, and a second, first fashioned by the Greek Sophists, in which language creates the realities it describes. As Struever says, "the history of rhetoric from the Socratic period to the Renaissance can be regarded as an unequal contest in which the metaphysical claims of the philosophers and theologians continually modify the rhetorical counter-claims rooted in sophistic assumptions."[102] Although Struever's book is devoted to the Renaissance, her thesis applies equally well to the early modern and later periods. Language was and still is a preoccupation because as a means of expression and communication it is what connects people to the world and each other. Any discussion of language therefore inevitably involves an examination of how people think and use words, and what words actually mean. Thus, language is an integral part of anthropology, psychology, history, philosophy, science, and religion. The debate about whether language is natural or artificial, ordained by God or created by man, an innate capacity or learned from sense experience was neither neutral nor dispassionate. The answers given to each question entailed a web of consequences that could lead to arrest, imprisonment, even execution. Take the following snatch of conversation at the University of Paris in the 1820s reported by Hippolyte Taine a century and a half after van Helmont published his *Short Sketch*:

> "Are you still a sensualist, immoralist and atheist?"
> "Why do you say that?"
> "Well, after all, you deny that reason is an independent faculty. You deny the existence of innate ideas. You maintain that a perfect science is nothing more than a perfect language. You continue Condillac's line of thinking, thus you can believe in neither truth, nor justice, nor God."
> "Great God!"
> "You are basically a man of the eighteenth century. Your philosophy destroys the dignity of humanity. You are either a materialist or a skeptic."[103]

If one substitutes Hobbes for Condillac, the quotation applies equally well to the seventeenth century.

A short introduction does not allow for a discussion of the many different natural language schemes put forth in the seventeenth century,

but the last and perhaps greatest of these, the one devised by Leibniz, provides a representative example. Although Leibniz's attempt to formulate a universal character was much more sophisticated than van Helmont's and led him to some scientifically useful results, the two men shared certain basic ideas. Leibniz described himself as a Platonist and believed in an intelligible realm of ideas. This, in turn, led him to think that all knowledge could be reduced to a finite number of simple ideas, which together would form what he called "l'alphabet des pensées humaines" (the alphabet of human thoughts). He proposed a project to draw up all these simple ideas, each of which could then be expressed by a suitable sign. Together these signs would make up a universal characteristic. By combining and separating them, men would arrive at a true understanding of propositions. There would be no place for misunderstanding or ill-founded opinions; reason would triumph over emotion, and instead of arguing men would sit down and calculate. In the end Leibniz was unable to draw up the encyclopedia of simple ideas upon which his universal character depended. But however unproductive his thinking was in terms of a natural language, it did have fruitful side effects for mathematics in terms of the binary system. Numbers do not express simple ideas such as divisibility in a clear straight-forward way, but by removing their artificial and accidental properties, the binary system of notation does. Leibniz also drew a connection between his characteristic and his invention of infinitesimal calculus, which he considered a restricted and partial application of his proposed universal character.[104]

Conclusion

Religion and science were inextricably linked in van Helmont's *Short Sketch* as they were in the work of other natural philosophers throughout the early modern period, a point that recent scholarship increasingly emphasizes.[105] Scripture and the book of nature were the two texts that revealed divine providence, and van Helmont was an expert in reading both.[106] Believing that Hebrew was the divine language of creation, van Helmont pursued his Hebrew and kabbalistic studies from both a religious and scientific perspective. Etymology and the various kabbalistic techniques for interpreting Hebrew words through abbreviations, the systematic transpositions of letters, and the substitution of numerically equivalent words and phrases (*Notarikon, Temurah, Gematria*)

provided keys to understanding both the divine and natural world. Scripture, according to this way of thinking, was by its very nature a scientific text. This was the point that Knorr von Rosenroth made in his preface when he described the Old Testament "as a gold mine of all good arts and knowledge and a treasure chest in which all the gems of philosophy, all the riches of divine Law, and, what is most excellent, all the treasures of Divine and Holy wisdom are hidden."[107]

If a complete understanding of Hebrew and the Hebrew scriptures was one route to knowledge, a second involved practical, scientific work. Court culture at Sulzbach was marked by an unusual flourishing of philological and Hebraist scholarship, the practice of natural philosophy, particularly in regard to alchemy and medicine, philosophical speculation, and artistic experimentation in poetry and music. Two presses were set up at Sulzbach, the first under Abraham Lichtenthaler, who published van Helmont's *Short Sketch*, and his successors, who produced a wide variety of literary, devotional, philosophical, and theological works, and a second press set up by Moses Bloch, which specialized in Hebrew, Aramaic, and Syriac texts.[108]

Sulzbach culture reflected the interests and institutions of neighboring towns, particularly those of Altdorf, Nürnberg, and Amberg.[109] Approximately two-thirds of the court officials at Sulzbach were recruited from the University of Altdorf, and many Altdorf professors were closely connected to the Sulzbach court. The most celebrated of these was the Christian Hebraist Johann Christoph Wagenseil, who corresponded with Knorr and served as a censor for some of the books published by the Hebrew press. Nürnberg was famous in Europe for its production of handicrafts and the manufacture of instruments. The Sulzbach court was similarly interested in technology and the cultivation and improvement of the arts and sciences. Nürnberg was also the home of several language societies, to which Knorr belonged.[110] As R.J.W. Evans has pointed out, these German societies carried on the tradition of Renaissance Humanism and ecumenism.[111] The fact that Knorr and van Helmont wanted to establish a society dedicated to the study of Hebrew reflected this kind of irenic program.[112] Van Helmont was a skilled chemist, and he, Knorr, and Christian August spent considerable time in the alchemical laboratory he had set up in Sulzbach.[113] Both Knorr and van Helmont were especially skilled when it came to discovering and compounding medicines. Van Helmont was keenly sought after for his medical cures.[114] Knorr's nephew claims that he had read all the major alchemical works, and that his medicines were so effective they

brought people back to life from their death beds.[115] Although hardly in the same league, the approach of both van Helmont and Knorr to understanding the natural world was similar to that of Isaac Newton, who also turned to the Bible, ancient traditions, and alchemy as equally valid sources for discovering the secrets of nature.

Van Helmont fit into the tradition of Renaissance philosophers and early modern scientists who emphasized the cooperative and collaborative nature of their work. He did not seek to be original but to recover what had originally been man's birthright, namely complete and accurate knowledge of the universe and himself. This was why, according to his good friend Benjamin Furly, he was planning at the age of eighty-one to travel as far as India to recover whatever elements of the *prisca sapientia* that the Brahmins had managed to retain.[116] Knorr dedicated his life to recovering traces of this same wisdom, which, like van Helmont, he believed were most fully preserved in the Kabbalah. At some point, probably during his years as a student at Leiden, Knorr concluded that theological, philosophical, and political conflict could be avoided if human beings would seek whatever was valuable in any and every school of thought. As he wrote in his *Neuer Helicon*:

> Sucht alles was man je gelehret/
> Was Heid/und Judenthum versprach/
> Und was man unter Christen höret/
> Denck' jedem Wege fleissig nach.
> Hier gilts nicht mit dem großen Haffen
> Ohn unterlaß im wilden lauffen.[117]
>
> Seek out everything that has been taught,
> What pagans and Jews promise
> And what one hears among Christians.
> Meditate on each assiduously.
> In this case it is worthless to follow the crowd
> That runs wildly without stopping.

By modern standards it would be hard to argue that either van Helmont or Knorr were scientists. Science has become specialized, technical, and mathematical to a degree unknown and unanticipated in the early modern period. But up to and even throughout the eighteenth century the designation of someone as a "philosopher" could have a number of meaning and cover a wide diversity of disciplines including what later became isolated as science proper. Philosophy was a flexible term covering many of the subjects that most keenly interested van Helmont and Knorr: philosophy, natural philosophy or science, logic,

mathematics, metaphysics, and ethics. One might add etymology to this list, at least up to the end of the seventeenth century when an increasing awareness developed that words did not necessarily reflect the essence of the things they designated.[118]

Charles Schmitt argued strenuously that the emphasis on mathematics as the sine qua non of the scientific revolution distorted what actually took place during the seventeenth century. By focusing almost exclusively on astronomy and physics—the sciences most amenable to mathematical treatment at the time—historians of science ignored the persistence and importance of Aristotelianism, downplayed developments in chemistry and medicine, and were unable to understand or appreciate the ways in which esoteric thought contributed to the scientific revolution. Although Schmitt was cautious in his assessment of esoteric influences, taking particular issue with what he considered Frances Yates' exaggerated emphasis on Hermeticism, he did recognize a place for esotericism in the scientific revolution and believed that a more balanced look at scientific developments in all fields would make this more understandable.[119] Many scholars have followed Schmitt's lead in recognizing the need to extend the definition of the early modern science to include the empirical sciences, esoteric philosophy, and the various and diverse institutions and settings in which these subjects were pursued—the universities, princely courts, and philosophical and scientific societies. The social and commercial dimensions of the scientific revolution have also become a key area of investigation. Van Helmont's and Knorr's activities as kabbalists, alchemists, and experimenters fit within this broader definition of "science," while their activities as a correspondents, translators, editors, and publishers contributed to the dissemination of knowledge that was such a crucial factor in fostering the scientific revolution.

By the end of the seventeenth century, the arguments of skeptics, combined with the literary criticism of humanists and biblical scholars from the Renaissance onwards, undermined the idea that Hebrew was either a divine or a natural language. In the year before van Helmont's *Short Sketch* appeared, Robert Boyle made light of the notion that Adam had any special insight when he named the animals. The only insight Adam had, Boyle suggests, was revealed by his response to Eve.[120] Van Helmont's book itself became a target for the pedantic wit of one of his younger contemporaries. In his *Deliciae-Hebraeo-Philo-logicae* (1700) the Christian Hebraist Johann Jacob Schudt sarcastically dismisses van Helmont's theories. He ridicules van Helmont's explanations of

the shapes and sounds of Hebrew letters and attributes them to a delight in novelty and a wish to shock. Why else, he asks, would van Helmont make such an absurd and embarrassing connection between the Hebrew letter *He* and Abraham's ability to reproduce? Schudt apologizes for even mentioning such an idea, which he feels should make a Christian blush.

But for all this criticism, van Helmont's book cannot be dismissed lightly. It represents a late flowering of an ancient tradition. The ideas about the shapes and sounds of words and letters had been a standard part of neoplatonic and kabbalistic thought for many centuries. The belief that a symbol was the thing it symbolized played an important role in art. As we have learned from Frances Yates, Paolo Rossi, and D.P. Walker, the belief that sounds were indicative of reality profoundly influenced the writing of poetry and music and the practice of oratory and magic.[121] Van Helmont's *A Short Sketch of the Truly Natural Hebrew Alphabet* drew on this rich tradition of thought that viewed the world and the human mind as commensurate. There was an optimism and exhilaration in van Hemont's belief that he had discovered a key to unlock the secrets of nature through his holy Hebrew alphabet, an optimism and exhilaration that is quite out of place in our pessimistic, post-modern, and deconstructed world.

Notes

[1] The Kabbalah is the commonly used term for the mystical teachings of Judaism, especially for those originating after the twelfth century. These teachings were considered to be the esoteric and unwritten aspect of the divine revelation granted to Adam in the Garden of Eden and again to Moses on Mount Sinai, while the Hebrew Bible was the written and exoteric portion of this same revelation. The word "Kabbalah" means "that which is received" or "tradition," and it was generally believed that the Kabbalah had passed orally from one generation to the next until the time of Ezra when it was finally written down. The Kabbalah's reputed divine origin led many Jews as well as Christians to view it as the purest source of divine wisdom. They consequently scrutinized kabbalistic writings with special care, expecting to find in it the incontrovertible word of God. See Gershom Scholem, *Kabbalah* (New York: Meridian, 1974); idem, *Major Trends in Jewish Mysticism* (New York: Schocken Books, 1954); Moshe Idel, *Kabbalah: New Perspectives* (New Haven: Yale University Press, 1988); Joseph Dan, *Jewish Mysticism* 4 vols. (Northdale, NJ and Jerusalem: Jason Aronson Inc., 1999).

[2] Allison P. Coudert, *Leibniz and the Kabbalah* (Dordrecht: Kluwer Acamenic Publisher, 1997), 58.

[3] Sarah Hutton, ed., *The Conway Letters* (Oxford: Oxford University Press, 1992), 329.

[4] For a more detailed account of Francis Mercury van Helmont's life see Coudert, *The Impact of the Kabbalah in the Seventeenth Cenury: The Life and Thought of Francis Mercury*

van Helmont, 1614–1698 (Leiden: Brill, 1999). Leibniz's full epitaph can be found on xiii, n 1.

[5] The dialogue form was often used in texts dealing with medicine. See R.P. Multhauf, "Some nonexistent Chemists of the Seventeenth Century: Remarks on the Use of Dialogue in Scientific Writings" in *Alchemy and Chemistry in the Seventeenth Century*, ed. A.G. Debus and R.P. Multhauf (Los Angeles: University of California Press, 1966). Seven Shapin and Simon Schaffer maintain that Robert Boyle's use of the dialogue form in his writings was one of the strategies he employed to gain acceptance for the experimental method. See their *Leviathan and the Air-pump: Hobbes, Boyle, and the Experimental Life* (Princeton: Princeton University Press, 1985).

[6] *Paradoxal Discourses of F.M. van Helmont concerning the macrocosm and the microcosm*… (London, 1685), preface, 6–7.

[7] Furly to Locke 26 May/5 June 1694. E.S. de Beer, ed., *The Correspondence of John Locke* 8 vols. (Oxford: Clarendon Press, 1976–89), 5: 59ff. The person to whom van Helmont dedicated his *Paradoxal Discourses* explicitly says in the preface that van Helmont told him that he did not write himself, and that, indeed he very rarely had time "to read over his own thoughts, by discourse communicated and writ down by others: and besides, had never yet met with any man that truly and thoroughly [sic] understood the meaning of his Mind, and who consequently could give a full and proper expression to it" (A4).

[8] *Short Sketch*, 24.

[9] Ibid., 62.

[10] Ibid., 82.

[11] Ibid., 39.

[12] *Short Sketch*, 30, 33, 42–3.

[13] Van Helmont was arrested some time toward the middle of November, 1661 and taken to Rome, where he remained in prison until his release on April 14, 1663.

[14] *Short Sketch*, 106.

[15] Ibid., 4.

[16] Ibid.

[17] Ibid., 5.

[18] J.-P. Schindler, "Christian Knorr von Rosenroth 'Neuer Helikon' in der Sulzbacher Kirchen-musikpflege," *Morgen-Glanz: Zeitschrift der Christian Knorr von Rosenroth-Gesellschft* 2 (1992), 92.

[19] Thomas Erastus, *Disputationum de Medicina nova Philippi Paracelsi pars prima* (Basel, 1572), 170: "Adde, quod surdi scirent loqui, tametsi neminem audiuissent loquentem, si nobiscum nasceretur sermo, & significatio eius esset naturalis. Ex quibus apertissime videmus, verba esse non a coelo, nec Natura significare, sed esse artificialia, & ex sola constitutione & consensu certorum hominum notas & signa cogitationum nostrarum facta esse."

[20] Diderot and Condillac were among those contributing to the debate about deaf mutes and "wild" children that became such a feature of the arguments for and against sensualism and materialism. See Ulrich Ricken, *Linguistics, Anthropology and Philosophy in the French Enlightenment: Language, Theory and Ideology* (Translated by Robert E. Norton. London: Routledge, 1994), 30ff., 90, 119ff., 155.

[21] *Short Sketch*., 5.

[22] Ibid., 6.

[23] *Quaedam praemeditatae & consideratae Cogitationes super Quatuor priora Capita Libri Primi Mosis, Genesis nominate*. Prolate a Francisco Mercurio ab Helmont (1697), 1: "*In capite creavit Aelohim coelos & terram*."

[24] Ibid., 78: "Et quia nomina imponere, est naturam dare.…"

[25] Ibid., 5: "I [i.e. *Yod*] vero sonum acutum habet, & significat, vitam fortem, & virile membrum gignens."

[26] Ibid., 4–5.

[27] Anne Becco, "Leibniz et F.M. van Helmont: Bagatelle pour des monades." *Studia Leibnitiana* Sonderheft 7 (1978): 119–42.

[28] *Short Sketch*, preface, 10r.

[29] *Quaedam praemeditatae & consideratae Cogitationes super Quatuor priora Capita Libri Primi Mosis*, 16: "Nempe, eo ipso quod dixit Deus, sit lux, fuit lux; hoc est, eo ipso quod Aelohim lucem cogitavit, verbo mentis efficaci, & sibi objectum cogitandi constituit, in quod emitteret vim internam, externavit eam, seu, aliquid à se separatum esse fecit, atque extra se produxit."

[30] Ibid., "…simili quadam, etsi multo inferiore ratione Adamus gignere, & propagare genus suum debuisset, si non fuisset lapsus, & terrestri cortice indutus."

[31] For contemporary ideas about this *spiritus*, see D.P. Walker, "Francis Bacon and *Spiritus*."

[32] *Short Sketch*, 49–50.

[33] J.B. van Helmont, *Oriatrike or, Physick Refined.*… Translated by Walter Charleton (London, 1650), 80: "…there dwells a certain *universal or mundane spirit* in the whole world, (i.e.) in all things within Trismegistus Circle, which we christen the *Magnum Magnale*, which existeth the universal *Pander* of all *sympathy and dypathy*, the invisible *Mercury* or common *Intelligencer*, and the *Promoter* of all natural actions."

[34] For the association of the *pneuma* with both breath and semen (the *penuma hagion*, or divine semen brooding over the waters) see Mircea Eliade, "Spirit, Light and Seed," in *Occultism, Witchcraft and Cultural Fashions: Essays in Comparative Religion* (Chicago: Chicago University Press, 1976), 93–119. Sixteenth and seventeenth century Paracelsians described this vital element in the air as a natural fire essential for life and combustion. See Debus, "The Paracelsian Aerial Niter" *Isis* 55 (1964), 43–61.

[35] *Short Sketch*, 50.

[36] Descartes to Mersenne, 15 April 1630 in *Correspondence du P. Marin Mersenne, religieux minim, etc.* Publiée par Mme. Paul Tannery. Editée et annotée par Cornelis de Waard, avec la collabaoration de René Pintard (Paris: G. Beauchesne, 1933–1988), II: 426. Leibniz also denied the existence of a vacuum. See Samuel Clarke, *The Leibniz-Clarke Correspondence* (Manchester: Manchester University Press, 1956), 64–66. See W.E.K. Middelton, *The History of the Barometer* (Baltimore: Johns Hopkins Press, 1964); Charles B. Schmitt, "Experimental Evidence for and against a Void: The Sixteenth-century Arguments" *Isis* 58 (1967): 352–66.

[37] *Short Sketch*, 25ff. According to Pagel the belief that the lungs were perforated "was a standing piece of contemporary information." William Harvey believed it, as did J.B. Van Helmont. Once again, van Helmont erred in the company of "good" scientists. See Pagel, *William Harvey's Biological Ideas* (Basel: S. Karger, 1967), 229.

[38] *Short Sketch*, 38.

[39] "Glad us maiden, mother mild/ Through thine ear thou were with child/ Gabriel he said it thee." Written in the thirteenth century and quoted in Marina Warner, *Alone of All Her Sex: The Myth and Cult of the Virgin Mary* (New York: Knopf, 1976), 37. Ernest Jones, "The Madonna's Conception through the Ear," in *Essays in Applied Psychoanalysis* (New York: International Press, 1964), 2: 266–357.

[40] George Steiner, *After Babel: Aspects of Language and Translation* (London: Oxford University Press, 1975), 37–8.

[41] R.B. Onians, *Origins of European Thought about the Body, the Mind, the Soul, the World, Time, and Fate* (Cambridge: Cambridge University Press, 1951), 109ff.

[42] Hugh B. Urban, "The Path of Power: Impurity, Kinship, and Sacrifice in Assamese Tantra," *Journal of the American Academy of Religion* 69 (2001): 777–816, especially 802.

[43] *The Wisdom of the Zohar: An Anthology of Texts*. 3 vols. Arranged by Fischel Lachower and Isaiah Tishby with extensive introductions and explanations by Isaiah Tishby. Translated by David Goldstein. The Littman Library of Jewish Civilization (Oxford: Oxford University Press, 1991), I: 300, 306, n. 153. Cf. Zohar I, 162a–162b; II, 128b–129a; III, 247a–247b, 296a–296b (*Idra Zuta*). On the diffusion of this idea in

medieval and early modern Judaism, see David Biale, *Eros and the Jews: From Biblical Israel to Contemporary America*, (New York: Basic Books, 1992), ch. 5.

[44] O'Malley and J.B. de C.M. Saunders, eds., *Leonardo da Vinci on the Human Body* (New York: H. Schuman, 1952), 460–2.

[45] For an amusing discussion of these theories and their diffusion in the eighteenth century, see Hugh Ormsby-Lennon, "Swift's Spirit Reconjured: Das Dong-An-Sich" *Swift Studies* 3 (1988): 10–78. For the universality of these ideas, see François Héritier-Augé, "Semen and Blood: Some Ancient Theories Concerning Their Genesis and Relationship" in *Fragments for a History of the Human Body*, Zone, pt 3, ed. M. Feher, et al. (Cambridge, MA: MIT Press, 1989), 158–75.

[46] *Short Sketch*, 35.

[47] It is interesting to compare van Helmont's discussion of the letter R with that given by William Holder, who also discusses the deaf in his treatise, *Elements of Speech: An Essay of Inquiry into the Natural Production of Letters with an Appendix Concerning Persons Deaf and Dumb* (1669), 51. Like van Helmont, Holder was struck by the fact that many people had difficulty pronouncing R. But his explanation is more prosaic and reveals how far he is from sharing the lofty ideas about language that are the mainstay of van Helmont's thought. According to Holder the ability to pronounce R depends on the muscle tone of one's tongue: "They, whose Muscles are weak or flaccid, are unapt to pronounce this Letter R."

[48] *Short Sketch*, 36.

[49] Ibid., 36–7.

[50] Ibid., 38.

[51] Van Helmont, *Paradoxal Discourses*, 63–4.

[52] J.C. Amman, *The Talking Deaf Man: Or, a Method Proposed whereby he who is born deaf, may learn to Speak* (London, 1693).

[53] Ibid., 5.

[54] *Short Sketch*, 29.

[55] Ibid., 39–40.

[56] Textual criticism did not begin in the Renaissance. In the Middle Ages it was well known that Jerome's Vulgate contained many errors and needed revision. However, the tools of textual criticism were very much refined during the Renaissance. Reuchlin opened up the study of Hebrew with his publication of *De Rudimentis Hebraicis* in 1506, and after 1500 Greek became more widely studied. See W. Schwarz, *Principles and Problems of Biblical Translation: Some Reformation Controversies and Their Background* (Cambridge, MA: Harvard University Press, 1955); Jerry H. Bentley, *Humanists and the Holy Writ: New Testament Scholarship in the Renaissance* (Princeton: Princeton University Press, 1983); Debora K. Shuger, *The Renaissance Bible: Scholarship, Sacrifice, and Subjectivity* (Berkeley: University of California Press, 1994); David Katz, "Isaac Vossius and the English Biblical Critics, 1670–1689" in *Scepticism and Irreligion*, ed. R.H. Popkin and A.J. Vanderfagt. (Leiden: E.J. Brill, 1993); James E. Force, "Biblical Interpretation, Newton and English Deism" in ibid.; Christopher Hill, *The English Bible and the Seventeenth Century Revolution* (New York: Penguin Press, 1993).

[57] This, of course, was actually not the case. Protestants did turn to the Church Fathers, particularly Augustine, but to a great extent they were hoist by their own petard of "sola scriptura," and Catholics delighted in reminding them of this fact.

[58] *Short Sketch*, "The Seventh Dialogue about the Holy Language and its Perfection," 93ff.

[59] On these issues, see Stephen Burnett, *From Christian Hebraism to Jewish Studies: Johannes Buxtorf (1564–1629) and Hebrew Learning in the Seventeenth Century* (Leiden: Brill, 1996).

[60] *Short Sketch*, 13ff.

[61] Cappel, for example, rejected the divine inspiration of the vowel poins. This was contested in the last creedal formula of Calvinist orthodoxy, *Formula consensus ecclesiarum*

helveticarum reformatarum (1675), which defended the literal inspiration and the absolute integrity of the Hebrew text, including the vowel points.

[62] Levita argued that the vowel points, known as the "masoretic points" (from the Hebrew word *massoreh* meaning "tradition" and the verb *maser* "to hand down") were devised by rabbis from the School of Tiberius in the ninth century CE, who were subsequently known as Masoretes. See C.D. Ginsburg, *The Massoreth ha-Masoreth of Elias Levita* (London, 1867).

[63] *Short Sketch*, 85.

[64] Ibid., 101.

[65] Ibid., 106.

[66] Ibid., 7.

[67] Ibid., 8.

[68] Ibid., 97.

[69] *De interpretatione; Rhetoric* 1, 1357a.24–1357b. 21, e, 1404a.20–23, 1405a.9–12; 1410b.0–21; *De sophisticus elenchis* 1.165a.4–19.

[70] Plotinus, *The Enneads*. Translated by S. Mackenna (London: Faber and Faber, Ld, 1969), V, 8, 6, 427. Iamblichus, *De Mysteriis.* Translated with an introduction and notes by Emma C. Clarke, John M. Dillon, and Jackson P. Hershbell (Leiden; Boston: Brill, 2004).

[71] *The Greek Corpus Hermeticum and Latin Asclepius.* Translated with notes and an introduction by Brian Copenhaver (Cambridge: Cambridge University Press, 1992), "Definitions of Asclepius to King Ammon…," 58: "The very quality of the speech and the (sound) of Egyptian words have in themselves the energy of the objects they speak of.

Therefore, my king, in so far as you have the power (who are all powerful), keep the discourse uninterpreted, lest mysteries of such greatness come to the Greeks, lest the extravagant, flaccid and (as it were), dandified Greek idiom extinguish something stately and concise, the energetic idiom of (Egyptian) usage. For the Greeks have empty speeches, O king, that are energetic only in what they demonstrate, and this is the philosophy of the Greeks, an inane foolosophy of speeches. We, by contrast, use not speeches but sounds that are full of action."

[72] Quoted in Beryl Smalley, *The Study of the Bible in the Middle Ages* (Oxford: Oxford University Press, rev. edition, 1952), 6.

[73] Ibid., 8.

[74] First printed in 1515, the Hieroglyphics of Horapollo went through thirty editions in the following hundred years. See Madeleine V. David, *Le débat sur les écritures et l'hieroglyphe au XVII^e et XVIII^e siécles et l'application de la notion de déchiffrement aux écritures mortes* (Paris: S.E.V.D.E.N., 1965); E. Iversen, *The Myth of Egypt and its Hieroglyphs in European Tradition* (Copenhagen: Gad, 1961); K.H. Dannenfelt, "Egypt and Egyptian Antiquities in the Renaissance" *Studies in the Renaissance* 6 (1959): 7–27.

[75] E.H. Gombrich, "Icones Symbolicae: Philosophies of Symbolism and their Bearing on Art." in idem, *Symbolic Images in the Art of the Renaissance* (London: Phaidon, 1972).

[76] Marsilius Ficinus, *Opera Omnia* (Basel, 1576), 1768.

[77] For a fuller discussion of the sources that van Helmont may have drawn upon, see Coudert, *The Impact of the Kabbalah*, ch. 5.

[78] In this connection Deuteronomy 4:12 was often quoted: "Then the Lord spoke to you out of the fire. You heard the sound of words but saw no form; there was only a voice." See Gershom Scholem, *On the Kabbalah and its Symbolism* (Translated by Ralph Manheim. New York: Schocken Books, 1965); *idem*, "Der Name Gottes und die Sprachtheorie der Kabbala" in Scholem, *Judaica* 3 (Frankfurt a. M, 1970), 77–86.

[79] Scholem, *Von der mystischen Gestalt der Gottheit: Studien zur Grundbegriffen der Kabbala* (Frankfurt am Main: Suhrkamp, 1977), 8.

[80] Behind this prohibition lies the ancient belief that by naming a thing one gains power over it. Pontus de Tyard, a sixteenth century French poet and Kabbalist,

pointed this out. See D.P. Walker, *Ancient Theology: Studies in Christian Platonism from the Fifteenth to the Eighteenth* (London: Duckworth, 1972), 99. One of the many ways the seventeenth-century false Jewish Messiah Sabbatai Sevi shocked his contemporaries was by pronouncing the *Tetragrammaton*. See Scholem, *Sabbatai Sevi: The Mystical Messiah* (Princeton: Princeton University Press, 1973), 142–3.

[81] Scholem, "Jesira." *Encyclopaedia Judaica* (Jerusalem: Keter, nd).

[82] J. Pistorius, *Artis Cabalisticae* (Basel, 1587), 870. Scholem points out that the Greek word "*stoicheion*" means both letter and element or atom in *On the Kabbala and its Symbolism*, Translated by Ralph Manheim (New York: Schocken Books, 1965), 77ff. The Hebrew word "*davar*" has the similarly suggestive double meaning of either "word" or "thing."

[83] The "double" letters can have either a hard or soft sound, depending on whether they are written with a *dagesh* (a dot) or not. Originally *Resh* was also pronounced in two different ways, as a lingual R or uvular R.

[84] These letters are called "simple" because they have only one sound.

[85] Pistorius, *Artis Cabalisticae*, 870–71: "Septem duplices…Syllabarum fundamenta Vita, Pax, Scienta, Divitiae, Gratia, Semen, Dominatio. Duplices quia convertuntur in opposita, loco Vitae est mors, Pacis bellum, Scientiae ignorantia, Divitiarum paupertas, Gratiae abominatio, Seminis sterilitas, Dominationis servitus…Septem duplices sculpsit, incidit, composuit & creavit cum illis stellas in Mundo, Dies in anno & portas in hominae, & ex illis sculpsit septem Coelos, septem climata, septem animales."

[86] Ibid., 871: "Duodecim simplices…Fundamenta illarum, Visus, Auditus, Odoratus, Locutio, Commestio, Coitus, Opus, Ambulatio, Ira, Risus, Cogitatio, Somnus.… Duodecim Simplices sculpsit, incidit, composuit, ponderavit & transmutavit, & creavit cum illis duodecim signa in orbe: Videlicet, Arietem, Taurum, etc. Et duodecim Menses in anno: Et hae sunt duodecim gubernatrices hominis: Videlicet, manus 1) Dextra 2) Sinistra 3) Pes 4) Uterque 5) Renes 6), 7) Jecur, 8) Fel, 9) Splen, 10) Colon, 11) Coagulum & 12) Ventriculus."

[87] Ibid., p. 870: "viginti duae literae, Fundamenta, collocatae in sphaera a cum Ianuis ducentis triginta & una. Sphaera directe rotata, bonum significat. Retrograda econverso, poneravit scilicet Aleph cum omnibus, & omnia cum Aleph & sic de singulis. Ita rotando singulas per omnes, resultant Ianuae ducentae triginta & una. Et omnia Idiomata & omnis creatura ex illis.…"

[88] "Vallem Regiam," *Kabbala denudata*, II, 1: 217: "Veniri non potest ad intellectum creationis hominis nisi per mysterium litterarum."

[89] Scholem, "Golem"; idem, "The Idea of the Golem," in *On the Kabbalah and its Symbolism*, ch. 5; Idel, *Golem: Jewish Magical and Mystical Traditions on the Artificial Anthropoid* (Albany, NY: State University Press, 1990). In the Talmud and Midrash there is a legend of two Rabbis who made a calf for themselves every Sabbath by using the *Sefer Yêzirah* and then ate it! (San. 65b, 67v)

[90] *Vallem Regiam*, *Kabbala denudata*, II, 1: 220–1.

[91] Ibid., II, 1: 213.

[92] H. Vital, "…de Revolutionibus Animarum…ex operibus R. Jitzchak Lorjensis Germani," *Kabbala denudata*, II, 2: 458–9: "Quod si igitur homo justus est atque pius, studetque in lege, & precatur cum attentione; ex illis vocibus, quae prodeunt ab ore ejus, creantur Angeli & Spiritus Sancti, qui semper durant atque persistunt."

[93] Idel, *Kabbalah*., 170. On the importance of human activity see Scholem, *Major Trends in Jewish Mysticism*, 244–86; idem, *Sabbatai Zevi*, ch. 1; R.J. Zwi Werblowsky, *Joseph Karo, Lawyer and Mystic* (London: Oxford University Press, 1962), 97ff.; David B. Ruderman, "Hope against Hope: Jewish and Christian Messianic Expectations" in *Essential Papers on Jewish Culture in Renaissance and Baroque Italy*, ed. David B. Ruderman (New York: New York University Press, 1992), 313ff.

[94] Quoted in Scholem, *Major Trends in Jewish Mysticism*, 136–7. Cf. Idel, *The Mystical Experience in Abraham Abulafia*, 38ff.

[95] Idel, *Kabbalah*, p. 169.

[96] Ibid., 179.

[97] John Calvin, *Institutes of the Christian Religion*. Translated by John Allen (Philadelphia: Presbyterian Board of Christian Education, 1930), 1: 231: "…our nature is not only destitute of all good, but is so fertile in all evils that it cannot remain inactive. Those who have called it *concupiscence* have used an expression not improper, if it were only added, which is far from being conceded by most persons, that every thing in man, the understanding and will, the soul and body, is polluted and engrossed by this concupiscence; or, to express it more briefly, that man is of himself nothing else but concupiscence."

[98] Ernst Benz, *Die christiche Kabbala: ein Stiefkind der Theologie* (Zurich: Rhein-Verlag, 1958); J.L. Blau, *The Christian Interpretation of the Cabala in the Renaissance* (Port Washington, NY: Kennikat Press, 1944); Scholem, "Zur Geschichte der Anfange der Christichen Kabbala" in *Essays Presented to Leo Baeck* (London, 1954); F. Secret, *Les Kabbalistes Chrétiens de la Renaissance* (Paris: Dunod, 1954); idem, *Le Zôhar chez les Kabbalistes Chétiens de la Renaissance* (Paris: Mouton, 1964).

[99] For a good overview of this issue (with appropriate bibliography) see G. MacDonald Ross, "Occultism and Philosophy in the Seventeenth Century" in *Philosophy, Its History and Historiography*, ed. A.J. Holland (Dordrecht: D. Reidel, 1985); Simon Schaffer, "Occultism and Reason" in *Philosophy, Its History and Historiography*, ed. A.J. Holland (Dordrecht: D. Reidel, 1985); Walter Pagel, *Joan Baptista van Helmont: Reformer of Science and Medicine* (Cambridge: Cambridge University Press, 1982); idem, *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance* (Basle and New York: S. Karger, 1976); Richard H. Popkin, "Newton's Biblical Theology and his Theological Physics" in *Newton's Scientific and Philosophical Legacy*, ed. P.B. Scheurer and G. Debrock (Dordrecht: Kluwer Academic Publishers, 1988); idem, "The Religious Background of Seventeenth-Century Philosophy" *Journal of the History of Philosophy* 25 (1987): 35–50; idem, *The Third Force in Seventeenth-Century* (Leiden: E.J. Brill, 1992); Richard S. Westfall, "Newton and Alchemy" in *Occult and Scientific Mentalities in the Renaissance*, ed. Brian Vickers (Cambridge: Cambridge University Press, 1984); B.J.T Dobbs, *The Foundations of Newton's Alchemy: or, "The Hunting of the Green Lyon"* (Cambridge: Cambridge University Press, 1975); eadem, *The Janus Face of Genius: the Role of Alchemy in Newton's Thought* (Cambridge: Cambridge University Press, 1991); Charles Webster, *From Paracelsus to Newton: Magic and the Making of Modern Science* (New York: Cambridge University Press, 1982).

[100] The scholarly literature on the subject of a "natural" language or "real" character is extensive. See, for example, Paolo Rossi, *Logic and the Art of Memory: The Quest for a Universal Language*. Translated with an Introduction by Stephen Clucas (London: The Athlone Press, 2000); Hans Aarsleff, *From Locke to Saussure: Essays on the Study of Language and Intellectual History* (Minneapolis: University of Minnesota Press, 1982); Ulrich Ricken, *Linguistics, Anthropology and Philosophy in the French Enlightenment: Language, Theory and Ideology*; James Knowlson, *Universal Language Schemes in England and France 1600–1800*; James Bono, *From Ficino to Descartes:* Vol. 1 of *The Word of God and the Languages of Man: Interpreting Nature in Early Modern Science and Medicine* (Madison, WI: the University of Wisconsin Press, 1995); Umberto Eco, *The Search for the Perfect Language*. Translated by James Fentress (Cambridge: Blackwell, 1995).

[101] John Locke, *An Essay Concerning Human Understanding*, Bk III, ch. 2, sec. 11.

[102] Nancy S. Streuver, *The Language of History in the Renaissance: Rhetorical and Historical Consciousness in Florentine Humanism* (Princeton: Princeton University Press, 1970), 6.

[103] Quoted in Ulrich Ricken, *Linguistics, Anthropology and Philosophy in the French Enlightenment: Language, Theory and Ideology*, 221. On the need to study language as a social institution, see Peter Burke and Roy Porter, eds., *The Social History Of Language* (Cambridge: Cambridge University Press, 1987) as well as their *Language, Self, and Society: A Social History of Language* (Cambridge: Polity Press, 1991).

[104] Louis Couturat, *La Logique de Leibniz d'après des documents inédits* (Paris, 1901; reprint, Hildesheim: Olms, 1961); H. Ishiguro, *Leibniz on Logic and Language* (London: Duckworth, 1972).

[105] "…the sense in which early modern changes in natural philosophy 'threatened' religion or were animated by irreligious impulses needs to be very carefully qualified or even denied. In speaking about the purposes of changing natural knowledge in the seventeenth century, it is obligatory to treat its uses in *supporting* and *extending* broadly religious aims," Steven Shapin, *The Scientific Revolution* (Chicago: Chicago University press, 1996), 135–6.

[106] The so-called "Argument from Design," with which natural philosophers justified their interest in the natural world, was deeply embedded in early modern thought. Newton, who was deeply religious, cited it: "To discourse of [God] from the appearance of things does certainly belong to natural philosophy." Cited in Shapin, *The Scientific Revolution*, 153. The contemporary debate over "Intelligent Design" is basically a modern version of this.

[107] *Short Sketch*, 10r.

[108] M. Weinberg, "Hebräischen Druckereien in Sulzbach (1669–1851): Ihre Geschichte; ihre Drucke; ihr Personal" *Sonderabdruck aus dem Jahrbuche der Jüdisch-Literarischen* Gesellschaft. Frankfurt a. M: Commissionsverlag von A.L. Hofmann, 1904, 1–186.

[109] J.J. Berns, "Naturwissenschaft und Literatur im Barock. Unter besonderer Berücksichtigung der Sulzbacher Kulturregion zwischen Amberg, Altdorf und Nürnberg" *Morgen-Glantz* 5 (1995): 129–174; Klaus Jaitner, "Der Pfalz-Sulzbacher Hof in der europäischen Ideengeschichte des 17 Jahrhunderts" *Wolfenbüttler Beitrage* 8 (1988): 273–404.

[110] Christoph Stoll, *Sprachgesellschaften in Deutschland des 17. Jahrhunderts* (München, 1973); Blake Lee Spahr, *The Archives of the Pegnesischer Blumenordern. A Survey and Reference Guide* University of California Publications in Modern Philosophy, vol. 57 (Berkeley: University of California Press, 1960); Martin Bircher & Ferdinant von Ingen, *Sprachgesellschaften, Sozietäten, Dichtergruppen. Vorträge und Berichte* Wolfenbütteler Arbeiten zur Barockforschung 7, 1978. (Hamburg: Hauswedell, 1978).

[111] R.J.W. Evans, "Learned Societies in Germany in the Seventeenth Century" *European Studies Review* 7 (1977): 129–51.

[112] For a more detailed discussion of this issue, see Coudert, *The Impact of the Kabbalah in the Seventeenth Century*, chs. 4–5.

[113] Jaitner, "Der Pfalz-Sulzbacher Hof in der europäischen Ideengeschichte des 17 Jahrhunderts," *Wolfenbüttler Beitrage* 8 (1988): 348. Although in the past scholars distinguished between alchemy and chemistry, the former deemed more spiritual and less "scientific," it has become increasingly clear that the two words were used interchangeably in the early modern period. On this point see Lawrence Principe, *The Aspiring Adept: Robert Boyle and his Aalchemical Quest* (Princeton: Princeton University Press, 1998). As Zedler says of Knorr, "Beydem Pfaltz-Graften war er in solchen Gnaden daß sie viel Jahre hindurch nicht wenig Stunden gantz allein bey einander, mit excolirung derer Orientalishcen sprachen und der Chymie zugebracht." *Grosses vollständiges Universal Lexicon*. Bd. 15, Leipzig, 1737, S. 1164–66.

[114] Coudert, *Leibniz and the Kabbalah*, 51.

[115] "Knorr hatte alle Aufzeichnungen berühmter Chemicker, die jemals erschienen waren, sorgfältig durchgearbeitet und war durch lnages Experimentieren hinter so viele Gehemnisse der Chemie gekommen, daß ihn sogar mächtige Fürsten bewunderten. Und bisweilen erfuhr er ihre grenzenlose Großzügigheit, wenn er außergewöhnliche Erfindung mit ihnen teilte. Mit den Arzneien aber, die er aufgrund seiner chemischen Kenntnisse heerstelle, hat er eine groß Zahl von fast aufgegebenen Kranken aus höchster Todesgefahr mit Gottes Gnade wieder ins Leben zurückgerufen." Manfred Finke and Erni Handschur, "Christian Knorrs Lebenslauf," Morgan-Glantz 1 (1991): 45.

[116] Furly to Locke, 19/29 May 1694, *The Correspondence of John Locke*, 5: 54–5.

[117] *Neuer Helikon mit seinen Neun Musen. Das ist Geistliche Sitten-Lieder*…, 1–2.

[118] Michel Foucault, *The Order of Things: an Archaeology of the Human Sciences* (New York: Vintage Books, 1973); Margaret Slaughter, *Universal Language and Scientific Taxonomy in the Seventeenth Century* (Cambridge. Cambridge Univesity Press, 1982).

[119] Charles B. Schmitt, *Aristotle and the Renaissance* (Cambridge: Cambridge University Press, 1983); idem, *The Aristotelian Tradition and Renaissance Universities* (London: Variorum Reprints, 1984); idem, "Towards a Reassessment of Renaissance Arisotelianism," *History of Science* 11 (1973).

[120] "I will not urge the received opinion of divines that before the fall (which yet is a less noble condition than is reserved for us in heaven), Adam's knowledge was such, that he was able at first sight of them, to give each of the beasts a name expressive of its nature; because that, in spight of some skill (which my curiosity for divinity, not philosophy, gave me) in the holy tongue, I could never find, that the Hebrew names of animals, mentioned in the beginning of Genesis, argued a (much) clearer insight into their names, than did the names of the same or some other animals in Greek, or other languages; wherefore, as I said, I will not urge Adam's knowledge in paradise for that of the saints in heaven, though the notice he took of Eve at his first seeing her, (if it were not conveyed to him by secret revelation) may be far more probably urged, than his naming of the beasts," Robert, Boyle, *The Excellency of Theology, Works*, ed. Thomas Birch (1772; rpt. Hildesheim: Olms, 1965–66), IV: 45–6.

[121] Frances A. Yates, *The French Academies in the Sixteenth Century* (New York: Routledge & Kegan Paul, 1988; originally published 1947); Paolo Rossi, *Logic and the Art of Memory: The Quest for a Universal Language*; D.P. Walker, *Spiritual and Demonic Magic from Ficino to Campanella* (London: University of London Press, 1958).

NOTE ON THE TEXT

Van Helmont's book appeared in Latin and German in 1667, although the Latin edition mistakenly gives the publication date as 1657. In 1697 a Dutch edition of the book was published along with Johann Conrad Amman's treatise.[1] We have translated the Latin edition since it would have been read by the most people inasmuch as Latin was the lingua franca among European intellectuals at the time. While there are some differences between the editions, they are relatively minor and in no way alter the meaning of the text.

Note

[1] *Kurtzer Entwurff des eigentlichen Naturalphabets der heiligen Sprache—nach dessen Anleitung man auch Taubgebohrne verstehend und redend machen kan. Aus Licht gegeben durch F. van Hellmont* (Sulzbach, bey Abrahami Lichtenthaler, 1667).

Een zeer korte Afbeelding van het ware natuurlyke Hebrewse A.B.C., welke die Doofgeboren syn, sodanig konnen verstaan, maar selfs tot het beruik von spreken komen. In't licht gegeven door den Baron Francis Mercurius van Helmont, met kooper platen verciert also mede een Verhandeling om de Doofgeborene te leeren spreken door Joh. Conrad Amman (Amsterdam, by Pieter Rotterdam, 1697).

ALPHABETI VERE NATURALIS HEBRAICI BREVISSIMA DELINEATIO QUAE SIMUL METHODUM SUPPEDITAT, JUXTA QUAM QUI SURDI NATI SUNT SIC INFORMARI POSSUNT, UT NON ALIOS SALTEM LOQUENTES INTELLIGANT, SED & IPSI AD SERMONIS USUM PERVENIANT

A SHORT SKETCH OF THE TRULY NATURAL HEBREW ALPHABET, TO WHICH IS ADDED A METHOD FOR TEACHING THOSE BORN DEAF NOT ONLY TO UNDERSTAND OTHERS SPEAKING BUT TO SPEAK THEMSELVES

p. 2r

Si quis Naturae studeat cognoscere linguam,
Scriptum hoc ductorem noverit esse sibi.
Hic Linguae motus proprio sub nomine surgunt,
Atque manus ductum dirigit Oris opus.
Praecipiti si menti ruis, ne volve, quod extat,
Nec celeri celeres perde labore notas.
Os videas, Linguamque notans, conamina spectes
Tardius, & totum sponte patebit opus.
Musica not primo capitur dulcissima raptu,
Si scandas gradibus mox tibi carmen erit.
Sic his in studiis producit Littera verbum,
Hoc sensum, hinc vivo sermo colore venit.
Sic poterit Scriptura legi, sic norma sciendi est:
Natura haec CLARO nos jubet ORE loqui.

p. 3r

Serenissimo Principi & Domino, Domino CHRISTIANO AUGUSTO, Comiti Palatino Rheni, Duci Bavariae, Juliae, Cliviae & Montium, Comiti Veldentiae, Sponhemii, Marcae Ravenspergi & Moersae, Domino in Ravenstein et cetera.
PRINCIPI ET DOMINO MEO CLEMENTISSIMO.
Serenissime Princeps Domine Clementissime.
Serenitas Vestra mirari poterit, quod ego libellum istum non circa rariores gestorum publicorum materias, vel aracana quaedam atque sublimia consilia politica occupatum, sed discursus tantum aliquos Philologicos de contemta quadam

Introductory Poem

p. 2r

If anyone is eager to understand the language of nature,
He will recognize that this guide has been written for him.
Here the motions of the tongue emerge with the names that belong to them.
And the action of the mouth directs the movement of the hand.
If you rush through things hastily,
Do not turn these pages, and do not waste your time reading this rapidly.
But, if you look at the mouth and tongue and slowly observe their operation,
Then the whole matter will be easily revealed.
The sweetest music cannot be understood at first glance,
But if you go note by note, the song will soon come to you.
Thus, in this work the letter produces the word,
The word, the sense, and from this comes the tone of living speech.
Writing should be read in this way, and this is the standard of knowledge.
Nature orders us to speak about these things with a clear mouth.[1]

p. 3r

Dedication

To the illustrious Prince and Ruler, Christian August, Count of the Palatine of the Rhine, Duke of Bavaria, Julia, Cleves, and Montum, Count of Veldentius and Sponheim, Marquis of Ravensberg and Moersa, and Lord of Ravenstien, etc.

To my most illustrious and gracious Prince and Ruler.

Illustrious Prince, you may wonder that I do not fear to dedicate this little book to you, which does not deal with lofty matters of public affairs or with secret and important political concerns, but instead treats

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vulgo Lingua, & quod minus, est vilissima saltem ejus parte Orthographica contienentem, non videar dedicando Eidem consecrare; cum tantum, si Serenissimum Illius nomen tractavi cuidam praefigere mihi fuisset animus, qui a curis tam sublimibus, quibus Serenitas Vostra summo cum fructu indefinenter occupatur, non penitus abhorret, opere longe majori atque nobiliori mihi foret opus.

At vero quia latere non potest, inter praeclaras illas tantoque Principe vere dignas Virtutes, quibus Serenitas Vostra, adcurante favore divino, est praedita, non minimam quoque esse hanc, quod Illi majoribus negotiis defatigae non ulla carior sit voluptas atque recreatio alia, quam scrutari scripturas divinas earumque in lingua originaria uberrimos fontes: & deinceps totum hoc quantulumcunque est opusculum non tantum in celeberrima Vostrae Serenitatis Residentia

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enatum est atque elaboratum, sed & ibidem praelo subjectum in lucem editur.

Non potui non illam erigi fiduciam, fore, ut Serenitas Vostra ne sperneret illud quod aspectu quidem vile, in recessu tamen, ut spes est, non omni penitus nervo destitutum erit; sed tamquam certissimum quoddam de mea erga Serenitatem Vostram fide atque observantia testimonium susciperet; atque pariter perpendere dignaretur Propositum illud, de quo tota latius & prolixius agit Praefatio; an scilicet tam laudabilis aliqua societas, si illa tanto cum emolumento posset institui, quantum indesperari potest, non digna sit admodum, cujus curam aliquis in tempore in se admitteret: & annon Ille immortalem omnino laudem gloriamque immarcescibilem esset consecuturus; qui rude illud atque recens demum natum consilium, quod tanquam nudus infantulus in publicum ibidem est expositum foventi

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brachio de terra suscipieret, eidemque vel prono tanto consilio, vel multo nobiliori opera de benefica quadam tutela prospiceret.

Prout autem totum ferventissimo Serenitatis Vostrae ad promovendum Bonum Zelo, prae omnibus aliis a me exhibetur, Illiusque liberae atque arbitrariae dispositioni penitus traditur atque relinquitur: ita

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only a few philological aspects of a commonly despised language, and, what is even less, the most insignificant part of it, namely the written alphabet. Nevertheless, I wanted to put your illustrious name on this treatise, you who are always so successfully occupied with such lofty concerns that I should hardly refrain from offering you a much longer and more illustrious work. But because it could not escape my notice that among those outstanding virtues worthy of so great a Prince, with which your Highness has been endowed by divine grace, not the least is this: that no other pleasure or recreation is dearer to you, wearied by such important affairs, than to examine the divine Scriptures and their rich and original source in Hebrew. Furthermore, not only was all of this little work conceived and executed while I resided in your celebrated court,

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but it was also printed and saw the light of day in the same place.

I was confident that your Highness would not disdain a work, so insignificant in appearance but in content hopefully not without some force, but that it would be accepted as the most certain testimony of my faith and reverence for your most illustrious Highness. And also that this proposal, discussed at length in the preface, would be judged worthy of consideration: namely, whether such a praiseworthy society could be established with such great benefit that someone would think it worthy of his present support. And further, whether this person would not gain eternal praise and incorruptible glory, who would lift up from the earth in his nurturing arms that rough and new born plan that has been exposed publicly like a naked infant

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and would also look after it with both advice and noble assistance like a benevolent guardian.

Just as I publicly and zealously offer this work to your Highness for the promotion of good, I also leave it completely for you to judge freely. Thus I commend your Highness wholeheartedly to the protection of

Serenitatem Vostram protectioni divinae animitus commendo, cumque debito felicissimi regiminis, omnisque exoptata atque perpetuae prosperitatis voto ad mortem usque permaneo
Serenitatis Vestrae

Obsequentissimus
F.M.B. ab Helmont.

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Praefatio ad lectorem

Humanarum societatem, Lector Benevole, tres potissimum inveniuntur species, quas prae caeteris honestas, utiles atque jucundas appellare licet: prima earum atque infima circa communiora praecipue versatur hujus vitae negotia, eorumque statum potissimum externum concernit: secunda atque summa, Animae humanae curam sibi proponit, de ejusque summa felicitate solicita est; Tertia atque media circa literarum ac artium studia occupatur, & eorum uberiorem quaerit fructum atque progressum. Omnium atque singularum hic finis est proximus, ut quod uni nimium est, commodius a pluribus efficiatur; sive id homines divina quadam inspiratione instigati primitus instituerint; sive haec suaserit communis utilitas; sive a brutis prima Mortalibus data sit ansa, velut Apibus, Formicis, Lucustis, aliisque similibus naturali quaedam societate conjunctis.

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Ista societatum genera accuratiori aliquantum consideratione non sunt indigna, natura hominum enim, quae sibi relicta tardior quandoque est ad majora, per talia non raro egregie commoveri, adque virtutem stimulari solet.

Prima igitur enarratarum societatum species, quae Politica dici potest, commode rursus in privatam dividitur atque Publicam, quarum illa, quae Oeconomica est proprie loquendo, vel Maritalis est, vel Dominica vel Paterna, prout haec iis, qui vel primoribus digitis tetigerunt Politicorum Scripta, satis nota sunt: Haec vero vel universalis est atque totius Reipublicae, cum Reges ac Principes, Statusve vel Populi quidam, Foederibus consociati, cunjunctis viribus aliquid aggrediuntur, quod soli non auderent, ut solim Salomon & Hiram, hodie confoederati Belgae,

God, and I remain until death devoutly praying for your most happy reign and continued and longed for prosperity.

To Your Most Serene Highness with the greatest devotion,
F.M.B. van Helmont

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Preface to the Reader

Gracious reader, among human associations one finds three kinds that are especially praiseworthy, useful, and pleasant. The first and least of these deals with the business of this life, chiefly with external conditions. The second and greatest concerns itself with the care of the human soul and its greatest happiness. The third, midway between, is engaged in the study of arts and letters and promotes their fruitful productivity and progress. Whether men first instituted these associations through divine inspiration, whether they were moved by the common good, or whether an example was first given to men by animals such as bees, ants, locusts, and similar creatures joined together in a natural society, the immediate purpose of each and every one of them is for many people to produce easily that which is impossible for one.

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These kinds of associations are worthy of more careful consideration, for human nature, which by itself is somewhat slow to advance, is often aroused and stimulated to virtue by them.

The first of these aforementioned associations, which can be called political, is easily divided into private and public. The former is properly speaking the household, which is either that of husband and wife, master and servant, or parent and child, as is well known to those whose fingers have skimmed over treatises on politics. The latter, indeed, is of two kinds: the first of which is general and found in every government, when kings and princes, patricians and plebians, joined by treaty, undertake something together that they would not venture to do alone, as Solomon and Hiram[2] did in the past and the United Netherlands

Urbesque Hanseaticae & alii: Vel particularis & quorundam saltem Civium, velut cum partim Opifices, ad promovenda ordine minora sua Negotia, partim Mercatores, ad commodius tractanda mercimonia majora, Societatibus uniuntur; quales sunt apud Batavos, quae ab India Orientali atque Occidentali,

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a Grolandia, Moscovia, Mari Balthico, Hispania, Freto Herculeo, aliisque locis communiter denominantur; In Gallia praeter minores alias nuper instituta pariter Indica; alibi aliae: & in locis, ubi Metalla effodiuntur, sodalitia fodinarum.

Altera societatum species, quam Religiosam appellare licet, antiquissima etiam est, atque diu ante CHRISTI Salvatoris nativitatem in usu fuit. Quid enim tam variae illae Graecorum Barbaricorumque Philosophorum Sectae fuerant aliud, quam societates de curanda felicitate animae hominis; prout hoc exempla Brachmanum apud Indos; Magorum apud Persas, Gymnosophistarum apud Aegyptios, Druydarum apud Gallos, apud Graecos Pythagoraeorum, Academicorum, Peripateticorum, Stoicorum, Epicuraeorum, Cynicorum, aliorumque abunde testantur? Quid aliud temporibus Antiochi Epiphanis denotabat Chasidaeorum nomen, quam tales qui summa voluntate atque studio in Legem ejusque conservationem atque propagationem erant propensi, ad Animae suae salutem? Quos

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deinde sequebantur Sectae Pharisaeorum; Saducaeorum & Essaeorum inque Aegypto eorum, qui se Therapeutas apellabant. Si vero exempla quaerimus huic societatem specie ejusque nomini magis congrua, certe religiosior atque sanctior non occurrit quam sanctissimorum Apostolorum, & septuaginta Discipulorum Christi, ad quorum imitationem postmodum varii in Ecclesia Christiana exorti sunt ordines, quorum omnium scopus atque finis est salus Animae, quique maximam partem adhuc hodie nullibi fere non florent. Atque his, praeter sacra antiquorum Romanorum sodalitia, merito opponi potest impia eorum societas, qui ante annos haud ita multos, nefaria illa conjuratione de propaganda doctrina Atheismi sese conjuxerant, e quorum numero & Julius Caesar Vannius extitit.

and the Hanseatic league and others do today. The second kind is specific and found among certain citizens, for example when artisans join together in societies to increase business for their own small group or when some merchants unite in societies to handle more merchandise with greater ease, such as those companies in the East and West

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Indies, Greenland, Moscow, the Baltic, Spain, Gibraltar, and other places among the Dutch. In France, besides other smaller ones, a similar company has been recently founded and others elsewhere. In places where metals are mined, there are guilds of miners.

The second kind of association, which can be called religious, is the oldest and existed long before the birth of our savior Christ. For what else were those various sects of Greek and pagan philosophers than associations for the well being of human souls, as amply shown by the example of the Brahmins among the Persians, the Gymnosophs among the Egyptians, the Druids among the Gauls, and the Pythagoreans, Academicians, Peripatetics, Stoics, Epicureans, Cynics, and others among the Greeks? What does the name of the Hasidim at the time of Antiochus Epiphanes signify except those people who with the greatest desire and zeal were drawn to conserve and propagate their law for the salvation of their souls? After these

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came the sects of the Pharisees, Sadducees, and the Essenes, and those called the Therapeutes in Egypt. If, indeed we seek examples of associations more deserving of the epithet "religious," none are more religious and holy than the most holy apostles and the seventy disciples of Christ, in imitation of whom various orders in the Christian Church later arose. The purpose and end of all these is the well being of the soul. All these groups spread widely and flourish everywhere to this day. Opposed to these and contrary to the sacred societies of the ancient Romans are those groups, whose members recently banded together with a wicked oath to propagate the doctrine of atheism, among whose number stood out Julius Caesar Vanninus.[3]

Istis duabus autem celebriorum societatum speciebus omissis jam ad tertiam pergendum est, quae magis accedit ad nostrum in hac praefatione propositum, & ab Eruditione nomen sortiri posset. Postquam enim per Dei Gratiam Artium liberalium optimarumque scientiarum cultura etiam in locis istis Occidentalibus ac Septentrionalibus florere coepit, non defuerunt hinc inde cultiora ingenia, quae societatibus

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conjuncta, porrectis quasi manibus ad id unum contenderunt, ut aperta semel studiis janua ne clauderetur iterum, sed potius, remotis magis magisque obstaculis, latius pateret. Horum igitur una pars Naturam sibi proposuit pervestigandam, prout exempli loco nobis est Societas Regia Anglicana, cujus disquisitiones atque experimenta, quamvis nundum ubivis divulgentur, atque praeterea, quae Digbaeus & Boylius haud infimi in illa subselli Viri in lucem edididerunt, rarius in publicum prodeant, non exiguam tamen aliquando praestabunt utilitatem Universae Republicae literariae. Atque huc deinde & illa pertinet Germanorum quorundam societas, qui sese Curiosos cognominant, a quibus itidem elegantissima dies jam vidit specimina in Ampelographia, Gammarologia, Tractatu de Scorzonera & forte aliis. Praeter hos & aliorum quorundam occurrit species, qui istum sibi proposuere scopum, ut linguam suam excolerent vernaculum, inque ea varias scientias artesque optimas in eorum grattiam, qui linguas exoticas ignorant, publicae luci exponerent; quales sunt apud Gallos atque Italos Academici, apud Germanos Societas Fructifera, Sodalitium Germanorum animorum,

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Ordo Cygnorum Albinorum & forte alii.

Si igitur omnes istae enumeratae Societates non tantum laude admodum & proficuae sunt, fieri non potest, quin & laudabile atque utile prae caeteris esset tale quoddam sodalitium, quod circa culturam Linguarum Sacrarum, praecipue autem Hebraicae occuparetur, ejusque curam in publicum totius Christianae Gentis utilitatem in se susciperet; quod procul dubio factu non adeo esset difficile. Atque haec mihi circa talia nunc occupato ulterius praefandi erit materia, si forte Clarissimi atque Dignissimi horum studiorum Cultores hoc modo quadantenus excitari possent, ut ad promovendam ulterius DEI gloriam societate inita, conjunctis atque communicatis viribus tale quid efficerent, quod uni, propter nimiam humanarum facultatum imbecillitatem, alias non foret possibile.

Putting aside these two sorts of celebrated associations, we must now turn to the third, which is more closely related to our purpose in this preface and which are called learned societies. For by the grace of God, after the cultivation of the best liberal arts and sciences began to flourish in these western and northern regions, many very cultivated minds joined together

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in associations and strove with outstretched arms for one thing, that the doors of learning, once opened, should not be closed a second time but instead should open ever wider as more and more obstacles were removed. One of these dedicated itself to the investigation of nature, as, for example, the English Royal Society, whose inquiries and experiments, although they have not yet been disclosed and rarely published—except for those of Digby[4] and Boyle,[5] men of the highest rank in that society—nevertheless they will be of great use for the general Republic of Letters. A similar goal is shared by that society of Germans called the Curiosi,[6] who have brought to light the most elegant experiments in Ampelographia,[7] Gammarologia,[8] and in the treatise on Scorzonera,[9] and many more. In addition to these there is another kind of association, whose goal is to cultivate the vernacular tongue and to publish in that language the various and best arts and sciences for the sake of those who do not understand foreign languages. Among these are the academicians among the French and Italians,[10] the Fruitbearing Society,[11] the Brotherhood of German Souls,[12]

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and the Order of White Swans,[13] and many others. If all these aforementioned associations are not only praiseworthy but also extraordinarily useful and profitable, then how much more praiseworthy and useful than all of them would a society be, which would not be difficult to organize, that concerned itself with cultivating the holy languages, especially Hebrew, whose preservation is advantageous for every Christian? Since I am currently concerned with these matters, the ultimate purpose of my preface will be to encourage the most distinguished and worthiest practitioners of these disciplines to form a society for the greater glory of God, so that through their combined and shared strength, they can do something which would not be possible individually on account of the weakness of human abilities.

Et ut ab Honesto confirmationis meae capiam initium, notum omnibus esse scio, quod non tantum societates, sodalitia, foedera, uniones & similia generatim omnia, sed omnes

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omnino hominum actiones atque occupationes ex eo saltem aliis praestare dicantur, si objectum prae caeteris habeant honestius atque nobilius: Ex hac enim ratione Aurifices Figulis, & Sodalitia religiosa profanis non immerito praeferuntur. Cum autem jam de praestantia nobilissimi Societatis hujus Objecti, Linguaeque Hebraicae dignitate incomparabile mihi sermo est instituendus, jam verba mihi deficere, linguamque meam cum reliquis omnibus coram ista omnium Linguarum Regina obmutescere, atque suam in hoc dicendi genere impotentiam publice manifestari persentisco. Non enim mere humana est haec lingua, sed quod nulli quotquot unquam in Orbe fuerunt alii contingit, divina simul atque coelestis, idque non saltem Originis, sed & Culturae ususque ratione. Sapientissimus quippe totius hujus Universi Conditor non tantum in primaeva Creatione primo statim Homini eandem implantavit atque concreavit, sed potmodum etiam subserventibus non fidelissimorum saltem Ministrorum, sed assumptis propriis quoque Organis atque Digitis, non semel ea benignissime usus est. Atque hoc ipso clare satis omnibus in universum Hominibus manifestavit, quanti ispe eandem ubique velit aestimari,

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Quod Carolus Magnus Imperator Germanico, est locutus, magno sibi honori ducunt Germanorum Nationes, eoque ipso contra Gallorum Gentem firmiter probare contendunt, quod summum illud Imperii decus pro partra Germaniam habuerit, primumque illum inter omnes Honorem a Graecis ad istius non autem Galliae Populum transtulerit. Si igitur gloriosum hoc est linguae Germanicae, quod prolata sit a summo illo atque gloriosissimo Monarcha; quanto magis ex eo augebitur Hebraicae linguae gloria & dignitas, quod ab ipse DEO, qui omnium Dominorum atque Regum Dominus est adhibita non uno modo sit. Cum hac nempe non ita se res habet, velut de lingua styloque Platonis quidam ait: Jovem ipsum, si de coelo descenderet, non aliter nec melius illo Philosopho locuturum esse; Sed hic revera sic factum est, ut omnium Deorum Deus, quandocunque de Caelo descendisse dicitur, non alia quam Hebraeorum lingua locutus est. Sic igitur plerumque

I acknowledge at the outset that it is well known that all associations, societies, leagues, guilds, and the like as well as all the actions

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and occupations of men are superior if they have a more honest and noble purpose. For this reason, gold makers are deservedly superior to potters and religious societies to profane ones. Since I must now describe the excellent purpose of this most noble society and the incomparable dignity of the Hebrew language, words fail me. My own tongue becomes speechless in the presence of that Queen of all languages, and I am deeply ashamed to reveal publicly my inadequacy in this sort of discourse. For this language is not simply human like every other language in the world but divine and celestial not only in terms of its origin but in terms of its cultivation and use. Indeed, not only did the most wise Creator of this entire universe create and implant this tongue in the first man at the beginning of creation, but afterwards he often employed it for the mouths and hands that serve his most faithful followers and for the mouths and hands he himself assumed. And thus he revealed to all men in the universe how greatly he wished it to be everywhere esteemed.

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Because the Emperor Charlemagne spoke German, the German nations take this as a great honor for themselves, and they strive mightily to prove to the French that the greatest glory of this Empire had Germany for its fatherland, and that Charlemagne passed this honor first and foremost from the Greeks to his own people, not to the French. If this is therefore the glory of the German language, namely that it was spoken by that highest and most glorious monarch, how much will this increase the glory and dignity of the Hebrew tongue since it is used by God himself, the absolute Lord of all lords and kings? It is not true what is said about Plato, that "if Jove himself descended from the heavens he would speak no differently nor better than that philosopher."[14] But, in fact, it so happens that whenever the God of all Gods descended from heaven, he spoke no other language than Hebrew. If, therefore, the greatest courtiers generally value that tongue

Aulici maximi aestimant illam linguam, qua vel Rex ispe vel Regina utuntur, adeo ut & ipsi eandem omnibus modis excolant, sperantes se propterea, majorem promerituros esse Gratiam, & ad altiores dignitatum gradus ascendere posse,

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prout in Aula Polonica Gallorum, inque Imperatoria atque Gallica Hispanorum linguam aestimari notum est; quanti Hebraica lingua, qua comunissime maximus ille omnium Monarcharum Imperator est usus, aestimanda erit ab iis omnibus, qui in sanctissima ejus Aula ad perpetuam illius gratiam atque summos honores aspirant? Praecipue cum illa non ejusdem generis cum Gallica atque Hispanica aliisque recentioribus aliunde consarcinatis atque confusis, sed Mater & Scaturigo reliquarum omnium, adeoque longe antiquior sit quam Graeca, Latina, Germanica & Sclavonica, quae communiter funamentales dicuntur, eo quod in ipsa confusione Babylonia exortae sint, & postmodum ex varia commixtione multas alias progenuerint. Illa etenim in usu fuit sola quamdiu totus Terrarum orbis uniis labii fuisse dicitur, usque ad notabilem illam omnium Gentium dispersionem, & in ista confusione illa quoque sola fundamentum caeterarum permansit atque regula. An autem haec non sufficiant ad dignitatem illius debite extollendam omnes illi considerent, quibus non deest judicium discernendi honorem parentibus debitum a liberorum honore; quique intelligunt, quantum distent purissimus quidam & Clarissimus

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Fonticulus atque Rivuli alii limo muscosque obsiti & ad aquarum usque penuriam paludosi. Et ne quis existimet sermonem nobis esse de cassa nuce, merisque corticibus suo Nucleo destitutis, certe non datur in tota rerum universate lingua alia, e qua plus Sapientiae addisci queat, quam ista. Quod enim Scaturigo verae Sapientiae dicitur Lingua Graeca; id verum quidem est, si illa cum aliis posteriorum aetatum Linguis conferatur; Sed si ad Sanctam istam fiat respectus, certe hic Solem habebimus, ejusque Lumen, ibi vero, si luminosum quid observatur, non nisi pallidam reperiemus Lunam, cujus omnis Splendor non aliunde quam a nostro Sole derivatur. Hebraei enim non tantum omnium bonarum Artium fuerunt inventores, quippe a quibus Davide teste, per Josephum in Aegypto propagata est Sapientia, unde illa postmodum in Graeciam, & ad alios Populos derivata est; sed verus quoque atque genuinus DEI Cultus, in quo solo prima & una Sapientia fundata est, primis innotuit

which is spoken by the King or Queen so that they cultivate it in every way, hoping to deserve greater thanks and ascend to higher degrees of dignity—as, for example,

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it is well known how French is valued at the Polish court and Spanish at the Imperial and French courts—how much greater must the Hebrew language, which the universally greatest Emperor of all monarchs uses, be esteemed by all those who aspire to the highest honors and eternal grace in his most holy court. All the more so because that language is not like French or Spanish or other more recently patched up and jumbled languages but is the mother and source of all languages. Consequently, it is far older than Greek, Latin, German, or Slavic, which are commonly called fundamental languages but which in fact arose from the Babylonian confusion that produced many other languages through various mixtures. Hebrew was the only language in use for as long as the earth had a single tongue until that famous dispersion of all peoples. In that confusion Hebrew alone remained the basis or model for other languages. If this is not enough to move everyone to extol the dignity of this language, I leave it to the judgment of each person to consider the respect owed by children to their parents and how much more the purest and clearest fountains differ from

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swampy streams with hardly any water choked with slime and moss. And lest anyone think that we are talking about useless matters—a husk without a kernel, so to speak—indeed, there is no language in the universe from which more knowledge may be drawn. It is certainly true that Greek is a source of true knowledge, if compared to other languages that came after. But if one considers the holy language, we must surely regard it as the sun, whereas Greek, if, indeed, we can discern any brightness, is nothing else but the pale moon, all of whose splendor comes directly from the sun. For not only did the Hebrews invent all the valuable arts, as David testifies: Joseph taught wisdom in Egypt and afterwards it went from there to Greece and to other peoples. But it is also a fact that the true and original worship of God, which is the foundation of all wisdom, was first known to the Hebrews

Hebraeis, & ab iis in alias Gentes emanavit. Et si aurea illa Veteris Testamenti scripta respiciamus, quid ibi inveniemus

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aliud, quam profundissimam omnium Artium atque Scientiarum Aurifodinam, & Gazophylacium, in quo preciosissimae Gemmae Philosophicae, immensae Divitiae Juris, & quod primarium, omnes Divinae atque Salvificae Sapientiae Thesauri Reconduntur? Ut taceam, quod exinde unicum versissime Chronologiae lumen affulgeat, ibidem purissimum omnium Virtutum atque Vitiorum Speculum pateat, & ex ista Fonte exactissimae totius Politices & Oeconomices regulae hauriri queant. Et utinam prolixius demonstrare liceret, quanta admirandi illi Libri sub simplici sua Litera non Naturae tantum, sed & Morum contineant Mysteria, ut de arcanis Vaticiniorum nihil nunc proferam in medium! Verum de istis omnibus Doctissimus Vir Henricus Morus in Conjectura sua Cabbalistica tam insignia edidit Specimina, ut illa sine admiratione legi nequeant: & utinam ea per omnes non Mosis tantum, sed totius Scripturae Sacrae libros pari methodo deducerentur, atque iste labor aliquando annitente tota illa, de qua loquor Societate, cum aeterna & immortali nominis ejus gloria susciperetur! Et jam

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finiri possem ea, quae de insigni hujus linguae excellentia in medium proferre constitui, nisi universa omnium rerum Natura aurem quasi mihi velleret, urgeretque, ut & suo nomine restarer publice, quod nulla inter omnes terreni Orbis Populos exculta lingua alia tam exacte cum ipsa conveniat, atque haec; & exinde nulla quoque possit esse digna, quae huic praeferatur. Ut autem hoc demonstrari queat commode ad manus nobis est Exemplum primi nostri Parentis Adami, imponentis nomina omnibus a DEO sibi adductis animantibus. Ille enim jam tum procul dubio in sese deprehenderat se internas Intellectus sui operationes atque commotiones omnes etiam simplicissimas, certa quadam oris vocisque dispositione atque articulatione posse exprimere quam exactissime, de hac enim illius perfectione adhuc umbra quaedam in Hominibus post miserandum ipsum lapsum est reliqua, cujus beneficio illi sonum, voces, & verba sua, immutato, paululum saltem animi statu notanter admodum variare solent, quamvis ob nimiam Naturae sic constitutae imperfectionem plerumque satis inarticulate: Umbram autem tantum

and flowed from them to other peoples. And if we examine the golden writings of the Old Testament, what do

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we find there but the deepest goldmine of all the arts and sciences and a treasure chest, in which the most precious gems of philosophy and the immense riches of the law and, first and foremost, all the treasure of divine and salvific wisdom? I will not mention the fact that the light of the truest chronology radiates from these books, that they display the purest mirror of all the virtues and vices, and that they contain the fountain from which we can drink the most precise principles of politics and economics. If only I could demonstrate more fully how those remarkable books contain in their simple written letters not only the secrets of nature but also the secrets of civilization, to say nothing of the secret prophecies! Indeed, the most learned Henry More published such noteworthy examples of all these matters in his *Conjectura Cabbalistica*, which no one can read without admiration.[15] If only the same method could be applied to all the books of Scripture, not just to those of Moses, and if this work could be undertaken at some time with the help of that society of which I speak, to the eternal and immortal glory of our Lord!

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I would bring these matters to a close, which I have decided to publish concerning this remarkable language, had not the universal nature of all things plucked my ear[16] and compelled me to testify publicly that no other language cultivated among all the peoples of this world agrees so closely with nature, and for this reason no other language deserves to be preferred. To easily demonstrate this, the example of our first parent Adam is at hand, Adam who gave names to all the living animals brought to him by God. For at that time he surely understood the internal operations of his own mind and all its fundamental movements so that by a certain fixed arrangement and articulation of his mouth and voice he could express himself as exactly as possible. Indeed, a shadow of this perfection still remains in men after the wretched Fall, as a result of which sounds, voices, and words can vary considerably with the slightest alteration of the mind, and often inarticulately because of the great imperfection of our nature. I admit, however, that only a

reliquam in nobis dixi, quia non omnia interna adeo nobis innotescunt, prout ea in summa illa

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sapientiae concretae exaltatione Adam cognoscebat, unde etiam aliquas tantum & non omnes commotiones suis signis exprimere possumus. Deinde necesse etiam est, Adamum jam tum accuratius scivisse, intellectum suum intelligendo fieri omnia, atque identificari cum quocunque objecto scibili, unde sequitur externa omnia in actu intellegendi ipsi facta esse quam praesentissima, quippe mente potius comprehensa quam apprehensa; cujus etiam reliquiae adhuc in Homine superesse deprehenduntur, cum objecta ad minimum idealiter Intellectum nostrum ingredi videmus, rudique quasi delineatione quadam ibidem depingi atque adumbrari. Si ergo in actu illo denominationis animalium, ex ipsissima quorumvis objectorum natura, intima semper nascebatur in intellectu ejus operatio atque commotio, quales articulata quadam vocis specificatione ab ipsius ore designari potuisse superius demonstravi, jam etiam sequitur linguam ejus, quae Hebraica erat exactissimam non animalium tantum, sed & omnium Entium naturam vocabulis propriis expressisse & ad vivum delineasse.

Jam prodeat, si aliqua invenitur Linguarum, de qua tam mira Naturae suas proprietates,

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tanta demonstrationis certitudine queat probari! Jam prodeat & societas aliqua, quae circa tam nobile occupata Objectum, utrinque & Naturae secretae, & linguarum simul arcanos perscrutetur recessus. Certe cum aliquando, si in Fatis est, in talia ulterius inquiret sodalitium aliquod, qualium in praesenti Opusculo exiguum quidem sed nobilissimum editur specimen, ubi invenietur in omnibus Nationibus vel gloriosius vel utilius aliquid? Et sane mirum est omnino, quod Animi Hominum, qui alias non raro sublimibus, atque a communi rerum usu remotioribus delectantur occupationibus; non jam dudum medio tam extraordinario quaesiverint gloriosam laborum suorum immortalitatem; atque dolendum, quod tot tamque variae societates tam exiguis saepissime rebus destineri voluerint, praetermisso proposito tam claro atque nobile.

Sed in promptu cuivis est causa, quod nimirum multi evidentem ubivis utilitatem, quam secuturam demum spectare malint gloriam: & quoniam illa non in primo statim horum studiorum limine omnibus occurrit, hic factum videtur, ut plerique eandem vix ullibi dari

shadow remains in us because we do not know our internal selves to the same extent as Adam did at the height

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of his created wisdom. For this reason we can only express some but not all the movements of our mind with their proper signs. Therefore, it necessarily follows that at that time Adam knew that his mind became all things by understanding them, and that his mind could identify itself with every knowable object. Consequently, all external things became immediately present to his mind through the very act of understanding by comprehension rather than apprehension.[17] Traces of this power are still detected in man since we see that objects enter our minds at the very least as ideas, painted and shadowed there as if in a rough sketch. If, therefore, in the act of naming the animals according to their essential natures, there always arose in his mind a most inward operation and motion, which could be expressed orally by a certain specific articulation of his voice, then it also follows that his language, which was Hebrew, not only vividly sketched and expressed the most exact nature of the animals but of all entities with their appropriate names.

Now, let it be shown if any other language can be found whose marvelous natural properties

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can be demonstrated with such certainty! And may a society come forth, whose noble purpose is to investigate both the secrets of nature and the hidden mysteries of languages. Certainly, if the fates decree that such a society inquires into these matters—a small but most noble example of which appears in the present work—where will anything more glorious and useful be found among all nations? Indeed, it is most amazing that human minds, which often delight in sublime things and occupations far removed from common use, have not already sought glorious immortality for their labors in this unusual way. And it is a pity that so many various societies have preferred to be so often distracted by trivial matters, putting aside such a distinguished and noble goal.

But the reason for this is apparent since many people prefer to set their sights on whatever is immediately useful rather than on what will bring glory in the long run. And since most people do not attain glory immediately on the threshold of their studies, they think it cannot be found anywhere.

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putaverint. Rem ipsam igitur postulare video, ut ad emolumentum quoque, primarium quorundam in laboribus suis scopum accedam, aciemque illius calcaris atque stimuli; quo sola plerique ad majora excitantur, pro viribus elimem atque exacuam. Perpendite igitur quaeso, laudatissimi linguarum cultores, an unquam utilius quid tali societate dum Sol stetit , productum sit in medium, excepta tamen suprema illa atque sanctissima societatum specie; putatisne societates illas mercatorias, (his enim vulgo utilitas fere unice adscribitur) negotia sua unquam tam evidentur promovisse, quam haec nostra promotura esset utilissima illa verae sapientiae & bonarum literarum commercia? videturne aurum illud, quod tantis curis atque impensis illarum sodalitatum beneficio ex Indiis convehitur compari posse, cum nostro hoc altero, quod accurante societate hac proposita tam facile e mineris sui erui, multoque minoribus impensis ex Ophire longe viciniori comportari posset? Sed cur non de summa omnium & primaria ordior utilitate, que est solius DEI gloria. Ad illam enim promovendam atque amplificandam, non cuncti saltem homines, sed omnes obligantur creaturae? Quaenam autem est illa

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socieatas, quae eandem tam firmo unquam quaesiverit proposito, tamque certo assecuta sit fructu praecipue, atque hanc facturam videmus? Certe in honorem atque gloriam Patriae suae, linguaeque suae vernaculae propagationem aliquid instituere laude non est indignum, nec inutile, nec gloria atque emolumento destituitur illud propositum, quod tendit ad culturam illius artis, cui quis est addictus: sed primario in opere quodam respicere unicam illam & summam utilitatem, quae est altissimi DEI gloria, illud omnino tantum inter caetera omnia eminere manifestum est, quantum lenta solent inter viburna cupressi. Et ut ad rem ipsam aliquanto propius accedam, sub universali illo primo specialior hic occurrit usus, quod totus Christianorum populus per hoc medium ad meliorem & exactiorem sacratissimorum Veteris Testamenti librorum intellectum quam facillime pervenire queat. Notum enim est apud peritos harum rerum atque in confesso, quod in hunc usque diem ne unica quidem translatio inventa sit, quae per omnia accurate cum purissimis Hebraei textis fontibus conveniat: nec spes est ullam inventum iri unquam, quae illa virtute, illa vita atque majestate illaque sensus profunditate polleat, quam vivus ille potentissimus

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I therefore think that I should discuss the reward and purpose of those involved in these labors, and consequently I shall file and sharpen with all my might the keen edge of that spur and goad by means of which alone most people are aroused to great things. Consider, I beseech you, O most praiseworthy students of language, whether there is anything under the sun more useful than such a society, the holiest and highest societies excepted. Do you really think that those trading companies (because one commonly attributes the greatest usefulness to these) have done a better job promoting their own business than our most useful association would for the exchange of true wisdom and literature? Can that gold which is brought with so much care and expense from the Indies for the good of those trading associations be compared with this gold of ours, which is so easily extracted from its mine by this currently proposed society and which can be brought together with much less expense from a much closer Ophir?[18] But why not begin with the greatest of all things and of the foremost usefulness, which is the glory of God alone? Are not all people but all creatures obliged to promote and increase this glory?

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For has any society ever sought the glory of God with so firm a purpose and pursued it with such certain profit as we think this one will? Certainly it is praiseworthy to establish something for the honor and glory of one's country and for the propagation of its vernacular language. And it is useful, glorious, and profitable to offer a proposal that strives to cultivate an art to which one is especially attracted. But it is clearly a task of the utmost importance to cultivate that singular and greatest usefulness, which is the glory of the highest God, and this clearly stands out among all the rest as cypresses tower over the supple viburna.[19] And to come a little closer to the matter itself, within this larger framework there lies a more special purpose, namely for all Christians to attain with the greatest ease a better and more exact understanding of the sacred books of the Old Testament. For it is well know and generally acknowledged among the experts in these matters that to this day not a single translation has been found that agrees in all respects accurately with the purest sources of the Hebrew text. And there is no hope that any translation will ever be found that has the power, the life, and the majesty and profound sense that this living and

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sed occultus simul Deus suae linguae, & praesertim his scriptis suis propriis ipse e inseruit atque implantavit. Unde non incongrue Translator; Qui Prophetas, inquit, tam eleganti atque efficaci stylo introducere vellet loquentes in versione quadam, atque in ipso textu iidem sese manifestant, ille non absimilis foret alicui, qui lusciniam cogere vellet, ut dulcissima vocis suavitate deposita, cuculando imitetur cuculum. Si quis igitur voluntantem atque arcana DEI non tantum ipse rectius disceret, se & aliis ad intimiorem eorundem intellectum viam sterneret commodam, annon ille de vera utilitate non sibi tantum, sed toti Christianorum communitate procurata merito gloriari posset? Praecipue si accurata illa Sacrarum Scripturarum scrutatio sic instituereturt, ut quis sine praecepta hypothesi & studio partium ubique iniqueret, an etiam Librarii illi, quibus DEUS sua concredidit elogia, semper & ubique, sat candidi aut providi fuerint in illorum conservationem: in quo scrutandi genere Capellus atque J. Volsius exemplo nobis esse possunt; Et sane optandum esset, ut talis inquisitio cum collatione antiquissimarum & celeberrimarum versionem absque Philodoxia ex mero veritatis amore per omnes Veteris Testamenti libros acuratius instituereturt, id quod cum unius non sit, cum summa utilitate in tali

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de qua loquimur, societate curari posset. Si enim Graecarum atque Latinorum Autorum scripta tanta hodie tamque exquisita diligentia undiquaque revidentur, ut saepe ob minimam quandam voculam multum temporis insumatur, nec parum impendatur operae, quanto labore non digni essent sanctissimi illi Libri, quorum respectu omnes reliqui volitant velut umbrae.

Sed ad Libros Novi Testamenti quoque accedo, ad quorum itidem veriorem intellectum aliter perveniri non potest, quam per diligentiorem literarum Hebraicarum culturam. Graeca enim illa Lingua, qua iidem conscripti sunt; non est de natura vulgatae illius, sed idiomate gaudet plane peculiari, quale nec apud Homerum nec apud Platonem vel Demosthenem reperitur, unde celeberrimi illi viri Scaliger, Drudsius, Heynsius aliique ab iis Hebraeorum contribulibus, qui inter Graecos degentes Hellenistae dicebantur, nomine proprio eam vocarunt Hellenisticam; eoque ipso satis superque docuerunt, istam in phrasi ubique fere cum Hebraica convenire, atque sine illius perfectiori intellectu accurate exponi non potest. Huc accedunt praeter phrasin modumque

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most powerful God himself has implanted and engrafted into his own speech and especially into his own writings. As the translator aptly says, the person who wishes to translate the prophets, speaking in the elegant and efficacious style of the Hebrew text itself, will be no different than someone who wishes to force the nightingale to give up the gentle sweetness of his voice and imitate the cuckoo's cuckooing. If someone were not only to learn correctly the will and secrets of God but also to pave the way for a deeper understanding of these matters, would he not justly pride himself on securing true benefits for himself and for the whole community of Christians? Especially if a close examination of sacred Scripture was established so that anyone could inquire without preconceived notions and partisan zeal whether those to whom God entrusted his words were always and everywhere sufficiently honest and careful in preserving them. Capellus[20] and J. Vossius[21] can serve as example to us for this sort of scrutiny. Indeed, it would be very desirable that such an investigation be made of all the books of the Old Testament by collating the most ancient and renowned versions without self-interest and from the pure love of truth. Since this is not the work of one person, it could be undertaken with the greatest benefit

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by the kind of society we are discussing. For if the writings of Greek and Latin authors are today poured over everywhere with such exquisite care so that often a great deal of effort is spent on the smallest word, would not these most sacred books—in comparison to which the rest fly away like shadows—be worthy of as much attention?

But I also turn to the books of the New Testament, a truer understanding of which cannot be achieved except through a more diligent study of Hebrew literature. For the Greek language in which these books were written is not like ordinary Greek, but takes pleasure in a very peculiar style such as is not found in Homer, Plato, or Demosthenes. Wherefore those most renowned men, Scaliger,[22] Crusius,[23] Heynsius,[24] and others called this language by its proper name, Hellenistic Greek, from those Jews who lived among the Greeks called Hellenes. And they have sufficiently, and more than sufficiently, shown that this language agrees with Hebrew in most expressions and cannot be correctly construed without a more perfect understanding of Hebrew. In addition

loquendi multae res, earumque affectiones, quae sine auxilio linguae Hebraicae commode intelligi nequeunt, qualia sunt omnia, quae ad Topographium, Traditiones,

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consuetudines, jura, ades, vestes & similia alia pertinent, de quibus omnibus non nisi ex scriptis Hebraeorum vera petenda est historia: ut nihil jam dicam de allegatis undiquaque e Veteris Testamenti vaticiniis dictisque quam plurimis. Sic ut autem ad dignoscendam beneficio linguae Hebraicae dialectam hellenisticam ex Heynsio in Nonnum non parum effulget luminis, ita ad intelligendas res ipsas, quarum descriptionem ad Hebraeis assumendam esse modo retuli, Lightfootius in Horis suis Hebraicis in Matthaeum & Marcum tam egregiam praestitit operam, ut laudes ejus propterea nunquam satis extolli queant. Et utinam quoque non tantum Horae ejus in priorem ad Corinthios ad plures perferrentur, sed & vel illius ver alius cujusdam juxta hanc methodum studio omnia totius Novi Testamenti volumina illustrarentur, ut multa quae obscura adhuc sunt, aliquantulum hac ratione, sua tandem luce radiarent. Et quam egregius esset iste labor, si tota quadam societate conjunctis operis in illum incumberetur, ut non citius saltem sed & rectius prodirent illae curae!

Imo quid putatis, profuturam hanc societatem misero illi nec dum illuminato Judaeorum populo? annon sperari posset fore, ut velum illud Mosaicum, quo velatae sunt facies illorum, si non ex toto saltem

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esset, ut caecitas illa, quae ex parte Israeli eveniat, quadantenus etiam sanaretur? Certe si unquam argumentorum aliqua est vis, negari non potest, eorum prae caeteris quam maximam esse, quae domestica dicuntur, & quibus proprio quasi gladio jugulari possunt adversarii: Imo si contra Judaeos unquam valuerunt argumenta, notum est illa vox fuisse alia, quam quae a testimonio e propriis ipsorum scriptis desumpta fuerint. Et forte Dominus benediceret laboribus istis tam piis tamque justis, ut plus hac via quam violenta coactione efficeretur.

Sed nunc redeundum mihi est ad Philosophiam Veterum, de qua jam superius aliqua facta est mentio, atque ostendendum breviter, quanto usui haec societas & eidem foret. Si enim verum est, quod Pythagoras, ut de illo refert Jamblichus, sapientiam suam didiceret a Prophetis, Successoribus cujusdam Moschi ex Phoenicia; Si verum quoque est

to diction and style, there are many things that cannot be accurately understood without the help of Hebrew, such as matters of topography, tradition,

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customs, laws, temples, clothes, and similar things, the true history of which can only be obtained from the writings of the Jews, to say nothing about the countless prophecies and sayings set forth everywhere in the Old Testament. Thus, Heynsius' *Nonnus* sheds a great deal of light for a better understanding of the Hellenistic dialect of Hebrew. Likewise, as I have just said, to understand these matters they must be viewed from a Jewish perspective. Lightfoot has also provided such outstanding assistance in his *Hebrew Hours in Matthew and Mark*[25] that his praises cannot ever be extolled highly enough. If only his *Hours* on the first book of Corinthians were applied to many more books, and if only the volumes of the entire New Testament were also illuminated by the learning of this or another person according to the same method, then many things that are now obscure would at length shine with their own light. What an amazing enterprise this labor would be, if through a joint effort an entire society were dedicated to promoting these matters not only swiftly but accurately!

In fact, don't you think that this society would benefit those still unenlightened and wretched Jews? Could one hope that the veil of Moses, which covers their faces, might be partly if not completely

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lifted for their benefit so that it would be possible for that blindness, which comes from the side of Israel, to be healed to some extent? Surely, if there is any force in argumentation, it cannot be denied that the strongest arguments are those which are called "familial," in which adversaries have their throats cut by their own swords, as it were. Indeed, if arguments have ever prevailed against the Jews, it is obvious that they must be drawn from evidence taken from their own writings. And God may bless such holy and righteous efforts that achieve more in this way than through violent compulsion.

But I should now return to the philosophy of the ancients, mentioned above, and I should briefly show what use this society would make of it. For, if it is true that Pythagoras, as Iamblichus[26] says, learned his own wisdom from the Prophets, followers of a certain Moschus from

illud, quad sapientissima Judaeorum natio pro dedecore sibi reputasset olim, si vel minima Philosophiae portio ab aliena Gente ad se transiret, prout Arrogantiae hujus Exempla & in Aegyptiorum atque Persarum & hodie e adhuc Sinensium populo reperiuntur: Si porro Philosophia Platonica in plerisque concordat cum Pythagoraea, eamque Divinus ille Vir, Numenio Teste, pariter a Judaeis accepit: certe hinc sequitur, non recte sentire eos, qui statuunt, Judaeos multas a Platone assumsisse opiniones, cum dicendum potius sit contrarium: Porro & inde sequitur, quod ex antiquis Judaeorum scriptis insignia verae Philosophia Mosaicae atque Propheticae fragmenta excerpi queant, quodque fabulae illae & parabolae, quae plerisque tam absurdae videntur, tanta absurditate atque vanitate non laborent, ac multi existimant, cum obscurius hoc dicendi genus non apud

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antiquos tantum Philosophos; sed & apud veteres Judaeos potissimum, prout testantur scripta Prophetica in usu fuerint, unde & ab isto Christo Domino nostro simile quid usurpatum legimus.

Si qui igitur in tali societate tam insignia genuinae antiquitatis Judaicae monumenta, non hodie demum vel heri adinventa, sed ante multa annorum millia jam tradita eruerent, quanta exinde toti literatorum communitati pronascertur utilitas! Certe quae alii de Aristotelicis atque Platonicis Opinionibus conscribumt, deque Philosophia Democritica, Epicurea, atque Phythagorica investigant, respectu eorum, quae de hac Mosaica Phrophetica atque Apostolica Sapientia, inventum iri scio, non nisi palae essent & quisquiliae. Quod si jam ulterius pergerem, adque plures utilitates adducendas transire vellem, diem mihi & verba defore novi, quare ad facilitatem totius negotii accedo, ostensurus quam commode talis quaedam societas hodie institui queat, quae tot utilitates summa cum laude cumularet in Christianorum Populo. Postquam enim per DEI gratiam Reuchlini temporibus praevaluit illa factio, quae Hebraeorum Scripta ab interitu vindicavit, atque ne comburerentur effecit, nunquam non inventi sunt Viri laudatissimi omnium Regionum, quibus de meliore lutu finxit Praecordia Titan, qui hanc linguam pro virili excoluerunt. Atque hic enarrare possem prolixius, quam insignes jam in publicum prodierint circa haec studia labores, Autoribus Bangio, Buxtorffiis, Calovio, Capello, Carpzovio, Cochio L'Empereurio, Galantino, Gaulminio, Gentio, Hottingero, Kirchero, Leusdenio, Masio, Mayero, Morino, Muis, Pocockio, Raymundo

Phoenicia; and if it is also true that the wisest nation of the Jews once considered it a disgrace if the least bit of philosophy came to it from a foreign people (examples of the same arrogance are found in Egypt and Persia and even today among the Chinese); and if, furthermore, the philosophy of Plato agrees for the most part with Pythagoras, and that divine man (with Numenius[27] as a witness) took it also from the Jews, then it certainly follows that those who claim that the Jews took many of their opinions from Plato are wrong, and the opposite is true. Thus, it follows that the remarkable and true Mosaic philosophy and the fragments of the prophets can be gathered from the ancient writings of the Jews, and that these stories and parables, which often seem so absurd, are not tainted with such great absurdity and inanity as many suppose, since this rather obscure way of speaking was not only

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in use among the ancient philosophers but especially among the Jews of old, as the prophetic writings testify. And thus we read that Christ himself made similar use of it. If, then, such a society were to unearth such remarkable monuments of genuine Jewish antiquity, which were not discovered today or yesterday but were already handed down many thousands of years earlier, how useful would this be for the entire community of letters! Certainly, I know that what others write about the opinions of Aristotle, Plato, Democritus, Epicurus, and Pythagoras will be chaff and rubbish in comparison to what one finds in the wisdom of Moses, the Prophets, and the Apostles. But if I were to go further and if I wanted to pass on to more useful matters, I know that time and words would fail me. Therefore, I turn to the ease of this whole business and will show how such a society, which would accumulate so many praiseworthy benefits for Christians, may be properly established today. For after that party prevailed in the time of Reuchlin,[28] through God's grace, which saved the writings of the Jews from destruction and which kept them from being entirely ruined, the most praiseworthy men of all religions were found who cultivated this tongue vigorously, men in whom Titan planted hearts of better clay.[29] I could enumerate here at greater length what has been published on these matters by Bangius,[30] the Buxtorffs,[31] Calovius,[32] Capellus,[33] Carpzovius,[34] Cochius,[35] l'Empereur,[36] Galatinus,[37] Gaulminius,[38] Gentius,[39] Hottingerus,[40] Kirckerus,[41] Leusdenius,[42] Masius,[43] Mayerus,[44] Morinus,[45] Muis,[46] Pocock,[47] Raymundus Martini,[48] Rittangelius,[49]

Martini, Rittangelio, Sauberto, Sberingamio, Schertzero, Schickardo, Schmidio, Voisin, Waltono, & multis Viris Clarissimis aliis; hic referre possem, eorum conatus, qui in

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Lexicographia hujus Linguae suam probarunt industriam, quales sunt, ut e pluribus paucissimos nominem, Amama, Avenarius, Bellarminus Cardinalis, Boblius, Dillherus, Neander, Pagninus, Schindlerus, Trostius, & eorum similes fere innumeri: porro in medium proferre possem aliquid de Potentissimorum Regum, atque Principum, aliorumque insignium Virorum sive sumptibut sive laboribus, quibus allaborantibus Sacra Biblia saepissime cum summo splendore sunt edita, unde jam Opera illa Regia Hispaniccum atque Gallicum, nec non Biblia Polyglotta Anglicana extant, ut nihil nunc de diligentissimo Aria, Bombergo, Huttero, Munstero, aliisque similibus memorem: tandem dicere possem, quod Liber Misnarum cum commentationibus Rambami atque Bartenorae omnibus, in linguam Hispanicam translatus, in nostris jam sit manibus, atque quam facillime sive hac, sive Latina lingua in lucem edi posset: Sed quid opus est Minervam docere, sufficit me Imperitis aliquantulum ostendisse, quid jam in istis studiis ubique sit praelaboratum, & quam quam facili negotio jam ulterior fieri posset progressus, ut tandem ad plenam in his omnibus lucem accedere liceret. Et quid obstaret, quo minus quam facillime moveri se paterentur Generosi Animi, ut non considerato Religionis discrimine, ad istam societatem accederent, in qua tam directe promoveretur DEI gloria, tam efficaciter quaereretur publica utilitas, & singulorum fama atque celebritas tam insigniter augeri posset? De jucunditate talium laborum nihil referam, qui, si praescientibus atque consentientibus tot Viris Clarissimis, de rebus sua Natura sublimibus, sed simul ob varietatem jucundissimis, in certam & infallibilem non sui tantum, sed & aliorum utilitatem susciperentur atque absolverentur, bone DEUS! quam laete & promte succederent omnia!

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Nec dubium est, inventum iri quosdam, qui, quod uberiori facultatum copia a DEO ditati sint, tanquam Nutritii optimorum studiorum in illum saltem finem huic sodalitio sese adjungerent, ut necessarios ad editionem bonorum librorum sumptus suppeditarent, & postmodum suos quoque

Saubertus,[50] Sheringamius,[51] Scherzerus,[52] Schickardus,[53] Schmidius,[54] Voisinus,[55] Walton,[56] and many other most distinguished men. I

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could mention here the efforts of these men, who proved their industry in the lexicography of this language, such as (to mention but a very few among many) Amama,[57] Avenarius,[58] Cardinal Bellarminus,[59] Bohlius,[60] Dillherus,[61] Neander,[62] Paginus,[63] Schindlerus,[64] Trostius,[65] etc. and countless others. Furthermore, I could divulge something about the expense and labors of the most powerful kings and princes and other distinguished men. Thanks to their efforts the sacred Bible has often been published with the greatest splendor, as in the royal works of the Spanish and French[66] and also the English polyglot Bible,[67] to say nothing of that most painstaking work of Aria,[68] Bomberg,[69] Hutterus,[70] Münster,[71] and others. Finally, I could say that the book of the Mishna, translated into Spanish with all the commentaries of Rambam[72] and Bartenora,[73] is now in our hands, and how easily this could be published either in Spanish or Latin. But what need is there to teach Minerva? It is enough for me to have shown the ignorant what has occurred in these disciplines and how easily further progress could be made so that full light could be thrown on these matters. And what prevents the most generous minds from allowing themselves to be most easily moved to join this society—without regard to religious difference—in which the glory of God would be so firmly encouraged, the public good so effectively sought, and the fame and renown of each person would grow so strikingly? I shall say nothing of those pleasant labors, which deal with matters naturally sublime and most delightfully varied. If they were undertaken and completed with the consent and foreknowledge of many famous men for the certain and unmistakable benefit of others as well as themselves, then everything would follow gladly and quickly by the grace of God.

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No doubt some people will be found who, being endowed by God with a richer abundance of talents and trained in the best disciplines, may join this society to defray the expenses of publishing good books and afterwards take the profit from them, so that distinguished works may not become food for roaches and worms and thus never come to light,

exinde caperent fructus; Ne foret ex impensarum defectu insignia quaedam Opera blattarum ac tinearum fiant esca, atque novercante ad eo Lucina haud unquam prodeant in lucem. E quis e Magnatibus atque Principibus cum debita submissione atque reverentia rogatus erubesceret in sese suscipere tam maxime laudabilis atque fructiferae societatis patrocinium, ut inde non tantum praeclara in eam conferetur autoritas, sed etiam esset aliquis, qui de illius conservatione atque propagatione paternam quasi gereret curam? Non tantum enim priscis temporibus celeberrimus ille Aegyptorum Rex Ptolemaeus Philadelphus summae laudi sibi duxit atque gloriae, quod se curante praestantissima illa LXXII. Interpretum societas, divinae Legis translationem in se susceperit, atque felicissime ad finem perduxerit; Quali gloria etiam eternitatem nominis sui condecoravit Potentissimus ille Imperator Justinianus, cum, congregato nobilissimo quodam doctiorom Jureconsultorum consortio, magnum illud Juris Romani Corpus, cujus adhuc in hodiernum usque diem viget usus coordinari curaret: Sed & nostra aetate Maximi Reges Galliae atque Britanniae, sicut & Celsissimi Principes Saxonici atque Anhaltini inventi sunt & adhuc inveniuntur qui Capita Fuerunt, & adhuc existunt certarum quarundam sodalitatum.

Quem igitur haec non moverent, ut ad laudatissimum hoc Propositum singulari ferretur animi studio, totique Orbi literato ostenderet, generosum suum sanguinem, qui in aliorum ebullit praecordiis, cum de societatibus turmisve

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bellicis inaudiunt, ad famam sodalitii longe nobilioris atque praestantioris moveri atque effervescere? Si enim legitima & honesta aemulatio, quae Mater est omnium illustrium rariorumque facinorum, ullo modo atque medio excitari interque gloriae cupidos accendi potest, certe hic datur medium eandem non tantum quadantenus excitandi, sed & cum summo omnium Bonorum fructu perfectissime conservandi atque propagandi: Si contra Concordia vera illa & unica felicitatis humanae Inventrix atque Conservatrix pariter ulla ratione inter Christianos restitui posse videtur, judicate quaeso, quibuscumque curae sunt similia, an non exinde egregrium quoque tam universali bono exurgere possit initium, unde postmodum illud quasi sponte succederet, quod a tot millibus Proborum tantis suspiriis tam diu desideratum est.

Horum omnium consideratio Autorem hujus Opusculi, sperantem fore, ut laudatissimum hoc propositum ullo modo dari queat effectui,

having a stepmother for a midwife. What rulers and princes would be ashamed (having been entreated with due reverence and submission) to assume the patronage of such a praiseworthy and productive society, so that a distinguished authority would not only be conferred upon it, but there would also be someone who would trouble himself to preserve and promote this society, like a father? Indeed, in ancient times that most famous King of the Egyptians, Ptolemy Philadelphus, achieved the highest praise and glory because he supported a society of seventy-two interpreters, who translated the Holy Law and brought it to a successful conclusion.[74] The most powerful Emperor Justinian adorned his name with similar glory, when, having gathered a most noble assembly of learned lawyers, he set in order that great body of Roman law, which flourishes even to this day. In our own time, the greatest Kings of France and Britain, as well as the highest Princes of Saxony and Anhalt, have been found and are still being found, who were and still do exist, as heads of certain established societies. What person, therefore, would not be roused and rush with an eager spirit to this most praiseworthy proposal, revealing to the whole literary world that his own noble blood, which boils in the hearts of others when they hear

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about warlike societies or troops, now moves and is stirred by the fame of a far more noble and excellent society? Indeed, if a lawful and honest emulation, which is the mother of all rare and laborious deeds, can by any way or means be stimulated and enflamed among those who desire renown, surely this is a way not only to inspire such emulation, but also to preserve and spread it most perfectly for the highest benefit of all good men. If, on the other hand, that true harmony and sole inventor and preserver of human happiness can be restored among Christians in any other way, then I ask (like a judge) anyone who cares for such things, namely religious peace, whether or not this endeavor would make a remarkable beginning for so universal a good, which would inevitably follow, since so many thousands of righteous men have desired it for so long and with such great sighs?

The consideration of all these matters has moved the author of this little work to hope that this most praiseworthy proposal will be put

permovit, ut quae de Naturali Alphabeto Hebraico primo saltem ad propriam Ingenii Exercitationem invenerat, non diutius occultaret, sed ad solius DEI gloriam, & communem utilitatem promovendam, insequenti Methodo Latina ac Germanica lingua conscribi curaret, figurisque aeneis quantum fieri potuit illustratam publicae luci exponeret. Ante omnia vero Lectores, quicunque demum illi fuerint, etiam atque etiam rogat, ut temerarium illud & praecox judicium circa rem tanti momenti tantisper suspensum teneant, donec paucissima haec folia probe perspexerint, lucemque veritatis, quae procul dubio non diu illos latebit sensim in se admiserint. Illi autem Domino, cujus honor hic & ubique solus quaeritur, sit laus & gratiarum actio in omnia seculorum secula.

Datum Sulzbaci, diem 6. Jan, 1667
R.A.K.C.

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Argumentum totius Opusculi

Libellus iste commode dividitur in 3 Partes: quarum

I. Non nisi parasceve est ad rem ipsam, in quinque colloquis.
II. Est Explicatio Alphabeti naturalis in se considerati colloquio sexto.
III. Conclusionis loco annexa est de tota Lingua Sacra, ejusque perfectione, colloquio septimo.

Partis Primae

Colloquium primum agit de variis Oris humani motionibus atque confermationibus, & quomodo qui a navitate surdi sunt, illas intelligere, mentemque loquentium exinde perspicere queant. Nimirum

1. Quod qui surdi nati sunt motu linguae non careant, & quare dicantur muti. 2. Quod iidem ex variis oris linguaeque motibus alios loquentes intelligere discant. 3. Quod haec ad eum modum fiant, quo alii legere discant. 4. Quod ista melius procedant in Oriente, quam in Septentrionalibus. 5. Qua ratione tales ad usum sermonis adduci queant. 6. Exemplum de surdo quodam, qui eo perductus est, ut loquentium mentem omnibus assequi potuerit.

into effect, so that whatever he has discovered concerning the natural Hebrew Alphabet chiefly for the cultivation of his own wisdom may no longer be hidden but serve to promote the glory of God and the common good. And thus he has taken care to have the following method written in Latin and German and has illustrated it as much as possible with engraved figures. Again and again the author asks that his readers (whoever they finally are) to suspend rash and reckless judgment about a matter of such great importance until they have read over carefully these very few pages and gradually let the light of truth into themselves, which cannot be concealed from them for very long. Praise and thanks be to God through all the ages, whose glory alone we seek here and everywhere.

Sulzbach 6 January 1667
RAKC [Christian Knorr von Rosenroth]

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Argument of the Entire Little Work

This little book is conveniently divided into three parts:

I. A preparation for the proposal itself in five dialogues.
II. The explanation of the natural alphabet itself in the sixth dialogue.
III. Instead of a conclusion, an appendix concerning the entire sacred language and its perfection in the seventh dialogue.

Part One

The first dialogue concerns the various movements and configurations of the human mouth and how those who are born deaf can understand these motions and thus comprehend the mind of those who speak. 1) That those who are born deaf do not lack the motion of their tongues and why they are called mute. 2) That they learn to understand others speak from the various motions of their mouth and tongue. 3) That these things happen in the same way others learn to read. 4) That these matters proceed better in the East than in the North. 5) How such people can be brought to the use of speech. 6) An example of a certain deaf person, who was brought to the point that he was able to follow the meaning of a speaker in everything.

Colloquium secundum ad rem ipsam proprius accedit, & in specie de admiranda quadam Hebraeae Linguae proprietate paulo exactius agit. Nimirum

1. Quod illius literae non nisi picturae sint repraesentantes varios linguae nostrae motus. 2. Unde factum sit, quod verae illarum literarum figurae non amplius in usu sint apud Judaeos. 3. Quomodo Judaei ipsi

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conquerantur de ignorantia sua. 4. Quam difficile sit ista persuadere hominibus, ac unde illud. 5. Quo ordine quis a literis facto initio ad plenum scripturae sensum ejusque enunciationem perveniat. 6. Quanta sit difficultas clare ac perspicue de istis omnibus loquendi. 7. Qua methodo descriptum atque explicatum sit hoc Alphabetum. 8. Qua modestia hic opus sit. 9. Collatio hujus Alphabeti cum reliquis Hebraeice scribendi generibus, adjecta semplici quadam disquisitione de veris & genuinis Antiquorum literis. 10. Unde tot scribendi genera enata sint. 11. Unde sese offerat occasio naturale hoc scribendi genus inveniendi, & quid ad illus conferant literarum Nomina.

Colloquium tertium specialiora quaedam proponit Praeparatoria, nimirum de Natura & qualitatibus Linguae humanae, initio facto a loquela infantum; nempe

1. Quod illa proveniat ex Idea materna vocis. 2. Quo ordine illud fiat. 3. Unde originem habeat vox incantandi. 4. Quare homo ad motus linguae propriae non attendat. 5. Quod ad sermonem etiam pertineat soni vocisque mutatio, & quomodo illa e diversis oris dentiumque apertionibus demonstrari queat. 6. Sequitur descriptio Linguae, ac 7. Epiglottidis. 8. Designatur Arteria aspera. 9. Et Oesophagus. 10. De Ventriloquis eorumque loquendi modo. 11. De meatu anhelitus. 12. Et phlegmate illac descendente, ac quomodo illius maturitas queat impediri. 13. De Uvula. 14. De parte palati membranosa. 15. De motu Uvulae. 16. De parte palati anteriori. 17. Axiomata quaedam de motu Linguae.

Colloquium quartum agit de primo sermonis requisitio invisibili, Anhelitu, nempe

1. Quomodo ille attractus in pulmone separetur;

The second dialogue comes closer to the point and deals more exactly with a certain admirable property of the Hebrew language. 1) That the letters of this alphabet are nothing but representations of the various movements of our tongues. 2) From which it is established that the true figures of those letters are no longer in use among the Jews. 3) How the Jews themselves

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were overcome by their own ignorance. 4) How difficult it is to persuade men of such things and why. 5) How from the origin of letters one arrives at the full sense of writing and its enunciation. 6) How difficult it is to speak clearly about these matters. 7) How this alphabet is described and explained. 8) What are the limits of this work. 9) A comparison of this alphabet with other kinds of Hebrew writing, with the addition of a simple inquiry into the true and genuine letters of the ancients. 10) Where so many kinds of writing arose. 11) Where the opportunity presents itself for discovering this natural kind of writing, and what the names of the letters contribute to it.

The third dialogue sets forth a special introduction concerning the nature and character of the human tongue, beginning with the speech of children. 1) That speech develops out of the image of the mother's voice. 2) In what order it develops. 3) Where singing originates. 4) Why men do not pay proper attention to the movement of their tongues. 5) How alterations in sound and voice relate to speech and how this may be demonstrated by the diverse openings of the mouth and teeth. 6) A description follows of the tongue. 7) The epiglottis. 8) The movement of the wind pipe. 9) The esophagus. 10) Ventriloquists, and how they speak. 11) The movement of the breath. 12) Where mucus comes from, and how its development can be blocked. 13) The uvular. 14) The back part of the membranous palate. 15) The movement of the uvular. 16) The front part of the palate. 17) Rules concerning the movement of the tongue.

The fourth dialogue deals with the first, invisible requisite of speech, namely the breath. 1) How the breath drawn into the lungs is distributed,

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ubi simul de pulmonis natura agitur. 2. quomodo idem in abdomen versus umbilicum velut centrum totius hominis penetret. 3. atque exinde per totum hominem feratur. 4. tandem vi occultae cujusdam circulationis in abdomen. 5. et ex parte in pulmones redeat ad exhalationem & vocem formandam. 6. probatur, quod ille ahhelitus per totum corpus penetret. 7. quod omnia membra aliquam illius partem invisibiliter expirent. 8. Ejusque loco aliud quid ab extra ad se attrahant. 9. ne capillis quidem exclusis; de quarum natura non inutili digressione aliquid differitur. 10. probatur, quod beneficio anhelitus omnium membrorum virtutes omnibus membris indivisim communicentur. 11. ostenditur quid hoc loco conferat lumen Lunare, & quomodo id probari queat.

Colloquium quintum agit de altero Sermonis vivi atque genuini Requisito invisibili, virtute nimirum seminali hominis. Nempe

1. Quod hac deficient Sermo quoque debito vigore caret. 2. quomodo loquela aliquando in homine deficiat, & quam notabilia tum concurrant accidentia. 3. Digresso de Analogia Microcosmi & Macrocosmi quoad ista. 4. Quod istud Sermonis Requisitum de tota hominis essentia participet. 5. demonstratur ex similitudine liberorum cum Patribus suis. 6. Digressio de similitudine liberorum cum faeminis aliis. 7. at inde de virtutute Idearum. 8. earumque duratione. 9. An Idea Sympathiam cum suo exemplari amittat, & quomodo illud probetur. 10. De medio hanc Sympathiam conservante & promovente. 11. Regressus ad vivam hominem vocem. 12. quomodo illa affectus vehementiores mitigare queat. 13. & qua ratione a simulata fictaque voce discerni possit.

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Pars Secunda

Colloquio sexto explicat ipsas Alphabeti literas, nimirum

1. In genere, ubi excusatio adjicitur, quod unica saltem adhibita fuerit figura. 2. simulque ponitur quosnam Autores in pronunciandis literarum Nominibus potissimum secutus sit Autor. 3. & quare interdum saltem linguarum particulae adhibeanttur. 4. Quid sibi velint figurae in mitra iconum. 5. In specie traditur quid observandum sit circa singulas literas. 6. Ipsa explicatio literarum specialissima proponitur. 7. Ubi inseritur quare litera *He* inserta sit nominibus Abrahae & Sarah. 8. De formatione Vocalium in genere, e diversa oris atque dentium

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together with a discussion of the nature of the lungs. 2) How the breath penetrates into the abdomen to the umbilicus as if to the center of the entire person. 3) And how from there it is carried throughout the whole body. 4) And then finally into the abdomen by means of some hidden circulation. 5) Also how part of it returns to the lungs for exhalation and forming the voice. 6) It is proved that the breath penetrates through the whole body. 7) That every limb invisibly breathes out some part of it. 8) And in place of this they attract something else from outside. 9) Not even excluding hair, concerning which a useful digression is attached. 10) It is proved that by the aid of breath the virtues of all members are indivisibly communicated to each other. 11) It is shown what the light of the moon contributes to this matter, and how this can be proved.

The fifth dialogue treats the other invisible requirement for living and genuine speech, namely the seminal power of man. 1) That with a deficiency of semen speech lacks its proper strength. 2) How speech sometimes fails in people and what remarkable accidents occur. 3) A digression on the analogy of the greater and lesser world in this connection. 4) This aspect of speech, namely its seminal power, participates in the entire essence of men. 5) This is proved by the resemblance of children to their fathers. 6) A digression on the resemblance of children to other women. 7) Concerning the power of ideas. 8) And their duration. 9) If an idea can lose sympathy with its model, and how this is shown. 10) How such sympathy is maintained and promoted. 11) A return to the living voice of men. 12) How it can calm violent emotion. 13) How it can be differentiated from a counterfeit voice.

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Part Two

The sixth conversation explains the letters of the alphabet: 1) An explanation is given for why only one figure has been used. 2) What authorities our author especially follows in pronouncing the names of the letters. 3) Why sometimes certain parts of the tongue are used. 4) What the figures on the headdress of each engraving signify. 5) What in particular should be noted about each individual letter. 6) An explanation of the most important letters. 7) Why *He* was added to the names of Abraham and Sarah. 8) Of the formation of the vowels in general

apertione. 9. De Vocalium nominibus atque figuris. 10. De loco formationis illarum. 11. Ipsa vocalium explicatio specialissima proponitur. 12. Cur Scriptura Hebraeorum a dextra & non a sinistra incipiat. 13. Unde componi queat Grammatica perfectissima.

Pars Tertia

Colloquio septimo agit de ipsa Lingua Sacra ejusque perfectione, nimirum.

1. In quo illa potissimum consistat. 2. quomodo a reliquis linguis confususioribus differat. 3. quare Radices tantum e tribus componantur literis. 4. & cur non plures ibi assumantur literae. 5. Qua ratione quis ad verum ac genuinum illius linguae intellectum pervenire queat. 6. Quomodo Idea illius per vocem erumpat, 7. & qua ratione quis hoc modo ad veritatem perducatur. 8. Qualis sit differentia inter vocem vivam & aliam Imperfectam. 9. Tandem de Accentatione Hebraeorum aliquanto prolixius agitur & concluditur.

p. 18r and 18v (out of order)

p. 1

Colloquium Primum

De variis Oris humani motionibus atque conformationibus,
& quomodo qui a Navitate surdi sunt, illas intelligere,
mentemque loquentium exinde perspicere queant.

H. Cum propositum modo nobis sit praecipue de lingua & sermone hominum mere naturali sermonem instituere, ante omnia hoc unum expeto, ut ad declarandum totius negotii institutum perspicuum aliquod proponatur Exemplum.

M. Res omnis rectius perspici non poterit, quam si quis exempli loco sibi proponat hominem quendam a navitate sua surdum, adeoque & mutum; in quo duo potissimum observari possunt,

Margin note 1: *Quod qui surdi nati sunt mutu linguae non careant, & quare dicantur muti.*

(1.) nempe, quod qui huic miseriae subjacet, plerumque surdus tantum fit proprie loquendo, voce autem non careat, nec oris linguaeque; motu; unde sequitur defectum sermonis articulati exinde [saltem?] oriri,

and of their shapes. 9) The names and shapes of vowels. 10) The place of their formations. 11) An explanation of the most important vowels. 12) Why Hebrew writing starts from the right and not from the left. 13) How the most perfect grammar might be devised.

Part Three

The seventh conversation refers to the holy language itself and its perfection. 1) In what that perfection of the language chiefly consists. 2) How it differs from other confused languages. 3) Why the roots of words are composed of only three letters. 4) And why no more letters are included. 5) How anyone can arrive at a true and genuine understanding of this language. 6) How an idea of this language bursts forth in words. 7) How anyone may be led in this way to the truth. 8) What the difference is between a living word and another, which is imperfect. 9) Finally, a somewhat longer discussion of the pronunciation of Hebrew and a conclusion.

p. 18r and 18v (out of order)

p. 1

The First Dialogue

Concerning the various movements and configurations of the human mouth, and how those who are born deaf are able to interpret these and consequently understand the mind of those speaking.

H. Since we have recently decided to start a conversation about the most basic language and speech of men, I seek one thing above all, namely to set forth a very clear example to illustrate the purpose of this entire enterprise.

M. The entire matter could not be more correctly understood than if someone proposed by way of example an individual who was born deaf and therefore mute, about whom two things may be chiefly observed:

Margin note 1: *That those who are born deaf can move their tongues, and why they are called mute.*

1) That one who is inflicted with this misery is usually only deaf, strictly speaking, and does not lack a voice or the movement of his mouth and tongue. From this arises the inability to speak articulately because he

quod ob corrupta auditus organa alios loquentes audire nequeat talis, adeoque nec ordinarium sonorum humanorum specificationem juxta normam loquendi

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consuetam in linguae vocisque suae motus introducere poscit; unde facile causa patet, ob quam nomen muti ipsi communiter tribuatur.

Margin note 2: *Quod iidem ex variis oris linguaeque motibus alios loquentes intelligere discant.*

(2.) Quod qui ita surdus est, plerumque visu polleat acutissimo atque argutissimo, hac ratione, ut si quis de rebus domesticis cum ipso loquatur, ille verum verborum omnium sensum quam velocissime etiam e longinquo quasi legendo intelligere queat; idque non nisi ex observatione oris loquentium aliquantulum accuratiori.

H. Qua methodo isti censendi sunt haec omnia didicisse?

Margin note 3: *Quod haec ad eum modum fiant, quo alii legere discunt.*

M. Non alia, quam cujus beneficio illiterati communiter aliorum scripturam legere discunt. Illi autem primo figuris utuntur majusculis & charactere crassiori, quo cognito ad literas minores pergunt, atque ea sibi proponunt, quae celerius atque confusius imo cum abbreviaturis scripta sunt, donec tandem omnia quam facillime assequantur, licet quaedam non usque ad finem sententiae plenarie expressa sint. Ita procul dubio etiam surdi isti primo tales exactius observarunt, qui sublata voce, intentiorique clamore vociferantes, aliquid sibi expediri vel apportari jusserunt, eorumque linguam, labia, genas, mentum, jugulum, similesque partes earum motum

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atque mutationem accuratius notantes, his omnibus tanquam characteribus majoribus, velut illi majoribus literis, usi sunt ad assequendum genuinum loquentium sensum; in quibus confirmati paulatim ad leniores & magis ordinarios loquentium motus progressi esse videntur, donec tandem eorum intentionem ex ipso horum motuum initio, nondum absoluto totius sententiae contextus intelligerent; ad omnia haec potissimum consuetudine adjuti.

Margin note 4: *Quod ista melius procedant in Oriente, quam in locis septentrionalibus.*

is unable to hear others speaking on account of his defective organs of hearing. Consequently, he cannot

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produce in the motions of his own voice and tongue ordinary human sounds according to the customary way of speaking. Thus, the reason is clear why he is commonly called mute.

Margin note 2: *That these same individuals can learn to understand other speakers from the various movements of the mouth and tongue.*

2) That one who is deaf generally possesses the sharpest and clearest vision, and for this reason if anyone speaks to him about household matters, he can understand the true sense of all words just as rapidly as if he were reading from a far, and this only happens by closely observing the mouth of the speaker.

H. How were they able to learn these things?

Margin note 3: *These things happen in the same way that others learn to read.*

M. In the same way that illiterate people commonly learn to read the writing of others. At first they practice with big capital letters, and once they understand these they proceed to small letters and then they are faced with those things written more rapidly and sloppily and indeed with abbreviations, until they can finally follow everything easily, perhaps even some things that have not been fully expressed at the end of the sentence. No doubt deaf people also observe very closely those people who, yelling with raised voices and increased volume, order something to be prepared or brought to them. And they closely observe

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the motions and changes of their tongues, lips, cheeks, chin, throat, and other similar parts, as if these were large characters (just like those who use capital letters) to follow the sense of those actually speaking. Having accomplished this, they appear to proceed little by little to softer and more ordinary motions of speech until they understand the meaning of the speakers from their initial motions before the completion of the entire sentence. In all these things they are assisted by habit.

Margin note 4: *That these things occur more easily in the East than in the North.*

Atque ista longe felicius succedere in Oriente quam circa septentrionem probabile est; ibi enim homines parum quidem ob calorem, sed omnia, quasi copiosiori opus haberent anhelitu, aperto ore & patentissimo gutture tanquam ex ipso pectore proloquuntur, ut omnes linguae commotiones facillime observari queant; hic vero locorum, praesertim in Anglia locisque vicinioribus paululum saltem aperto ore vix labia moventur.

H. Si non alia habent Surdi isti intelligendi principia, quam diversas in mota loquentium lingua configurationes, ex quibus tanquam ex primis scripturae cujusdam Elementis verum loquentis sensum quasi legendo intelligere non impossible sit, non tantum probabile est, fore, talis etiam scriptura

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ab iisdem commode legatur, si ita quis ipsis literas depingat, sicut easdem antea per vivum loquentium motum a lingua duci atque formari viderant;

Margin note 5: *Qua rationes tales ad usum sermonis adduci queant.*

sed nec difficile esse judico eosdem beneficio harum figurarum ad debitam vocis & linguae articluationem perducere, si nempe quis illos ante speculum constitutos hos ipsos motus ore suo imitari, eosdemque motus postmodo efflato anhelitu quasi animare atque vivicare doceat: anhelitus autem aerisque in hoc negotio usum facile vel ex admota ori nostro manu sua, vel tempore hyberno ex exhalatis visibiliter vaporibus, vel etiam ex assumato cibo quodam graveolento olfactus beneficio addiscere poterunt. Et certe, si fieri potest, ut quis ex varie depictis in picta quadam Pandura digitis, fidibus canere; ex depictis vario ordine & situ pedibus, artem saltatoriam exercere; ex depictis varia circumgyratione vexillorum flexibus, vexilla vibrare discat; si ex pictura ars hastiludii, tractandorumque sclopetorum; si ars structoria denique & similes aliae hoc modo addisci queunt, cur non etiam ex varie configuratis linguae orisque motibus loquelam hominum aliquis docere atque discere posset?

M. De omnibus quidem ego

Margin note 6: *Exemplum de surdo quodam, qui in eo perductus est; ut loquentium mentem in omnibus assequi potuerit.*

And it is probable that these things happen far more easily in the East than in the North. For there men speak mainly from their diaphragms with an open mouth and a full throat, less because of the heat than because they need a great deal of breath. Therefore, all the motions of their tongues may be easily observed. Here in the North, especially in England and neighboring places, the mouth opens just a little and the lips scarcely move at all.

H. If the deaf have no other way to understand than by observing the various motions of the tongues of people speaking, then they can understand the sense of someone speaking just as one learns to read by observing the basic elements of writing. Thus it is probable that

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if someone depicts these letters in such a way that they can see how they are produced and shaped by the tongue movements of actual speakers, then they can easily read this writing.

Margin note 5: *How such people can be taught to speak.*

I do not think it is difficult to lead these students to the proper articulation of their voices and tongues by means of these figures, provided that someone teaches them how to imitate those motions in their own mouths while standing before a mirror and afterwards to bring these motions to life with exhaled breath. These students could easily learn the use of breath and air in this endeavor either by putting their hand on our mouth or by observing the vapor exhaled in winter or by smelling the breath of those who have eaten pungent food. Surely, if it is possible for someone to learn to play the violin by seeing the finger movements illustrated on the strings of a violin, the art of dancing through depictions of the order and placement of the feet, the art of flag waving through illustrations of gyrating flags, and finally, if the arts of jousting, gunnery, and building and other similar things can be learned in this way, is it not possible for someone to learn and teach human speech through the various configurations of the tongue and mouth?

M. I have no doubt whatsoever about these things.

Margin note 6: *An example of a certain deaf man who was brought to the point that he could comprehend the meaning of a speaking person in everything he said.*

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nullus dubito, imo ad faciendum in hoc labore periculum sponte me offero; cum praesertim simile quid in surdo quodam Musico jam praestiterim, qui tamen simul & visus hebetudine & membrorum tremore laborat; hunc autem trium hebdomadarum spatio eo usque perduxi, ut ad omnia responderet, quae quis tarde & ore praesertim aperto cum ipso loqueretur. Atque ille deinceps proprio Marte linguam Hebraeam brevi admodum tempore perdidicit, idque, postquam nostra methodo literas combinare atque legere didicisset, non nisi conferendo Biblia Hebraica cum Germanica versione; jamque, accendente nimirum exercitio adeo, in his perfici coepit, ut totam scripturam Hebraicam intelligat.

Colloquium Secundum

In quo Ad rem ipsam propius acceditur, & in specie admiranda quaedam Hebraeae linguae proprietas exactius condideratur.

H. Ergone sanctissima Hebraeorum Scriptura aliquam habet cum linguae humanae motibus similitudinem?

Margin note 1: *Quod illius literae non nisi picturae sint repraesentantes varios linguae nostrae motus*.

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M. Illa ipsa in se nihil est aliud, quam variorum humanae linguae motuum artificiosa repraesentatio; inque hoc ipso proprie loquendo illius natura constitit, nec in alio quoquam consistere potest. Et certe si fundamento ullibi niteretur alio, annon aeque temeraria, vana atque muta foret, ac omnes omnium linguarum Scripturae alia, ne unica quidem excepta, quarum ne minima quidem debita illa ac genuina recte scribendi principia in characteribus suis exhibet, ut quis ex sola literarum figura oris linguaeque motum cognoscere, adeoque exinde vocem articulatam formare queat, quod profecto Hebraea praestat quam exactissime? Haec enim sola est vera ac legitima recte scribendi ratio, quae non ex caeco impetu & temerario ductu nata, sed tanquam Vox picta sic primitus instituta est, ut sicut loquendi organa internum animi characterem auribus, ita illa eundem, per loquendi organa expressum, oculis subjiciat. Primarium autem loquendi organon lingua est, e cujus

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Indeed, I willingly offer my own experiment in this work, especially since I already succeeded in something similar with a deaf musician, who, though suffering from weak vision and trembling limbs, I nevertheless brought to the point where he could answer everything that someone said to him slowly and with a wide open mouth in the space of three weeks. And this man later learned through his own effort the Hebrew language in a very short time, and he taught himself to read and combine letters according to our methods, and by continuing with this practice he has now reached the point that he understands the entire Hebrew Scripture.

The Second Dialogue

In which we come nearer to the matter itself and consider an admirable quality of the Hebrew language.

H. Therefore, does the most holy script of the Hebrews have any similarity to the motions of the human tongue?

Margin note 1: *That the letters are nothing but pictures representing the various motions of our tongue.*

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M. In itself it is nothing other than the artificial representation of the various motions of the human tongue. And its nature consists properly speaking in this. And certainly if it were not for this fundamental fact, would it not be just as arbitrary, vane, and changeable as every script of every other language without exception? None of these exhibit in their letters the proper and genuine principles of correct writing in such a way that someone could recognize from the shapes of the letters alone the motion of the mouth and tongue and therefore form articulate speech, a matter in which Hebrew chiefly excels. For this alone is the true and legitimate way of writing correctly, which does not arise from blind impulse and senseless whim but was first established as a picture of the voice, so that just as the organs of speech presents the internal character of the mind to the ears, so does the organ of speech also present that same uttered meaning to the eyes. The chief organ of speech, moreover, is the tongue, from whose various motions and collisions speech arises. Therefore, if speech is to be depicted, can this

vario motu atque allisu loquela oritur: quid ergo, si loquela pingenda sit, aliud pingi poterit quam varia ejusdem linguae commotio atque configuratio? & si Hebraei scribendo sic olim depinxerunt loquelam,

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quid magis ad ipsam naturam ejusque verum ordinem accedere poterit quam sapientissima ipsorum scriptura?

H. Si istud irrefragabiliter verum est, nemo profecto satis mirari poterit, quomodo Judaei per tot secula absque vera hac Orthographia permanserit, illamque jam illam amissam non dudum reassumserint.

Margin note 2: *Unde factum sit, quod verae illarum literarum figurae non amplius in usu sint apud Judaeos.*

M. Hoc certe non est quod quis miretur, cum tota Natura hominum tali jam subjaceat corruptioni, ut verum illum ac genuinum scribendi modum non possit non negligere atque oblivioni tradere: idque & nunc futurum jam praevideo, nisi, quae monuero, accurate in posterum observata fuerint.

Margin note 3: *Quomodo Judaei ipsi conquerantur de ignorantia sua.*

Et quantas ipsi Judaei de sua in rebus Grammaticis ignorantia hinc inde querelas fundunt? praesertim cum in nec in Talmude ipsis satisfaciat, quibuscunque in locis, ibi de literis agitur: id quod non pauci saepius mihi confessi sunt. Si quis Hebraeam Grammaticam R. Abraham de Balmis evolverit, in fine reperiet sequentia: "Hic expliciunt vires particulares accentum juxta posse nostrum & mentem nostram arctam: si autem esset nobis facultas deveniendi ad profunditatem mentis divinae accentum, dedissemus causam

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omnium particularitatum eorum, & quare hic ante hunc, & quare hic postponatur huic, & quare una vice adhibeatur hic & alia vice alius in eodem sensu: Quia propter peccata nostra depauperata est scientia nostra antiqua, permultis expulsis & peregrenationibus, & non reperitur aliquis, qui cogitet considerare & acuere ingenium in his rebus profundis, & periit sapientia a sapientibus Israel, & intellectus prudentium ejus absconditus est. Deus autem Omnipotens propter pietatem & misericordiam suam acceleret redemtionem nostram & vivificet nos; & det

be done in any other way than by the various motions and configurations of that same tongue? And if the Hebrews formerly depicted speech by writing,

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what could come closer to the true order and nature of this than their profoundest Scriptures?

H. If this is irrefutably true, one can only wonder how the Jews continued to exist for so many centuries without this true orthography and how, once having lost it, they did not recover it for such a long time.

Margin note 2: *How it happened that the true shapes of their letters are no longer in use among the Jews.*

M. Certainly, this is not surprising since human nature is now subject to such corruption that not only was this true and genuine way of writing neglected but also passed into oblivion. And I predict that this will happen again unless my warnings are accurately heeded.

Margin note 3: *How the Jews may conquer their own ignorance.*

And how many quarrels have arisen among the Jews because of ignorance in matters of grammar? Especially since those very places in the Talmud where letters are discussed can give them no satisfaction, as many people have often confessed to me. If anyone should open the Hebrew grammer of R. Abraham Balmis, he will find the following comment at the end: "Here the particular meanings of accents have been set forth according to our abilities and limited understanding. If, however, we had the power to comprehend the profundity of the divine mind in regard to accents, we could give the particular explanations

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for all of them, for why one proceeds and one follows the other, and why one is used in one situation and another in another in the same sense. But because our ancient wisdom has been impoverished on account of sin and because of constant expulsions and wandering, no one has been discovered who thinks about sharpening his wit on these profound matters; and wisdom has perished from the wise men of Israel, and the understanding of its learned men has been hidden. May the omnipotent God in his compassion and mercy hasten our redemption and let us live, and may he enlarge our hearts and minds to understand

nobis cor amplum ad sciendum secreta literarum Sacrae Scripturae, & punctorum atque accentum ejus; nam qui ea ut decet intelligeret, non indigeret alia expositione: sed hoc caremus, & absconditum est usque ad redemtionem nostram, quae celeris sit. Amen."

Margin note 4: *Quam difficile sit ista persuadere hominibus, ac unde illud.*

H. Operae pretium igitur, erit, si ea, quae de vera Orthographia literarum Hebraicarum proferre placuerit; adeo perspicue tradantur, ut ab omnibus commode intelligi queant, eoque minus iterum oblivionis involvantur tenebris.

M. In eo quidem, quoad ejus facere

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potuero, omnes intendam nervos; verendum tamen omnino est, ne parum admodum undiquaque proficiam.

H. Quam ob causam?

M. Quia quicunque hodie sapientiae atque veritatis, quae per se semplicissima est, amore flagrant, studio plane perverso & inepto utramque quaerunt: dum enim intempestivo penitus conatu & praecoci nimis molimine festinabundi & anhelantes ad summa statim sciendi fastigia properant, qui fieri potest, quin infinitae rerum varietati atque multitudini adeo implicentur atque involvantur, ut cum ad studiorum finem jam pervenisse se existiment, principiorum quoque notitiam amiserint. Cum e contrario, qui veram & simplicissimam sibi viam eligunt, non nisi semplici atque moderato gressu solam secuti naturam & quidem caute admodum incedant; Atque hae sola est illa ratio, qua ad profundam sapientiae radicem tandem pervenitur, ejusque propagines deinceps absque errore investigari possunt. Si quis igitur, cum ex infinita atque ineffabili Dei bonitate se creatum agnoscat, ineffabilem illam Creatoris sui bonitatem ex sanctissimo ipsius verbo uberius cognoscere desideret, istum omnino

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in Timore Domini talem se gerere decebit, qualem natura verorum discipulorum hic esse postulat; ne si quid invenerit, ex inordinata praecipitique festinatione id iterum negligat atque amittat.

Margin note 5: *Quo ordine quis a literis facto initio ad plenum scripturae sensum ejusque enunciationem perveniat.*

the secrets of the letters of the divine Scriptures and their points and accents. For whoever properly understands these things would need no other explanation. But we lack this, and it will be hidden until our redemption, which may be soon. Amen."[75]

Margin note 4: *How difficult is it to persuade men about these things, and why this is so.*

H. Therefore, if these things concerning the orthography of the Hebrew letters seem good to publish, it will be worthwhile to treat them so clearly that everyone can easily understand them, and they will no longer be shrouded in the darkness of oblivion.

M. Indeed, I will

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strain my nerves to the utmost in this endeavor, even though I am very much afraid that I may not be altogether successful.

H. Why?

M. Because, today, whoever burns with the love of wisdom and truth, which is most simple in itself, seeks both with twisted and misplaced zeal. For as long as they rush headlong, breathlessly, rashly, and prematurely toward the highest summit of knowledge, they are twisted and wrapped up in an infinite variety and multitude of things, so that when they think they have arrived at the end of their labors, they have lost sight of the beginning. On the contrary, those who choose the true and simplest path follow nature alone with sure and measured step, and they proceed cautiously.[76] And this is the sole reason why they finally arrive at the root of knowledge and can then investigate the branches without error. Therefore, if anyone recognizes that he has been created by the infinite and ineffable goodness of God, he should wish to understand more fully the ineffable goodness of his creator from his own most sacred words. This

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should be undertaken in fear of the Lord as befits the nature of his true disciples. If anything is discovered, let it not be lost through careless haste and negligence.

Margin note 5: *In what order someone beginning from the letters may arrive at a full understanding and enunciation of the Scriptures.*

Sciendum igitur, totam Scripturam Sacram formatam esse non nisi ex figuris diversorum humanae linguae motuum; idque hoc ordine, ut primo configurati illi motarum linguarum typi tanquam consonantes, vocalibus suis per naturam vivificati atque animati, beneficio simplicissimae cujusdam compositionis atque combinationis dictiones constituant; ex his dictionibus deinde beneficio simplicissimi quidem sed ordinatissimi sui regiminis in animo legentium clarus & perspicuus progeneretur sensus, unde idea rerum lectarum formatur quam exactissima; quae in vivam vocem proruptura signaturam suam iterum communicat sermonis organis, quibus legitime in actum deductis absolvitur sanctissimus ille divinae communicationis circulus, ex meris infinitae benevolentiae signis concatenatus, quorum primum est formatio ideae in mente scriptoris sacri, cujus signum erat viva verbi praedicatio, quam iterum, ut & oculorum fieret objectum, depingebat imitatrix divini sermonis scriptura;

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quae suos iterum characteres in idea legentis exprimebat, ut illa eosdem tandem, rursum motu linguae designatos, aliorum communicaret auribus.

H. Ista quidem in genere dicta mihi non sunt sufficiunt, & fortasse nec aliis praesertim simplicioribus; ut igitur omnia eo rectius intelligantur, de ista vivi sermonis pictura prolixius aliquanto & clarus agendum erit.

Margin note 6: *Quanta sit difficultas clare ac perspicue de istis omnibus loqui.*

M. Hic patientia opus erit haut exigua, nunc etiam balbutientium me laborare infirmitate persentisco, quibus tanta rerum copia simul in ore connascitur, ut ordine neglecto cuncta uno halitu evomere velle videantur. Si igitur non omnia eo quo decet ordine in medium proruent, tua omnino exoranda erit aequanimitas, ut insignem istum bene dicendi defectum in me tolerare discat.

H. In me quidem nihil horum unquam desiderari patiar: scio enim suos ut docentibus, ita & discentibus esse labores, praesertim si quis, volatili illo multiscientiae ardore ejurato, moderatae tarditatis se profiteatur esse studiosum. Progrediamur igitur in timore Domini ad rem ipsam, istosque naturae characteres paulo accuratius intueamur.

It should be known that all sacred Scripture has been formed from nothing but the shapes of the diverse motions of the human tongue and in such a way that the images of the tongue in motion represent consonants brought to life and animated naturally by their own vowels. Utterances are made from these most simple combinations and arrangements. A true and lucid sense will arise in the mind of readers from the most simple but orderly arrangement of these utterances. An idea of the things we read about is thus formed as exactly as possible, which bursts out in a living voice and conveys itself through the organs of speech with the organs brought into action, thus completing the most sacred circle of divine communication. This circle, a pure sign of his infinite goodwill, begins with the formation of ideas in the mind of the holy author, whose identifying mark was the living enunciation of the word, which afterwards was written down in imitation of divine speech and depicted in such a way that we could see it.

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This writing impressed its characters on the mind of the reader so that it would communicate to the ears of others those very same things signified by the motion of the tongue.

H. In general, I am not satisfied with these remarks, nor perhaps would other less educated people be. To better understand these things, we should deal more fully and clearly with this picture of living speech.

Margin note 6: *How difficult it is to speak clearly and lucidly about all these matters.*

M. This will require great patience, for I recognize that I labor under the infirmity of those who stutter and that a great number of things rush into my mouth at the same time so that everything appears to burst out in one breath without order. If, therefore, everything does not flow forth in the proper order, I pray for you indulgence so that you will tolerate my failure to speak eloquently.

H. I will allow everything you ask of me, for I know that those who teach as well as those who learn have their own difficulties, especially someone who, having foresworn the fickle desire to know everything, confesses that he likes to go slowly and deliberately. We will therefore proceed in the fear of God to the subject itself and will examine more closely these natural characters.

Margin note 7: *Qua methodo descriptum atque explicatum sit hoc Alphabetum.*

M. Ne solo discursu obscurior sim,

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quam ut quis mentem meam penitius assequi valeat, necessarium esse duxi, ut omnes literarum figuras in ore depicti cujusdam capitis, eoque potissimum loco, in quo lingua suas communiter exercet actiones, tanquam in theatro proponerem. Ubi notantum, plures aliquando linguas non nisi diversos in una operatione unius linguae motus exprimere, sic enim solent aliquando ad uniquam literam formandum plures concurrere gesticulationes, ut inde totius actionis initium medium & finis commode discerni queant.

H. Inde apparet, etiam diversos hos unius Linguae motus ad unius literae formationem concurrentes, si rem ita se habere demonstrari potest, in causa esse posse, quod sancta haec scribendi ratio, postquam semel amissa fuit, tam diu in obscuro latere potuit.

Margin note 8: *Qua modestia hic opus sit.*

Si igitur quis praesumerit eandem in lucem iterum producere, ille profecto rem tanti momenti, quantum ego quidem existimo, non sine summa modestia poterit aggredi.

M. Pro necessaria hac atque utilissima admonitione gratias ego quas possum maximas, vicissimque Lectorem quemcunque admonitum esse volo, ut sicut modeste omnia proponuntur, ita modeste quoque eadem tractet,

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nec rudes illas informesque figuras prius condemnet, quam earum simul explicationem perlegerit, totamque rem simul sumtam exacte perpenderit. Utque ad rem ipsam aliquanto propius accedam:

Margin note 9: *Collatio hujus Alphabeti cum reliquis Hebraice scribendi generibus, adjecta semplici quadam disquisitione de veris & genuinis Antiquorum literis.*

Sciendum est, me ex illis, quae vulgo circumferuntur Hebraeorum Alphabetis nullum agnoscere potuisse pro authentico, quod undiquaque sequerer: tanta enim in characteribus eorum sive typis expressis, sive in

Margin note 7: *How this alphabet may be described and explained.*

M. Lest I speak so obscurely

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that someone cannot completely follow me, I have considered it necessary to depict—as if on a stage—all the figures of the letters in the mouth of a human head, in that very place where the tongue commonly performs its actions. Here it should be noted that sometimes one operation of the tongue can involve many different tongue movements, as often happens when many strokes of the pen form a single letter. Thus it is easy to discern the beginning, middle, and end of the entire process.

H. It is clear, then, that these diverse motions of a single tongue coming together to form a single letter—if it can be shown to work this way—explain the reason why this sacred way of writing could lie in obscurity for so long. If, therefore, someone presumes to bring this to light again, he must approach a subject of such importance, as, indeed, I believe it is, with the greatest modesty.

M. I give the greatest possible thanks for this necessary and most useful warning, and, in turn, I admonish every reader that just as all these things are modestly proposed he may also treat them modestly

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and not condemn these figures as rough and shapeless before he has completely read their explanations and closely considered the entire matter. And to come a little closer to the subject, it should be known that I, who have thoroughly investigated the matter, do not recognize anything as authentic that is commonly said about the Hebrew alphabet. For so great is the diversity of the characters either expressed in writing or chiseled on ancient coins that often there appears to be little or no similarity among the letters.

Margin note 9: *A comparison of this alphabet with other written Hebrew and a simple discussion of the true and genuine letters of the ancients.*

If, moreover, anyone thinks that he will arrive at a true understanding of the original and genuine Hebrew alphabet from those things that

antiquis numismatibus excusis, invenitur diversitas, ut saepe ne minima quidem inter literas occurrat similitudo. Si quis autem putaverit, se ex iis, quae ab Athanasio Kirchero, & Waltono aliisque de hac materia controvertuntur, ad veram primi & genuini Hebraeorum Alphabeti cognitionem perventurum esse, illum quidem lubentissime suo patiar abundare sensu; non fore tamen puto, ut praeconceptis illis opinionibus ita sibi praeoccupari patiar animum, quin & naturalis haec & simplicissima idipsum indagandi methodus digna illi videatur consideratione. Et quantum ad communes illos characteres attinet illarum origo, semplicissime loquendo, videtur esse talis. Cum Santus ille Patriarcha Abraham ex Chaldaea exiret, certe probabile not est, illum ignarum

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fuisse artis Chaldaice scribendi: literarum enim studium, teste Callisthene Philosopho, ante captam ab Alexandro Babylonem jam per bis mille ferme annos floruerat in illa regione, adeoque Abrahami temporibus non poterat esse incultum; Veritati igitur maxime est consentaneum, eundem literas in domo paterna excultas secum detulissse in terram Canaan; quae postmodum non possunt non fuisse per posteros propagatae, cum Jacobo in Aegyptum deportatae, ibidemque inter Israelitas conservatae, donec tempore exitus ex Aegypto, iisdem in deserto, tamquam jam notis, lex traderetur, eaedemque cum toto populo in Palaestinam redirent, atque ita per posteros conservarentur. Porro nec probabile est, Cananaeos, inter quos hospes & peregrinus erat Abraham, caruisse literis, praesertim cum inter illos viveret summus ille vir Melchisedech; nec ulla est ratio, quae inferat illas periisse aut immutatas esse post Abrahami tempora, unde verisimile est illas adhuc in usu fuisse, cum post Exitum suum cum magna hujus gentis parte permiscerentur Israelitae, & utrinque postmodo exercerentur contractus atque commercia. Hinc iterum a veritate non abludit, si quis inferat, novos

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hos incolas ob commoditatem conservationis & commerciorum, pro suo, cum gentibus sese conformandi, more, a Veteribus inter multa alia etiam literas addidicisse; prout adhuc hodie a Judaeis in nostris regionibus fieri videmus, & praecipue ab iisdem Ptolemaeorum tempore in Aegypto factum est. Unde sequitur, duplicem inter ipsos exortum esse characterem, antiquum scilicet illum, quem Abraham secum ex

are argued by Anthansius Kircher[77] and Walton,[78] I will willingly let him wallow in their explanations. I do not think that such a person, so preoccupied with his preconceived opinions, will consider this natural and simple method of mine worthy of consideration. And to speak simply, we shall see what those original characters have in common with these later ones. When the holy patriarch Abraham left Chaldea, it is highly unlikely that he was ignorant

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of the Chaldean manner of writing. For, according to the testimony of the philosopher Callisthenes,[79] the study of letters flourished almost two thousand years in that region before Babylon was captured by Alexander, and therefore it had to be cultivated in the time of Abraham. Thus, it is highly likely that he brought with him into the land of Canaan the letters learned in his father's house. Afterwards these letters must have been handed down to later generations when they were carried into Egypt by Jacob and preserved there among the Israelites until the Exodus from Egypt. The law was transmitted in those same letters in the desert, as we have already noted. These letters returned to Palestine with the entire people. And thus they were preserved for later generations.

Furthermore, it is not probable that the Canaanites, among whom Abraham was a guest and a foreigner, lacked letters, especially since that great man Melchisedech[80] lived among them. Nor is there any reason why these letters would have perished or changed after the time of Abraham. Thus, it is very likely that they were still in use since, after his death, the Israelites mingled with most of the people [the Canaanites] and later engaged in trade and commerce. Furthermore, it does not strain credulity if some should conclude that these

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new settlers learned, among other things, another form of writing from the Canaanite elders to facilitate communication and commerce and to conform to the customs of these people. We see the same thing happen today among the Jews in our regions, and it was done especially in Egypt in the time of Ptolemy. It follows, then, that two kinds of writing arose among them: the ancient one that Abraham brought

Chaldaea detulerat, & communem alterum. Cumque videamus Judaeos ad Cananaeorum mores adeo sese applicuisse, ut ne ab idololatria abstinerent, praesertim qui erant ex regno decem tribuum Israel; quis dubitet, quin tanti aestimatae tandem ab iis fuerint communes literae, ut etiam Liber legis iisdem describeretur. Unde tamen non sequitur, idem non simul etiam fieri potuisse charactere antiquo Abrahamtico, quo eundem & Moses descripserat, praesertim in Regno Juda; & eo quidem discrimine, ut altera scrptura altera haberetur sanctior & dignior. Tandem autem cum juxta 2. Reges 17, 27. Sacerdos quidam ex abductis decem Tribubus ad novos Samariae mitteretur, qui eos informarer in Lege Dei Israelis, quas illum literas huc

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secum portasse probabile est alias, quam communes? & quem Librum Legis alium quam iisdem charcteribus descriptum? cum praesertim non ex iis esset Regni Judae Sacerdotibus, in quibus erga antiquum Dei cultum adhuc tantillum superesse videbatur Zeli, sed ex Idololatrico illo genere, qui verum Deum sub imaginibus vitulorum hactenus coluerant. Unde apparet, scripturam Samaritanorum hodiernam non facile habendam esse pro alia, quam pro antiqua illa Cananitica. Deinde cum Esdras post captivitatem Babylonicam Sarcram Scripturam iterum descripsisse dicitur, & aliis quidem, ut Hieronymus inquit, literis; quibus ille quaeso commode uti potuit aliis, quam antiquis illis Abrahamitici atque Mosaicis, quarum studium apud Sanctiores nondum plane exolevisse poterat, quaeque a Chaldaicis illis atque Babylonicis sive Assyriacis (quibus nominibus idem semper hactenus in isto quidem negotio denotatum est) quarum usus durante captivitate in populum iterum introductus erat, non adeo multum differre, quia ab eadem Chalchaedorum gente Abraham easdem acceperat? Nisi quem igitur nimium vexat communis ille litigandi pruritus, illi procul dubio

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concedendum erit, hodiernas Hebraeorum literas, quae fatentibus omnibus suam Esdrae debent originem, parum admodum distare posse ab antiquis illis Abrahamticis, unde quoque eaedem ad ipsam oris linguaeque naturam tam prope accedunt. Cum tamen de istis omnibus nulla nobis non dicam mathematica, sed ne historica quidem sit certitudo, rectius fieri non poterit, quam ut, si quis ad primum harum rerum fontem contendere praesumat, ille propriae potissimum linguae utatur

with him from Chaldea and a second common one. And since we see that Jews accepted Canaanite customs to the extent that they did not even abstain from idolatry, especially those who were in the kingdom of the ten tribes, who can doubt that they wrote down their book of law [Torah] in this script? However, it does not follow that the same thing happened to the ancient Abrahamic script in which Moses wrote down the same law, especially in the kingdom of Judah. And because of this separation, one script was held to be holier and worthier than the other. Finally, according to 2 Kings 17:27 a priest was sent from the ten lost tribes to the new inhabitants of Samaria, who taught them the law of the Israelite God.

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Is it probable, then, that he brought with him anything other than the common script, and that the book of law was written in this same script, especially since he did not belong to the priests of the kingdom of Judah, among whom there still remained so much zeal for the ancient worship of God, but a member of that idolatrous tribe who at this time worshipped God in the images of calves? Thus, it appears that the everyday script of the Samaritans cannot easily be regarded as anything but the ancient Caananite script. After the Babylonian captivity, when Ezra is said to have written down holy Scripture for a second time, I ask, as Jerome says, whether he could have used any other script than the ancient one of Abraham and Moses, the study of which could not have fully vanished among the pious? And this script, the use of which was introduced once again during the Babylonian captivity by those Chaldeans, Babylonians, or Assyrians (whose names in this case are interchangeable) could not have differed much because Abraham had accepted the same script from the Chaldeans.

Therefore, unless someone is itching to quarrel

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he must concede that the Hebrew letters in use today, which everyone acknowledges owe their origin to Ezra, differ only a little from the ancient script of Abraham. Thus, these letters also closely resemble the nature of the mouth and tongue. Nevertheless, although there is no mathematical nor historical certainty about these matters, one may surmise that anyone claiming to get to the heart of the matter will follow primarily his own tongue as a guide and model by means of

ductu & exercitio, quo facto facillime si quae a nobis errata fuerint discernere, inventisque istis, quae desunt, addere poterit.

Margin note 10: *Unde tot scribendi genera nata sint.*

H. Unde autem exorta videtur potissimum, modernarum literarum a naturalibus istis discrepantia?

M. Haec inde orire potuit, nisi me fallit suscipio, quod non uno eodemque modo Scriptura Sacra describeretur; quam facile enim, si qui celerius ducebant literas, ex incuria quaedam sive in omnibus sive in quibusdam immutari potuerunt, & quam facile tardiores alii inutili quodam ornatu easdem deformare poterant? praesertim si quis ad illa potissimum tempora respiciat, quibus verus atque genuinus hujus Scripturae sensus in populo Israelitico jam perierat.

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Margin note 11: *Unde sese offerat occasio naturale hoc scribendi genus inveniendi, & quid ad illud conferant literarum Nomina.*

H. Unde autem enata nunc est occasio, easdem iterum inveniendi?

M. Hic primas omnino partes tenuit ispa singularum literarum Natura, & juxta illam accurata linguae nostrae consideratio, quos illa nimirum ad earundem efformationem contribuat motus. Deinde tantillum etiam profuerunt ipsa literarum Nomina, quae venerabilis Beda statuit, ab Esdra, mutatis tantum characteribus, ut ea tenus in usu fuerunt retenta fuisse, quaeque adeo ad nostra usque tempora per traditionem propagata sunt. Horum declarationem ad facilius intelligendas literarum figuras ubique apposui, eo quod illam ad inferendam majorem lucem censerem non esse inutilem. Unde si vera sunt, juxta traditionem antiqua illa Nomina, negari non poterit, veritati quoque conformem esse istam Explicationis meae partem, qua continuata horum Nominum cum suis figuris exhibetur Analogia. Atque ex istis Nominibus connexionis quoque atque ordinis ratio in isto Alphabeto potissimum dependet.

which he can recognize the mistakes which we have made, and, having discovered these, he can make good our deficiencies.

Margin note 10: *How so many kinds of writing originated.*

H. How did the discrepancy between modern letters and these natural ones arise?

M. Unless I'm mistaken, it arose this way: sacred Scripture was not written down in one manner. For isn't it easy to see that those who wrote the letters quickly could change these letters out of carelessness into all sorts of other letters, and that those who wrote more slowly could deform these letters with useless flourishes, especially if the true and genuine sense of that script perished among the Israelites?

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Margin note 11: *How this natural kind of writing was discovered and how the names of the letters agree with it.*

H. How was this script was rediscovered?

M. The nature of every single letter retains its original elements. And a close examination of our tongue in accordance with that nature reveals the motions that contribute to the formation of these letters. Equally useful were the names of these letters, which, according to the Venerable Bede, still remained in use, even though their shapes had been greatly changed by Ezra. Consequently, these names have been handed down through tradition to our own time. Throughout this treatise I have laid out an explanation of how the shapes of the letter should be easily understood so that this may shed some greater light on the subject. If these things are true, then those names are undeniably ancient according to tradition, and this part of my explanation also conforms to the truth inasmuch as there is a continuous analogy between these names and their figures. And the reason for the order and connections between letters in this alphabet chiefly depends on these names.

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Colloquium Tertium

Ubi Praeliminaria quaedam de Natura & qualitatibus linguae humanae traduntur, cum insertis, de loquela infantum & similibus, quibusdam aliis.

H. Ex istis omnibus ea, quae ipsas literas, earumque efformationem concernunt, commode intelligi potuerunt; cum tamen & alia quaedam occurrant, quae circa loquelam hominum utiliter hoc loco spectari atque explicari possent, necessarium esse duxi, antequam ad rem ipsam ulterius progrediamur, quaestiones quasdam de iisdem miscellaneas, attamen haud injucundas ventilare; quarum prima erit, quanam ratione Infantuli primum discant loqui?

Margin note 1: *Quod illa proveniat ex Idea maternae vocis.*

M. In omnibus Infantibus, cum vacui omnino sint ab omnibus quorumvis Entium ideis, insignis occurrit aptitudo, Ideam maternae vocis intime sibi imprimendi, illamque efficacissimam operationem ad adeo admittendi, ut postmodum illius solius beneficio, non accedente ullo adminiculo extraneo, quam primum organorum in sese sentiunt vigorem,

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propio motu sua conentur lingua verborum maternorum sonum imitari;

Margin note 2: *Quo ordine illud fiat.*

& illum quidem primo, qui inferiori oris nostri parte formari solet; deinde crescent musculorum robore, istum quoque qui medio in ore elaboratur, donec tandem ad illos accedant, confirmatis nempe ulterius loquendi instrumentis, quos lingua ad summa palati allisa producit. Et sicut in adultis auditi quidam Musicorum moduli, Ideam vocis atque tonorum saepe tam efficaciter imprimunt animo, ut quidam quam diutissime illos in sese persentiscant quasi sonantes, nec cum volunt ab iis liberari queant; unde quoque originem traxisse videtur apud Latinos Gallosque & alios vox incantandi:

Margin note 3: *Unde originem habeant vox incantandi.*

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The Third Conversation

in which certain preliminary matters are discussed concerning the nature and qualities of the human tongue, as well as the speech of infants and other similar things.

H. From what has already been said, we can easily understand everything concerning the letters and their formation. Nevertheless, before we get to the matter itself, I have thought it necessary to sort through certain miscellaneous questions that are not unpleasing since other issues arise concerning human speech, which can usefully be examined and explained in this place. The first of these is, how do infants learn to speak?

Margin note 1: *That this comes from the idea or image of the mother's voice.*

M. A remarkable aptitude is found in all infants (since they completely lack ideas about everything whatsoever) for imprinting the image of the mother's voice deeply within themselves, and for applying it most effectively, so that by this means without any external stimulus they experience in themselves the first stirrings of their speech organs,

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and they strive to imitate the sound of the maternal voice with their own tongues.

Margin note 2: *In what order this occurs.*

At first they imitate that sound which is usually formed in the lower part of our mouth. Then, as their muscles strengthen, they imitate the sound which is produced in the middle of the mouth until, finally, once the organs of speech are fully developed, they arrive at those sounds that the tongue produces by striking the roof of the palate. Just as modes of music, once heard, impress upon adults the image of the voice and tone so effectively that they feel as if they resound within them for a long time, and they cannot free themselves from these sounds even if they wish to. This is how Latin, French, and other people learned to sing.

Margin note 3: *The origin of singing.*

ita Materni sermonis Idea in infantulis impressa haeret quam diutissime, iisdemque postmodum locuturam quasi collocat atque ordinat linguam, & sic unica & sola est loquelae ipsorum Magistra.

Margin note 4: *Quare homo ad motus linguae propriae non attendat.*

Ad istos autem per hanc Ideam conformatos linguae motus postmodum nunquam iterum sese reflectit animus noster, etiamsi multis myriadum millibus repetuntur; quia omnes mira celeritate fiunt, unde quicquid in illis latet miri atque magni, plerisque ignotum est.

H. Cum porro videam vocem sonumque

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hominis sola quoque oris apertura variari, anon istius variationis gradus paulo exactius possunt demonstrari?

Margin note 5: *Quod ad sermonem etiam pertineat soni vocisque mutatio, & quomodo illa e diversis oris dentiumque apertionibus demonstari queat.*

M. Hic commode adhiberi poterit ossiculum vel lignum quoddam in sex ordines gradatim distributum, cujus figura depicta est icone 34. ad cujus dimensiones oris atque dentium apertio distenditur, quando sex illae Musicorum claves voce exprimi debent. Si porro quis eo ordine, quem eadem pagella depictum videt, os suum dentesque aperuerit, vocalium, quoque ordinarios illos quinque gradus invenire poterit.

H. Jam Lingua sese mihi offert, quam, quia primarium est sermonis nostri organon, libentissime paululum accuratius intelligerem.

Margin note 6: *Sequitur descriptio Linguae, ac.*

M. Quaeratur, si placuerit, figura 33. qua exibetur Lingua nostra, cum instrumentis cognatis omnibus, unde postmodum Natura motuum ejus aliquanto plenius intelligi poterit. Ipsa nempe Lingua est 1. quam Potentissimus Creator, ut varias se flectere formas, pluribusque agitari posset motibus, ex insigni parvorum, tenuium atque spongiosorum musculorum copia contexit; ipsique facultatem exinde dedit sese in varias figuras conformandi, ut modo rotunda

So, the image of the mother's speech imprinted on infants sticks for a very long time and afterwards trains the tongue for speaking, and thus it becomes the single and sole teacher of their speech.

Margin note 4: *Why a man does not pay attention to the motion of his own tongue.*

And later the mind never thinks again about these motions, which have been shaped by this idea, even if the sounds are repeated a million times because everything happens with such remarkable swiftness that they forget anything great or marvelous in them. Although I recognize that the

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voice and sound of men varies only according to the opening of the mouth, can we not demonstrate a little more exactly these degrees of variation?

Margin note 5: *What concerns speech and the change of sound and voice, and how these changes result from different openings of the mouth and teeth.*

M. We could easily make use of a xylophone made out of wood or bone with six different notes like the one depicted in illustration 34, which shows the configuration of the mouth and teeth when the six musical notes are expressed by the voice. Furthermore, if anyone opens his mouth and teeth in the way he sees depicted on this page, he will discover the ordered arrangement of the five vowels.

H. Now, since the tongue is the primary organ of speech, how can it help me understand more accurately and readily [the nature of speech]?

Margin note 6: *A description of the tongue follows.*

M. Please consult figure 33, which shows the tongue with all its related parts, from which one may understand more fully the nature of its motions. Surely, the tongue itself is (1) an organ which the most powerful Creator has constructed from a great number of small, soft, and spongy muscles so that it can bend into various shapes and move in different ways. He endowed it with the ability to shape itself into various forms so that

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quasi modo longiori, modo breviori forma in actum prodeat, & mox tenuior, mox crassior, mox acutior, mox planior, mox velut excavata existat, atque hinc in omnes partes, sive id sit antrorsum sive retrorsum, sive sursum, sive deorsum, sive dextrorsum, sive sinistrorsum & premi atque flecti queat. Quibus in actibus illa simul Rectrix quaedam atque dispensatrix est aquarum, partim inferiorum atque terrestrium, quae per dentes inferiores, illamque oris partem ascendunt, partim superiorum atque coelestium, quae per dentes superiores, illamque Oris partem descendunt. Porro Lingua haec librata est quasi ossiculo quodam peculiari, quod a forma Ypsiloides dicitur, ut super illo tanquam Hypomochlio quodam ordinatissimo semper motu levari atque deprimi, inque omnes pro lubitu partes torqueri queat.

Margin note 7: *Epiglottidis.*

2. Est elevata quaedam cartilago, Epiglottis dicta,

Margin note 8: *Designatur Arteria aspera.*

quae veluti quoddam in folle assarium initium arteriae asperae 3. superintegit atque claudit,

Margin note 9: *Et Oesophagus.*

quotiensque aliquid cibi vel potus in Oesophagum 4. protrudi atque deglutiri debet.

Margin note 10: *De ventriloquis eorumque loquendi modo.*

Atque per istam Epiglottidem fieri potest, ut quis attracto spiritu introrsum loquatur in ventrem suum, ore penitus clauso, quemadmodum non saltem

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olim [Engastrimythi] sive Ventriloqui locuti esse putandi sunt, sed nostris quoque temporibus deceptores quidam sese divinare fingunt, prout ipse certissima edoctus sum experientia.

Margin note 11: *De meatu anhelitus.*

5. designat locum, unde non anhelitus saltem per nasum descendit, sed & phlegma quoddam,

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it can become rounder, longer, or shorter, thinner, more angular, flatter, more hollow, and thus it can be pressed or bent in all its parts so that it can go either forward or backwards, upwards or downwards, to the right, or to the left. In these actions the tongue regulates and dispenses the lower, earthy waters, which ascend through the bottom teeth and the lower part of the mouth, and the upper, heavenly waters, which descend through the upper teeth and the upper part of the mounth. Furthermore, the tongue is balanced on a special bone called the *Ypsiloides*, so that like a lever it can be lowered and raised always in the most exact way and can be twisted at will in all its parts.

Margin note 7: *The Epiglottis.*

(2) The raised cartilage, called the epiglottis, is at the opening of the wind pipe like the valve in a bellows.

Margin note 8: *The Windpipe.*

(3)[81] It covers and closes whenever food or drink must be swallowed and pushed into the Esophagus.

Margin note 9: *The Esophagus.*
Margin note 10: *Concerning ventriloquists and their way of speaking.*

And through the epiglottis it is possible for someone to speak in his stomach, having drawn air within with his mouth completely closed, just as in

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former times Engastrimythi[82] and ventriloquists were thought to speak, but in our times they also pretend to be fortune tellers, as I have learned from direct experience.

Margin note 11: *Concerning the path of the breath.*

(5)[83] shows the place where the breath not only descends through the nose but also the phlegm, which can be called the semen of the brain and which fails to develop fully as mucus from too much thinking and meditating and other excesses.

Margin note 12: *Et phlegmate illac descendente, ac quomodo illius maturitas queat impediri.*

quod quasi cerebri possis dicere semen, quodque, si nimium cogitando atque meditando aliisque excessibus quis debitam illius maturationem impediverit, primo quidem coryzam saltem; mox, si ex immaturo illo humore spiritus aliquid secum in arteriam asperam detuleruit, tussim; tandem vero, nisi quis debito cogitationum temperamento sibi consulerit, maturitatemque ejus impedire perrexit, Phthisin excitat.

Margin note 13: *De Uvula.*

6. est glandula quaedam carnosa dependens, quam Uvulam dicunt, quae circa 5. levari atque deprimi potest,

Margin note 14: *De parte palati membranosa.*

cum laxa illa atque mobili cute 7. in posteriori palati parte:

Margin note 15: *De motu Uvulae.*

Atque hac uvula leniter mota, excitare potest sonum quendam, infractus suspiriis haud absimilem.

Margin note 16: *De parte palati anteriori.*

8. est durior palati pars anterior. Atque his explicatis, non inutile fore duxi, ad clariorem rerum tradendarum intellectum, si generalia quaedam de motu Linguae & similibus hoc loco praescriberem Axiomata.

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Margin note 17: *Axiomata quaedam de motu Linguae.*

I. Lingua humana qua mobilis commode dividitur in 4. partes, mucronem nempe, post-mucronalem, ante-radicalem, & radicem.
II. Lingua in ore clauso recta decumbens, in quiete esse dicitur.
III. Lingua in sublime elevata, nulla adhibita vi, sponte per naturam descendit in quietem.
IV. Lingua ore aperto in imum deducta, eodem sese claudente, naturali motu iterum ascendit in quietem.
V. Lingua cum impetu in altum compulsa, cum impetu quoque descendit, & profundis quidem quam ad locum quietis; unde naturalis ejus motus tum demum redit, cum exinde ad quietem ascendit.

Margin note 12: *Concerning the descent of the phlegm and how it fails to develop fully.*

Afterwards, if the breath takes something from this immature humor with it down into the esophagus, a cough develops. Finally, indeed, unless one moderates his thinking, the maturation of this phlegm will be impeded and consumption will arise.

Margin note 13: *The uvula.*

(6) is the certain fleshy part that hangs down called the uvula, which according to (5) can be raised or lowered with that loose and mobile skin (7)

Margin note 14: *The membranous palate.*

is the back part of the palate.

Margin note 15: *The movement of the uvula.*

And when the uvular moves smoothly, breath can stir up a certain sound like sighing. (8) is the harder, front part of the palate.

Margin note 16: *The front palate.*

Having explained these things, I think it useful to offer certain general axioms about the motion of the tongue and similar matters for a clearer understanding of the things I am going to discuss.

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Margin note 17: *Axioms concerning the motion of the tongue.*

I. The human tongue is easily divided into four moveable parts, namely, the tip, behind the tip, the root, and behind the root.
II. The tongue, lying strait in the closed mouth, is said to be a rest.
III. The elevated tongue, when no force is applied, naturally descends to rest.
IV. The tongue in an open mouth, when it is drawn downwards, naturally ascends again into a position of rest when the mouth closes.
V. The tongue, driven upwards with force, also descends with force to a lower position than the place of rest. From here, its natural motion then returns when it ascends to the place of rest.

VI. Lingua cum impetu antrorsum compulsa, cum impetu quoque retrorsum cogitur, inde vero naturali demum motu in quietem redit.
VII. Circa motus linguae atque oris, perpetua existit consonantia, unde quandoque illi hos quandoque vero hi illos sequuntur.
VIII. Omnes motus linguae, qui in efformatione unius Literae concurrunt, ejusdem figura sive charactere exprimuntur.
IX. Quamvis in compositis ad formandum totam dictionem literis, non omnes illi motus ad finem perducantur,

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quos lingua exercet in formanda litera nuda, omnes tamen in figura literae semper expressi manent, charactere non diminuto, quia his imago est totius actus circa hanc literam exerciti; ad quem complendum lingua, etiam ad insequenti litera in consensum rapta, naturaliter tamen inclinatur.

Colloquium Quartum

De Anhelitu hominis, & quantum ille ad formandam humanam vocem atque sermonem conducat.

H. Quia video ad formandum hominis sermonem necessarium quoque esse ejusdem anhelitum; jam porro indagare lubet, quomodo ille sese habeat, & qua ratione per eundem expiratum vox formetur.

Margin note 1: *Quomodo ille attractus in pulmone separetur; ubi simul de pulmonis natura agitur.*

M. Aer per Nares ordinaria via in hominem ingressus, odorem simul phlegmatis vel seminis—illius cerebrini secum per arteriam asperam devehit, atque hac ratione coeleste illud atque nobillissimum organon, Pulmonem nempe, intrat, cujus materia idcirco tantam habet cum vivo aethere analogiam, ut Aer per eandem nobilitatus

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commodius cum omnibus membris uniri queat: & id quidem hac ratione, ut si quid impuri cum aere attractum sit, illud in isto parenchymate permaneat, & postmodum beneficio tussis, vel via quacumque alia iterum ejici queat, quicquid vero spirituosum & subtilius est in aere maximam partem per Diaphragma in Abdomen penetret, ut exinde

VI. The tongue, driven forward with force, is also compelled backwards with force. Then it returns by natural motion to the place of rest.
VII. There is perpetual harmony in the motions of the tongue and mouth, some motions following others and vice versa.
VIII. All the motions of the tongue that combine to form one letter are expressed in its picture of figure.
IX. Although not every motion of the tongue reaches its end

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when letters are arranged to form an entire word as occurs in the formation of a single letter, nevertheless, all these motions always remain expressed in the picture of the letter (with no diminution of its shape) because the image is of the entire act of expressing this letter, and the tongue, naturally inclined toward the completion of this movement, is drawn into agreement with the following letter.

The Fourth Conversation

Concerning human breathing and how this contributes to the formation of the human voice and speech.

Margin note 1: *How breath is distributed through the lungs, and the nature of the lungs.*

H. Since I see that breathing is necessary for the formation of speech, I would now like to inquire how it operates and how the voice is formed by the exhalation of breath.

M. Air, having entered the nostrils in the ordinary way, carries the odor of the phlegm and the cerebral semen into the wind pipe, and in this manner it enters that celestial, most noble organ, the lungs, the substance of which is so much like the living ether that the air

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is easily united with all the limbs of the body in such a way that if any impurity is inhaled along with the air, it remains in the lining of the lungs and can later be expelled by coughing or some other way. Indeed, whatever is more subtle and spiritual in the air mostly penetrates through the diaphragm into the abdomen so that it can circulate throughout

per totom hominem circulari queat. Quod enim non totus ille crassus Aer omnino per Pulmones penetret, judicari potest e pulmonibus Bestiarum, qui aquis imposti iisdem innatant, nec aquam intra sese admittunt; tantamque in externis partibus habent firmitatem, ut aer per arteriam asperam inflatus non penetret, sed eosdem tumefaciat atque elevet. Quod porro pars aeris spirituosior ex iisdem in animante vivo penetret, in sectione viva Canum manifestum est, ubi dissecto uno impetu Diaphragmate ex cavo pectoris sensibiliter prorumpit spiritus. Tandem vero, quod spirituosa haec substantia per Diaphragma in Abdomen rapiatur, non tantum in illis apparet, qui Tympanite laborant, in quibus impedita ob quamcunque causam circulatione Aeris, Abdomen ab intrante continuo aere distenditur; sed in equis quoque qui Asthmatis malo

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infestantur, quibus, cum attractus nimia quantitate Aer debito ordine distribui nequeat, adhibito cauterio perforatur intestinum rectum, ex quo foramine superfluum illud Aeris tanto impetu prorumpit, ut quam diu in motu est Equus, fistulae sonum indefinenter efficiat.

Margin note 2: *Quomodo idem in abdomen versus umbilicum velut centrum totius hominis penetret.*

H. Qua ratione autem fieri potest, ut Aer ex pulmonibis in Abdomen, & ita per totum corpus sese insinuet?

M. Si quis, cui debita proportione ordinatum est corpus, deposita veste super extenso fune, brachiis ultra caput protensis supino situ libratus sentrum gravitatis suae quaerat, illud alibi non inveniet, quam in ipso corporis medio sub umbilico, qui medium quoque abdominis locum occupat; quique in utero materno medium est, hominem non tantum suae matri alligandi, sed & vivo attracti aeris spiritu recreandi, imo unde tanquam ex centro vitae tota hominis initium habet efformatio. Idem parebit, si quis nudato corpore brachiisque in abdomine collocatis in terra jaceat extensus, eodemque situ surgere velit; tum enim aeque pedes ipsi erunt elevandi ac caput, propter hoc ipsum in medio aequilibrium, in abdomine nimirum constitutum; ubi virtuti quoque seminali atque plasticae locus est; atque hoc non jacentis tantum, sed & stantis atque ambulantis hominis est medium.

Margin note 3: *Atque exinde pertotum hominis corpus feratur.*

the entire body. We can see from the lungs of animals who swim that dense air does not entirely penetrate through the lungs since when they are immersed in water, the lungs do not let in water. And animals have such solidity in their external parts that air blown into them does not penetrate their windpipe but makes them swell and rise to the surface. That the more spiritual part of the air penetrates into living animals is demonstrated by the vivisection of dogs, when air perceptibly rushes out from the chest cavity after the diaphragm has been cut with one incision.[84] Finally, indeed, that this spiritual substance is taken from the diaphragm into the abdomen is apparent not only in those who suffer from dropsy, whose abdomens swell from incoming air because the circulation of air is impeded, but also in horses afflicted with asthma,

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who cannot properly distribute the air they breath in too copiously. The excess air rushes out through a cauterized opening in their fundament with such great force that it produces a constant whistling as long as the horse is moving.

Margin note 2: *How the air drawn into the abdomen towards the navel penetrates to the center of the entire human being.*

H. How does the air go from the lungs and permeate the abdomen and entire body?

M. If a well proportioned man, lying naked on the floor on a stretched out cord and balanced on his back with his arms stretched above his head, seeks his center of gravity, he will find it nowhere else than in the middle of his body under his navel, which is also the middle of the abdomen. And the umbilical cord is in the middle of the mother's uterus not only for the purpose of binding the child to his mother but also for sustaining him with the living spirit of inhaled breath. Indeed, the entire formation of man arises there as if from the center of life. The same thing appears if a naked man, lying on the ground with his arms folded on his abdomen, wishes to get up from this position. For then his feet and head must lift up at the same time on account of the equilibrium established in the middle of the abdomen.

Margin note 3: *How air permeates the entire human body.*

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Illud igitur, naturae medium, abdomen scilicet humanum, ad modum follis motum suum naturalem exerit, partemque aeris subtiliorem e pulmonibus per diaphragma, tanquam expansum in parvo isthoc mundo Firmamentum, quod in viventibus sicut interna omnia undiquaque est permeabile, in sese attrahit; illamque cum aethere tanquam luce diurna, & frigore Lunari tanquam nocturna luce confestim per totum corpus distribuit;

Margin note 4: *Tandem vi occultae cujusdam circulationis in abdomen.*

quibus postmodum vitaliter circulatis, cumque omnibus humani corporis partibus communicatis, seminalis ille Aer cum gloria atque veluti triumphans in Abdomen revertitur; ubi primo praecipuae ejus vires maximam partem iterum cum novo Aere, qui nimirum rursus est nobilitandus, uniuntur; ut hoc modo omnia hominis membra non tantum intrinsecus suum accipiant alimentum, sed apta quoque reddantur ab extra simile quid in sese recipiendi (omnia enim membra externa, sicut communem aliquem halitum expirant, ita vicissim inspirando, externum aerem in sese assumunt.)

Margin note 5: *Ex parte in pulmones redeat ad exhalationem & vocem formandam.*

Deinceps autem, quod residuum est ad superiora

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redux per coelestem pulmonum essentiam regreditur, ut nempe vivum illud non saltem cordis, sed totius microcosmi semen congrue disseminare queat, per divinam vocis humanae harmoniam.

Margin note 6: *Probatur, quod ille anhelitus per totum corpus penetret.*

H. Quomodo probari poterit, quod anhelitus hominis in pedes usque, adeoque per totum omnino corpus penetret?

M. Id inter alia ex hoc probatur, quod, qui brachiis pedibusve suis vim aliquam exercere, roburque suum ostendere voluerit, continere cogatur anhelitum, nisi frustra anniti velit. E contrario enim, qui nimium clamando nimium e se diffundit spiritum, omnibus subito membris admodum debilitari solet; quemadmodum in iis apparet, qui a carnifice torminibus subjiciuntur, qui si clamore nimio dolores illos exquisitos testentur paulatim ita lassescunt, ut mox omnia confiteantur. Hinc

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The middle of man is also the place where the seminal and reproductive powers are located. And this is not only the case for a man lying down but also for one standing and walking. Therefore, the center of nature, namely the human abdomen, draws into itself like a bellows the most subtle part of the air from the lungs into the diaphragm (like the stretched out firmament of this little world), which everywhere permeates all the internal organs of living men. The diaphragm distributes air along with ether (just like daylight) and air with lunar coldness (just like night light) quickly throughout the whole body.

Margin note 4: *The hidden circulation in the abdomen.*

After all this has been circulated and communicated vitally to every part of the human body, the seminal air returns in triumph and glory to the abdomen, where most of these outstanding forces are united with new air in order to ennoble it. Thus, in this way every human limb not only receives nourishment from within but returns fit nourishment from what they have received externally. (For external limbs, just as they exhale some ordinary breath, take in external air by breathing.)

Margin note 5: *A part of the air returns to the lungs in order to shape the breath and the voice.*

Then, however, whatever remains

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returns through the celestial essence of the lungs so that it can suitably disseminate not only the vitality of the heart but also the seed of the whole macrocosm through the divine harmony of the human voice.

Margin note 6: *It is proved that the breath penetrates the whole body.*

H. How can you prove that the breath of man penetrates the whole body down to the feet?

M. Among other things, I prove it by this, that whenever someone wishes to show off his strength and exert his arms and legs, he must hold his breath; otherwise he strives in vain. On the contrary, whoever loses his breath by screaming too much suddenly becomes weak in all his limbs. This appears in those subject to physical torture, who, if they betray their pain by too much screaming gradually grow tired and

& fieri solet, ut quae in partu laborant foeminae, nisi summa urgeat necessitas a clamore absterreantur, ne virtus illa ad ultimum conatum necessaria ante tempus evanescat. Imo hinc ratio quoque dari potest, quare qui multum oscitant mox debliores atque graviores fiant.

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Margin note 7: *Quod omnia membra aliquam illius partem invisibiliter expirent:*

H. Quomodo probatur, omnia externa membra aliquid exspirare?

M. Istud si non aliunde, saltem exinde pateret, quod omnis homo de sese quendam spiret odorem, quamquam alius alio graviorem, & id quidem ex omnibus a capite membris usque ad pedes; Deinde notum quoque est singulas vestium nostrarum partes ab usu paululum continuo solere maculari.

Margin note 8: *Ejusque loco aliud quid ab extra ad se attrahant.*

H. Quomodo porro probatur omnia membra externa insimul ab extra in sese recipere?

M. Primo, si externo quidam hominis membro venenum affricetur, manifestum erit, illud, si tantillo saltem vigore polleat, per totum hominem penetraturum esse usque ad ipsius vitae sedem. Deinde, si cui extrinsecus Balsamum inungas fragrantissimum, omnia quoque ab intra in homine viscera refocillari deprehenduntur, idque etiam si vel capilli saltem humani muncti fuerint.

Margin note 9: *Ne capillis quidem exclusis; de quarum natura non inutili digressione aliquid disseritur.*

H. Qua ratione per nudos capillos tale quid fieri potest, & quaenam exinde vel per illos in hominem fieret influentia?

M. Quamvis ista tam proprie huc non spectare videantur, incidenter tamen ad illa respondeo, atque monebo, Capillos hominis tam viles & abjectos

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non esse, quantum quidem videntur atque habentur vulgo. Quare enim, si id esset, tot tamque vehementes in hominibus ideae per illos & in illis hominibus ideae per illos & in illis potissimum sese exsererent? quando nempe plebeji potissimum qui decoris parum sunt studiosi, si quaedam

soon confess everything. It frequently happens that women in labor are deterred from screaming, unless from extreme necessity, lest they lose the strength necessary for the final push. This is the reason why those who yawn too much soon become weak and heavy.

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Margin note 7: *That every limb invisibly breathes out something.*

H. How can you prove that every external limb breaths out something?

M. The evidence for this is that every man exudes a certain odor, although some more strongly than others, and, indeed, this comes from every limb from head to foot. Furthermore, one notices that every bit of our clothing is continually stained from constant use.

Margin note 8: *In return the limbs draw something within from without.*

H. How can you prove that all the external limbs receive something from within at the same time as from without?

M. First, if a poison is applied to an external limb of a man, and he stirs the least bit, it will penetrate through his entire body and even to the seat of life itself. Second, if you spread some fragrant balm on someone, then all the internal organs are perceptibly revived. This occurs even if only the hair is anointed.

Margin note 9: *A useful digression concerning the nature of human hair.*

H. How can such a thing happen solely through the hair, and what influence does the hair have on men?

M. Although the hair does not appear to be strictly relevant here, nevertheless I will answer and warn that human hair is not as worthless and

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insignificant as commonly thought. For, if it were, then why do so many powerful ideas arise in men through their hair? If common people, who are not the least bit concerned with decorum, are full of sadness and worry, they usually grab their hair and scratch their heads, while others, filled with grief and grim anxiety, yank and pull out their hair. The hair of those filled with horror and amazement stands on end;

moeroris idea eos adimpleat, manibus capillos praecipue petunt, caputque scalpunt; quando alii, quos idea doloris, atque tristioris anxietatis replevit, capillos vellunt atque evellunt; quando iis, quos stupor atque horror invasit, capilli obrigescunt, juxta illud: Obstupui, steteruntque comae, & vox faucibus haesit: quando Idea timoris in iis, qui mortem immoderatius metuunt, capillos una nocte facit canos, & similia. Unde concludendum potius, perfectius aliud ibidem occcultari. Et certe, si quis Analogiam majoris mundi atque minoris paulo accuratius intuebitur, mirum omnino erit, nisi inter multas alias & hanc inventurus est similitudinem, quod sicut in illo id, quod summum nobis apparet, stellae sunt, ita in hoc idem sint capilli; unde nescio an non putandum sit, ita, ut illis sua virtus atque influentia, vicissim & his aliquid simile tribuendum esse. Non enim frustra scriptum esse videtur, quod ille, cui alibi tribuitur, quod numeret

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stellas, capillos quoque capitis nostri numeravit; quemadmodum nec mysterio caret, quod Samson cum capillis suis robur suum & perdidisse & recepisse dicitur. Unde forte factum est, ut in Italia illis, qui torquendi sunt eo torturae genere, quod la Veglia dicitur, si illos pertinaces fore suspicio est, capilli omnes abradantur. Deinde Cervi quoque quamprimum Cornua eorum debitam incrementi perfectionem attigerunt, naturali libidinis aestu fervere incipiunt, eademque cornua, si cum tenera adhuc existunt & mollia inter cibos assumuntur, foecunditatem hominum non parum promovent. Ista autem analogice capillis nostris correspondent, unde post diuturniorem paulo decoctionem idem ex ambobus provenit gluten & eadem gelatina. Atque hic de aliorum quoque brutorum cornibus atque ungulis aliquid dici posset, quibus cum capillis humanis major intercedit cognatio, ob parilem nempe durationem; cui accedit, quod in confectione olei & excoctione glutinis unus utrinque odor atque sapor percipiatur. De istis autem atque similibus observationibus, nec locus nec tempus plura loqui permittunt.

Margin note 10: *Probatur, quod beneficio anhelitus omnium membrorum virtutes omnibus membris indivisim communicentur.*

H. Nunc quoque probandum erit, quod singula membra anhelitus beneficio

it sticks up, and their voice stops in their throats. The hair of those who fear death excessively turns white in the space of one night. So, we should conclude that something special is concealed in the hair. If, indeed, someone looks closely at the analogy of the greater and lesser worlds, he will utterly marvel, unless he has already discovered this correspondence among many others, that just as the stars appear to us to be the highest thing in the macrocosm, so does the hair appear in the microcosm. Just as the stars have their own power and influence, I think something similar should be granted to the hair. For it is not written in vain that he who is said to have numbered the

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stars should also have numbered the hair on our heads.[85] It is also no mystery that Samson gained and lost his strength through his hair. And it is a fact that in Italy those who are about to be tortured on the rack are completely shaved if they are considered stubborn. Additionally, as soon as the antlers of deer have achieved their full growth, they begin to rage with the natural heat of lust, and if these same horns, while still tender and soft, are mixed with food, they greatly promote human fertility.[86] Moreover, by analogy, these antlers correspond to our hair, from both of which arises a glutinous and gelatinous substance after they have been cooked for a day. And something could be said here concerning the horns and hooves of other beasts, which share great similarity with human hair, in respect to their longevity. For one perceives the same odor and taste when they have been processed into oil and gluten. But time and place do not allow me to speak more about these and similar matters.

Margin note 10: *Proof that by means of the breath the powers of all the limbs are indivisibly communicated to one another.*

H. Now, shouldn't it also be proved that through the breath

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de viribus singulorum membrorum participent?

M. Id probatur inde. Quia Aer iste spirituosus uniformes homini virtutes, motumque vitalem vere harmonice tribuit unde perpetua in omnibus membrorum actibus consonantia oritur; & si alicubi vis facienda est, una per omnes artus ex coagmentato illuminante hoc spiritu existit operatio, quam ubique quasi totam deprehendere licet, in omnibus partibus, sicut in toto tota est.

Exemplum ejus virtutis, ideificam atque elaboratricem dicere licet, tunc occurrit, cum sola manus ideam aliquam toti foeminae essentiae impressam effective communicare potest foetui in illa corporis ejus parte, quam manus ista in corpore proprio tetigerat: tum enim pregnans illa mater ideam conscupientiae vel terroris sui non primario sentit manui suae imprimi, & manus illa tamen particeps illius facta & quidem totius, eandem speficare potest.

H. Quomodo probari potest, Hominem Lunaris quoque luminis ejusve influentiae fieri participem?

Margin note 11: *Ostenditur, quid hoc loco conferat lumen Lunare, & quomodo id probari queat.*

M. Primo negari nequit, externam hominis constitutionem magna ex parte originem traxisse ex sanguine lunari menstruo, unde sequitur, eundem cum accidentaliter saltem immutatum

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esse fatendum est, ad sui incrementum atque conservationem lunari quoque influxu opus habere, ut postmodum in homine magis magisque nobilitatus Solaris tandem naturae fieri queat: quem scopum e contrario assequi non poterit, si quis continuatis imaginationibus nimium sese applicet atque alliget quasi Lunari illi naturae; hoc ipso enim gloriosam illam immutationem omnino impedit, unde insipiens factus, non nisi Lunatica tandem influentia gubernatur. Deinde irrefragabilis saepe docuit experientia, homines quosdam inveniri, quibus cogitationes suae quotannis eodem tempore, quo Luna ad idem coeli punctum accedit, recurrant, eodem penitus ordine, quo antea: id quod aliqui singulis mensibus; & alii iterum quietiores per singulas Lunae quadratataturas persentiscunt. Nisi igitur Homo Lunari illo Lumine ejusque influentia quadantenus gubernaretur, unde quaeso talis Idearum circulatio procederet? aut quaenam virtus alia easdem juxta Lunae cursum dirigeret, statisque temporibus, ad eas tandem perficiendas, reduceret?

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each limb shares the strength of all the others?

M. It is proved in this way. The inhaled air bestows on men its powers and its vital motions in a uniform and harmonious manner, and because of this there is a perpetual agreement among all the actions of the limbs. And if force is anywhere required, it comes from the operation of the vital breath joined together through all the limbs. This breath can be perceived everywhere in every part as a whole, just as the whole is in every part. We can obtain an idea and illustration of this power through the following example: the hand of a woman, all by itself, can effectively communicate to her fetus a certain idea impressed on the same part of its body that the mother has touched on her own body. For that pregnant mother can perceive an idea of desire or dread that while not primarily impressed on her hand, yet because her hand shares in her whole body, it is able to express that idea.

Margin note 11: *The influence of the lunar light is demonstrated and proved.*

H. How can you prove that men share in the lunar light and its influence?

M. First, it cannot be denied that the external constitution of man has drawn its origin in great part from the menstrual blood of the moon. Thus, it follows that this lunar blood, although

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subject to chance and change, must make use of lunar influence for the growth and preservation of the body so that afterwards the nobility of the solar nature can become increasingly apparent in man. On the contrary, this goal cannot be attained if someone devotes himself continually to his imagination and binds himself to that lunar nature. For by doing so, he will completely obstruct that glorious and unchangeable part of himself, and thus become foolish and finally be ruled solely by lunar influences. Incontrovertible evidence teaches that there are certain men whose thoughts return when the moon is full in exactly the same manner as before. Some men experience this every month, whereas others experience it more calmly once a week. Unless a man is governed to some extent by lunar light and its influence, where, I ask, could such a circulation of ideas come from? For, what other power could direct these thoughts according to the course of the moon and finally bring them to perfection at certain established times?

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Colloquium Quintum

De Viva Vocis humanae Virtute, ejusque tam origine quam effectis.

H. Cum hactenus aliqua saltem attigerimus de natura loquelae atque vocis praeliminaria, jam porro vox ipsa sese nobis offert; in qua saepe mihi visus sum invenisse aliquid, quod ejus dependentiam a femine nostro arguat: Daturne igitur fortassis aliqua & hujus materiae circulatio, unde aliqua ejusdem in vocem influentiae oriatur?

Margin note 1: *Quod hac deficiente sermo quoque debito vigore careat.*

M. Sic omnino videtur. Vox enim infantis atque pueri quantum quaeso differt a voce Adolescentis, quem ob majorem in ipso virtutis plasticae perfectionem pubuisse dicimus? Et hic praecipue notandum, quod in infantulis tenerioribus nulla adhuc inveniatur gutturis asperitas, quae multum contribuit ad veram literae caninae pronunciationem; unde si talis puelulus cogatur ad istam literae *R* prolationem, eundem pallescere, & saepe in morbum incidere videmus: haec enim litera a perfectiori virtute seminali admodum dependet, unde nec castrati ad vivum illam exprimere

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queunt. Cum igitur puber, dici potest homo, vox ejus immutatur, quod nempe de vi illa seminali participet; & contra, vigore suo iterum privatur eadem, quia sublato semine, ejusdem quoque influxum cessare oportet. Et tum omnia simul hominis membra notabiliter immutantur atque decrescunt, nec unquam procrescere potest in tali homine barba. Ubi enim non est virtus prolifica, ibi non potest esse proles; & ubi non est perfectio materiae, ibi non est perfectio corporis, unde nec perfectio vocis.

Margin note 2: *Quomodo loquela aliquando in homine deficiat, & quam notabilia tum concurrant accidentalia.*

Atque hic non possum non facere mentionem cujusdam rei, quae non adeo communiter observari solet. Si quis nimium de rebus profundioribus loquendo vim sibi intulerit, atque adeo valde fuerit defatigatus, fieri quandoque quam facillime solet, ut ille in aliquot dies loquelae usum

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Fifth Dialogue

Concerning the living power of the human voice and its origin and effects.

H. So far we have touched upon certain preliminary matters concerning the speech and voice. Now we come to the voice itself. I have often thought that there is something about speech that demonstrates its dependence on the semen. Isn't it therefore likely that the circulation of this material influences the voice?

Margin note 1: *With a deficiency of semen speech lacks its customary vigor.*

M. This is altogether apparent. For how, I ask, does the voice of an infant and boy differ from that of an adolescent, who has reached puberty on account of the greater perfection of his reproductive power? Here one should especially note that in younger children the opening of the throat is not fully developed, without which the snarling letter cannot be truly pronounced. Thus, if a young boy is compelled to pronounce the letter R, we often see him grown pale and sick. For this letter completely depends on the perfected power of the semen, for which reason ennuchs

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cannot fully express it. Therefore, a boy can be called a man when his voice changes because it then shares that seminal power. On the other hand, when that seminal power loses its vigor because the semen has been removed, its influence ceases. And then all the limbs of the body change and grow noticeably smaller, and such a man cannot grow a beard. For when this power diminishes, an individual cannot produce children, and when this seminal matter is not perfected, neither the body nor the voice can be perfected.

Margin note 2: *How speech sometimes fails in man and what remarkable accidents then occur.*

Here I cannot fail to mention something that is not commonly observed. If someone puts too much effort into speaking about profound matters, and if he utterly tires himself out, then it easily happens that he loses the use of his voice, even though he can still move his tongue. He then begins to develop a mild cough, which flowing down is expelled

plane deperdat, cum linguam tamen interea pro lubitu movere queat: & tum leniori quadam tussi laborare incipit, tum defluente, subdulci quodam albicante atque viscolo phlegmate, expuibili; quod facile ipsum interimere potest, nisi in tempore commoda adhibuerit remedia; in isto enim phlegmate praecipua pars humanarum virium, imo ipsius vitae, consistere deprehenditur, quae, ut in Gonorrhaea communi,

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admodum imminuitur: id quod et inde patet, quod, si beneficio quietis, silentii, & medicamenti, praesertim Balsami sulphuris optimi malum istud imminuatur, & homo vocem suam paululum recuperet, ille tamen, quotiescunque rursum de praedicto phlegmate aliquid exscreaverit, recidivam patiatur; idque donec tantundem fuerit productum atque in exscreati locum restitutum. Atque hic notandum, saporem istius Phlegmatis naturalem, similem esse sapori farinae triticae; quae, quod notabile, aqua affusa in massam tenuem glutinosam redacta, odore plane convenit cum materia seminali hominis: Et quod magis mirum videtur, si quis tali morbo affectus pane triticeo azymo vescatur, leniri sibi malum sentiet, atque imminui; cum e contrario si panem comederit fermentatum, augeri morbum sentiat, tussimque & exscreandi necessitatem ingravescere.

Margin note 3: *Digressio de Analogia Microcosmi & Macrocosmi quoad ista.*

Si igitur hoc loco aliquis ad manus reassumeret nobilissimam illam Macrocosmi atque Microcosmi analogiam, non dubium est, quin ille sit observaturus, quanta sit inter triticum verum, quod semen quasi est majoris mundi, & inter triticum microcosmicum cognatio, praesertim si paulo accuratius consideraverit, quomodo

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hoc per illud augeri confortari soleat, & quomodo hoc ipsum non aliter per varias mortificatorias digestiones ex ignobiliori semper materia tandem ad suam ascendat exaltationem atque perfectionem, quam illud quoque ex ignobiliori frumento, adhibita, per varias in varios agros transplantationes, mortificatione varia, ad istud perfectioris frumenti culmen ascendere solet. Sed de his plura adjicere locus non patitur. Sufficit enim, quod ostensum sit, Vocem nostram a Virtute nostra plastica insigniter dependere, vimque suam plasticam non nisi ab hac accipere.

as a sweet-tasting, white, and viscous phlegm. This can easily kill him unless he takes suitable and timely precautions. For the principal part of human strength—indeed, of life itself—exists in this phlegm, which in a case of gonorrhea

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is utterly diminished. And if this illness is treated with rest, silence, and medicines, especially with a balm of excellent sulfur, and the man gradually recovers his voice, nevertheless, as often as he begins again to spit out this phlegm, he will suffer a relapse until the amount of phlegm he spits out has been produced and restored. Here, it should be noted that the smell of that phlegm is like the smell of wheat flour, which, when mixed with water and reduced to a sort of glutinous mass, has a smell clearly like that of male semen. And what is even more remarkable, if anyone with such an illness eats unleavened wheat bread, he will feel a lessening and lightening of his illness. But, on the contrary, if he eats leavened bread, he may feel his illness and his need to cough and expectorate increase.

Margin note 3: *A digression concerning the analogy between the microcosm and macrocosm in respect to the matters.*

Therefore, if someone should here apply that most noble analogy between the macrocosm and the microcosm, he will undoubtedly observe how great a correspondence there is between actual wheat, which is, as it were, the semen of the greater world, and that wheat of the lesser world. This is all the more true if he considers more closely how

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the one increases and strengthens the other, and how this semen ascends from less worthy material to its final exaltation and perfection through various mortifying stages of digestion, just as wheat also ascends from less worthy grain to its height of perfection through various mortifications when it is transplanted from field to field. But this is not the place to speak further about these matters. It is enough to show that our voice depends significantly on our reproductive power, and that this reproductive strength comes from nothing but the semen.

H. Quomodo autem seminalis ille liquor dici potest influere in vocem hominis?

Margin note 4: *Quod istud sermonis Requisitum de tota hominis essentia participet.*

M. Id facile intelligi potest, si quis consideret, praedictam illam materiam, in qua totius hominis essentia occultatur, nisi ad actum generationis applicetur, non posse non in spiritum evanescere atque dissipari tenuissimum, cum enim novum semper ipsi incrementum accedat, nisi suo ordine, quod nimis maturuit, iterum distribuatur, quodnam in humano corpore statui posset regimen? hac autem distributionem posita, fieri non poterit, quin simul etiam vis illa

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plastica, indivisim undiquaque circulari statuatur, atque distribui.

H. Quomodo autem probatur ibidem totam hominis essentiam latere, cum certum sit solum marem ad propagationem specie non sufficere?

Margin note 5: *Demonstratur ex similitudine liberorum cum Patribus suis.*

M. Id ex eo manifestum est, quod saepe, cum in conceptu praepollet vis mascula, infans progenitus Patri suo plane sit similis, non facie saltem sed & natura atque ingenio.

Margin note 6: *Digressio de similitudine liberorum cum foeminis aliis.*

H. Quod si tale quid fiat, si Mater praegnans, Foeminam quandam (suae familiae ultimam) peramans ejusdem ideam foetui suo imprimat, ut ille in lucem editus, amatae isti plane sit similis? id quod & in Viris per imaginationem evenisse deprehensum est.

M. Hoc aliunde non provenit, quam quod omnis homo totam suam virtutem vitalem indefinenter ex sese radiando emittat, unde sequitur, eum, qui istam in sese assumat atque quasi concipit, participem quoque fieri posse totius illius; idque per solum visum.

Margin note 7: *Et inde de virtute Idearum.*

H. Poteritne Idea quaedam semel concepta, tantam habere in homine facultatem?

H. How does the seminal fluid flow into the human voice?

Margin note 4: *A requirement of speech that it share in the entire essence of man.*

M. This can be easily understood if one considers that the aforesaid semen, in which the essence of the entire human being is hidden, must vanish and dissipate into a most subtle spirit unless it is expelled in the act of generation. For, since the semen always increases, what rule can be established in the human body—because the semen matures to the highest degree—unless it is always distributed again in due order? But when the seed is not distributed through generation, then this reproductive power

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must be circulated and distributed evenly and indivisibly.

H. How can you prove that the essence of the entire man is hidden in the semen since it is certain that the male alone cannot propagate the species?

Margin note 5: *This is demonstrated from the resemblance of children to their fathers.*

M. It is clear from this, namely, because often when the male power is predominant in conception, the infant clearly resembles his father not only in looks but in nature and temperament.

Margin note 6: *A digression concerning the resemblance of children to other women.*

H. So, how does it happen, then, that if a pregnant mother adores a certain woman, the last of her family, she imprints the idea of this woman on her fetus so that when it is born, it clearly resembles that loved one? The same thing has been seen to happen in the case of men through their imagination.

M. Such a thing happens because every man radiates from himself his entire vital power without stop. It follows from this that someone who takes this power into himself and conceives, as it were, can share in that entire other person, and he can do this through sight alone.

Margin note 7: *Concerning the power of ideas.*

H. Could an idea, once conceived, have such a great effect on a man?

M. Quod non Ideae tantum illae, quae ab homine, sive per vocem, sive per totius diradiationem, emanant,

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sed & quae lapidibus aliisque similibus procedunt, miram habeant in illa, quae ipsas suscepit vita, vim, multis exemplis demonstrari potest. Si enim, verbi gratia, Equae cuidam per paucos dies Caballus pulcherrime depictus proponatur, & ita quidem, ut illius species non nisi per Aquam refracta visum ejus afficiat, tunc certe colores illi, qui tamen juxta communem loquendi morem, rebus inanimatis annumerantur, tantam in hoc animante progenerant Ideam, ut facto dienceps vero conceptu, foetus in lucem editus picturam illam exactissime referat. Atque huc quoque spectat notissima illa Patriarchae Jacobi inventio. Porro si quis ad homines perveniat, quamplurima sane exempla foeminarum reperiet, quae si maritos prioris matrimonii debite amaverint, eorumque Idea potius quam femine impraegnatae fuerint, cum ad fecundas nuptias accedunt, liberos progenerant prioribus maritis quam simillimos.

Margin note 8: *Earumque duratione.*

Atque talis Idea non statim, finita prima operatione, emoritur. Equa enim ex primo conceptu ab asino facto mulum quidem parit; conceptu etiam, & quidem adhibito equo, iterato, Equuus nascitur, sed talis, in quo manifesto insignes reperiuntur, de priori Idea Asinina, reliquiae, unde tales Equi

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a tolerantia aliisque similibus qualitatibus laudari solent. Id quod & in aliorum animantium, praesertim columbarum specie fieri videmus: ex nigro enim columbo & alba columba plerumque primo pulli excludun-tur, quorum alii plane nigri alii plane albi sunt; postmodum vero, si nigri isti cum nigris, & albi cum albis copulantur, tum demum pullos maculatos nasci apparet. Id quod etiam in arborum insitione natura quandantenus imitatur, quando ex combinatis rubris atque albicanti-bus fructibus secunda demum insitione mixtura colorum provenit. In hominibus autem talia quoque non desunt exempla: Si enim Hispanus quidam Lusitanusve senior paululum, & nigricante facie, uxorem ducat colore albicante, primo quidem, si vis foeminea praedominetur, etiam Liberi albicant, matri quippe & natura & facie similes, qui postmodom

M. Many examples demonstrate that ideas flow forth not only from a man, either through his voice or through the emanations of his entire body,

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but from stones and other similar things, and these ideas have remarkable power on whatever receives them. If, for example, a beautiful picture of a stallion is placed in front of a mare in such a way that she only sees its image reflected in water, then, those colors, which commonly speaking are considered inanimate, can produce an image in the mare so vivid that when she later conceives, she bears a foal exactly like the picture. And that remarkable stratagem of the Patriarch Jacob is relevant here. Furthermore, in the case of human beings, many examples show that if women loved their first husbands very much, they become pregnant more from the idea of them than from their semen, and when they marry a second time, they produce children who closely resemble their first husbands.

Margin note 8: *The duration of these ideas.*

And such an idea does not die immediately after it has been applied. For a mare bears a mule after she has been first impregnated by an ass. And even when she is impregnated again by a horse, she bears a foal in which are found clear signs of the idea of the previous ass. Such horses are praised for their

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endurance and similar qualities. And we see this happen in other animals, especially pigeons. When chicks from white and black pigeons are separated, some of which are clearly black and others white. But afterwards, if black pigeons mate with black and white with white pigeons, then piebald chicks are born. And this also happens in grafting trees when a mixture of colors appears from the joining together of red and white fruits in the second grafting. And many similar examples occur in human beings. For if a swarthy Spaniard or Portuguese marries a white women, indeed, at first, if the power of the woman predominates, then the children are white and similar in nature and appearance to the

tamen, quamvis cum albicantibus iterum copulati, subnigros iterum patri suo, progenerant nepotes, similes nempe ei non facie tantum, sed & ingenio: id quod aliquando in tertia demum generatione factum esse deprehensum est.

Margin note 9: *An Idea Sympathiam cum suo exemplari admittat, & quomodo illud probetur.*

H. Daturne igitur aliqua inter Ideam hominis, sive factis sive

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verbis eradiatam, & inter exemplar ejus ipsum nempe hominem, Sympathia & cognatio?

M. Si quis veras Sympathiae causas paulo accuratius inquirat, inter alia inveniet: (1) quod ea, quae aliquando vitaliter fuerunt unita, eorundemque spirituum influxu vivificata, quamvis postmodum separentur, semper tamen aliquam retineant cognationem, atque Sympathiam, sive illa ipso actu sese exerat sive minus. Unde in notissimo illo Exemplo, Nasus ille ex alio homine in alienam carnem transplantatus tum in vivo homine computruisse dicitur, cum alter ille alibi putresceret in sepulchro, ex quo facta est exsectio. Huc pertinet, quod in Belgio accidisse memini in Clerico quodam, cui ob gangraenam Chirurgus crus resecuerat; quo facto, cum in alio conclavi quidam cultello in membrum illud resectum, quod quasi pro mortuo habebatur, scinderent, agrotus cum summo dolore, sectiones omnes sentire, locumque absens offendere poterat, quo factae essent, quasi illus ipsum crus a corpore ejus nunquam fuisset separatum. Ad eum ferme modum alius quidam militia clarus, cum crus ipsius tormenti ictu ablatum muro alicui insertum esset, non prius

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sentire poterat a summis doloribus levamen, quam illud exemptum atque sepultum esset: & similia exempla infinita fere hinc inde occurrunt, ut taceam De Curis Magneticis, per unguentum armarium, lignum vulnerarium, pulverem Sympatheticum, aliaque similia factis, cum de talibus apud alios tam Italos quam caeterarum Nationum Autores prolixe agatur. 2. deprehensum est, in Natura necessario inveniri spiritum aliquem viventem, cui multae operationes Sympatheticae videntur esse adscribendae, cum illae crassioribus aliis & corporalibus loquendi modis explicari nequeant. Verbi gratia, cum in duabus Testudinibus duae chordae consonantes, non commotis intermediis aliis, sympathetice

mother. Nevertheless, if the children mate with whites, they produce dark offspring similar to their grandfather not only in appearance but in character. And this has been observed until the third generation.

Margin note 9: *Whether an idea has sympathy with its model and how this can be proved.*

H. Is there some sympathy and relationship between the idea of a man

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radiating either through his words or deeds and the man himself?

M. If anyone inquires closely into the true causes of sympathy, he will find among other things: 1) that when those things, which were formerly united and enlivened with an influx of vital spirits are later separated, they nevertheless always retain some sympathy and relationship, which emerges either in some deed or something less tangible. This is shown in the noteworthy case of a nose transplanted from one man to another, which putrefies in the living man as soon as the dead man, from whom the nose was taken, rots in his grave. In this regard, I recall what happened to a certain priest in Belgium, whose leg was amputated by a surgeon on account of gangrene. Afterwards, when in another room they cut with a knife into the amputated limb, which was considered dead, the patient could feel every cut with the greatest pain and, though absent, show the place where the cuts were made as if the leg had never been separated from his body. Almost in the same way a certain distinguished soldier, when his leg was buried in a wall after it had been blown off,

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could feel no relief from the greatest suffering until his leg was removed and buried. There are an infinite number of similar examples, so I will pass over the magnetic cure of wounds by means of the weapon salve, the wound wood, the sympathetic powder, and similar things since these have been treated at length by Italian authors and those from other nations.[87] 2) In nature there has been observed a certain living spirit, to which are ascribed many sympathetic operations that cannot be explained by more corporeal and material means. For example, when two strings on two lutes are tuned to the same pitch, they vibrate in sympathy without any intervening matter. This happens

moventur; id quod in aliis quoque instrumentis Musicis fieri certum est; item, cum florente vite vel hordeo in cellis vina atque cerevisiae mutari incipiunt, quamvis illa per mare in ea loca, ubi vineae non inveniuntur, sint perlata; & quae sunt hujus generis alia. Ex istis jam facilius fieri poterit judicium, an detur adhuc Sympathia quaedam, inter Ideam, quae sane pro re penitus immateriali non est habenda, ejusque Exemplar. Si igitur per Similia quis in rem inquirere velit, ille primo notare poterit, Naevum

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quemcunque maternum si ille de fructibus quales sunt uvae, cerasa, mora & similes, extiterit, Sympathiam semper retinere cum suis arboribus, illisque mutatis mutari: unde quadantenus concludendum videtur, quod sicut se habet idea fructus in corpore hominis ad suum exemplar nempe arborem, ita quoque se habeat idea boni vel mali in alio quodam concepta ad suum exemplar, nempe hominem illius autorem: idque tanto magis cum ibi sit Sympathia inter individuum & totam speciem, hic vero non alia requiratur, quam inter individuum & individuum. Aliud & quidem vicinius simile nobis exhibebit sequens historia: Cum Sueci in Bavaria essent, duo quidam Equites ex turma magistri cujusdam Equitum notissimi forte fortuna domum aliquam ingressi cum inventa in stramine suo foemina mortua concumbere non fuerant veriti, e quibus alter quidem non iterum comparuit, alter per mentem, & quod excedit, carro vectus turmam secutus est, ob foedissimum nempe, ex facto illo contractum morbum, qui eum quoque e vivis sustulit: totum autem corpus ejus undiquaque magnis scatebat tuberibus, ex quibus apertis, vivi prorepebant vermes ejusdem

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speciei, cum illis qui e putrescentibus demortuuis prorepere solent: unde quilibet putabat, morbum istum non aliunde traxisse originem, quam ex foemina illa mortua, in qua, cum citra abominationem vitaliter cum ejus cadavere copularetur, aliquid reliquisse putabatur inseparabiliter, in quod postmodum mors illa suum exercere potuerit imperium, quodque quamvis a corpore ejus separatum naturalem tamen Sympathiam eo ipso amittere non potuerit. Simile quid, sed sensu contrario quietores aliqui piique & meditabundi Christiani in sese deprehendunt, quod nempe talis maneat inter ipsos & excussam a se ad generationem vim spermaticam, cognatio atque Sympathia, ut in tempore quo exinde

with other musical instruments as well. Similarly, when grape vines or barley begin to flower, the wine and beer in cellars begins to turn, although that wine and beer have been transported across the sea to places where there are no vineyards. And there are other examples. From these things we can easily determine whether a certain sympathy exists between an idea, which is not completely immaterial in and of itself, and its exemplar. If, therefore, one wishes to inquire about other examples, he should first note

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that every birthmark comes from the mother, and if it looks like fruit, such as grapes, cherries, and mulberries, it always retains its sympathy with its own tree and changes as the tree changes. From this one may conclude that just as the image of the fruit exists in the body of a person according to its exemplar, namely the tree, so the idea of good and evil conceived in anyone bears a relationship to its exemplar, namely the man who originated the idea. And this is all the more so when sympathy exists between an individual and its species. But, here we need only discuss the sympathy between individuals. A similar example that is closer to home appears in the following story. When the Swedes were in Bavaria, two horsemen from the cavalry of a well-known captain happened to enter a house, where they did not fear to have intercourse with a dead woman on her straw mattress. One of them never appeared again; the other followed the cavalry for a month or more in a carriage on account of the loathsome disease he had contracted from that deed, after which he died. Indeed, his entire body erupted with huge boils, from whose openings crawled forth living worms

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like those that crawl from rotting corpses. Thus, everyone thought that his death came from that dead woman alone, with whose corpse he abominably copulated while alive. Everyone assumed that something of her remained inseparably with him so that after death she could wield her power, which although separated from her body nevertheless retained its natural sympathy with her body. Similarly, but in a different sense, certain Quietists, pious and meditating Christians, observe within themselves that such a relationship and sympathy remains

foetus in utero augetur atque formatur, semper accurate ante oculos habeant, quomodo omnes illius artus atque partes, tam internae quam externae, ne minimis quidem venulis exceptis efformentur: id quod nec iis, qui inter Judaeos Rabbini audiunt, ignotum est, qui tamen, cum ea se solos nosse putent, omnia pro summis arcanis habeant, unde & inter primas Cabbalae suae partes eam numerant, quam dicunt Cognitionem formationis hominis in utero. Simili ergo ratione Sympathia

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quoque statuenda videtur, inter spermaticam spiritualis propagationis materiam, Ideam nempe, & Efficientem ejus. Atque haec sola videtur esse causa, quod homines quidam, ardentius sese peramantes suas invicem cogitationes saepe quam exactissime scire queant, quamvis nulla extiterint signa externa, ex quibus eaedem potuissent colligi: Item quod Uxores quaedam Zelotypiae flammis exustae intentionem atque studia Maritorum suorum quandoque, non nisi dictante animo, exacte pernoscant; non ulla existente ab extra occasione tale quid suspiciandi: prout utroque in casu testis omni exceptione major est experientia etiam accuratius examinata. Quod ad sanguinem illum attinet, qui ex cadavere occisi profluit, si ad illud intersector accesserit, illum accurato cujuslibet judicio considerandum relinquo, cum similibus multis aliis, quae praecipue apud eos accurrunt sive per somnia sive multis aliis modis, qui silentio & quieti dediti a turbulentis sive negotiis sive curis non impediuntur, quo minis talia multa queant percipere.

H. An non ista pro his, qui minus sunt in similibus exercitati, crassiori aliquo exemplo, paulo clarius possint explicari?

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M. Quamvis spiritualia ista modo crasso atque palpabile non proprie & fundamentaliter declarari queant, conabor tamen, ut assumto Aeris exemplo, quo mediante (non excluso tamen lumine) omnes ideae, ne propria quidem excepta, indissolubili nexu nobis imprimuntur, res aliquanto fiat clarior. Si igitur inter nos insigne aliquod intercessisset scandalum, possetne fieri, ut ideae illae nostrae, quas tum alter alteri impressisset, in nobis possent annihilari, adeo ut ab iis utrinque liberaremur, nec quamdiu intellectus in nobis superesset, quicquam ex illis in animum nostrum recurreret? annon potius putandum est fore, ut illae in nobis semper magis magisque elaborentur?

between them and the semen expelled in the act of generation that when the fetus grows and develops in the womb, they always have before their eyes an exact image of how all the limbs and body parts, both internal and external, are shaped down to the tiniest vein. This is not unknown among the Jewish Rabbis, who since they think that they alone know these things, hold them in the highest secrecy. Thus, they reckon this as one of the most important parts of their Cabbala and call it the knowledge of the formation of man in the uterus.[88] In a similar way, sympathy

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seems to exist between the reproductive power of spiritual propagation, namely the idea, and the person who produced this idea. This is the only explanation for why certain people who love each other ardently and deeply can know each other's most intimate thoughts without external signs from which they could apprehend these thoughts. Likewise, certain wives, burning with jealousy, know exactly the intentions and passions of their husbands, even when nothing explicit is said and there is no occasion for such suspicion. Both examples, properly examined, offer proof that withstands any possible exception. I pass over many other things worthy of consideration, such as what happens to the blood of a murdered man when his murderer approaches his corpse and what happens in the dreams of calm and quiet people when they are not agitated by business affairs and anxieties that keep them from perceiving many such things.

H. Can this be more clearly explained with a more concrete example for the sake of those who are not so skilled in these matters?

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M. Although such spiritual matters cannot be thoroughly and properly clarified with crude and palpable examples, I will nevertheless attempt to make the matter clearer by taking the example of air (not to mention light), through the medium of which all ideas, without exception, are permanently impressed upon us. If some offense had occurred between you and me, would it not be possible for these ideas, which each of us has impressed upon the other, to be obliterated so that we could both be free of them without any knowledge or trace of them remaining in our minds? Or should we suppose we continue to mull over these ideas?

H. Id mihi quidem non videtur negandum; licet elaborationem illam nondum recte intelligam. Sed id mihi videtur dubium, an haec fieri possint nobis procul ab invicem separatis.

Margin note 10: *De medio hanc Sympathiam conservante & promovente.*

M. Poteritne talis aliqua separatio concipi esse possibilis, ut non connectens utrumque Testis aliquis utrique praesens maneat, cujus corpus nulla disjungi vel separari possit distantia?

H. Hunc testem necesse esset, ut viderem atque cognoscerem, antequam aliquid hic vel affirmare vel negare possem.

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M. Quid si igitur intellectu tuo eundem videres atque cognosceres, nunquid istud tibi sufficeret?

H. De hoc quidem nullum est dubium, cum proprie loquendo cognitio nulla detur alia, quam quae Intellectu sit.

M. Cum igitur nemo negare queat, quod Ineffabilis Deus noster, ex infinito Amore, sapientiaque & potentia immensa, creaturas suas ita constituerit, ut singulae suum assequi possint finem ad quem creatae sunt; hinc certum omnino videtur esse consequens, quod illae non possint esse entia quasi mortua, adeoque rigida atque insensata, sed vitam quandam in sese habeant, penetrandi atque movendi facultate praeditam. Quemadmodem ergo actiones nostrae dum adhuc in utero vivimus materno non omnino latent matrem nostram, quis dicere audeat, easdem cum adolevimus latere Matrem istam magnam, Naturam nimirum Universi?

H. Hoc certum est omnino, quod matres aegrotent, & contristentur, cum embryones male se habent sive circa incrementum sive circa partum: & e contrario gaudeant, si bene se habere infantulum suum per omnia senserint. Quod autem ad vitam

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Naturae attinet, de illa ulteriorem desiderio informationem.

M. Poteritne igitur aliquis concipere, Aerem cujus essentia vere nobilem, penetrantem atque activam ubique sese ostendit, absque omni ordine in turpissima confusione consistere?

H. Istud ego quidem non dixero; cum sciam in illum & per illum tot virtutes caelorum in nos influere, in illo quoque Terram cum Aquis &

H. I cannot deny this, yet I still don't really understand how this occurs. But I am doubtful if these things can happen when we are far apart from each other.

Margin note 10: *How this sympathy is promoted and conserved.*

M. Do you think there can be such a separation that no binding witness shall remain between the two, yet the body of one cannot be divided or separated from the other by any distance?

H. I must see and recognize this witness before I can either affirm or deny it.

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M. What if you were able to see and recognize this witness in your mind? Would that be sufficient for you?

H. There is no doubt about it, since, properly speaking, there is no other knowledge than that of the mind.

M. Since no one can deny that our ineffable God, in his infinite love, wisdom, and immense power, made his creatures so that every single one could attain the proper end for which it was created, thus it is altogether certain that these creatures cannot be dead, inflexible, and without feeling but must have some life in themselves endowed with the faculty of penetration and movement. In the same way our actions cannot be completely hidden from our mother while we are in her womb, who dares to say that these same actions are hidden from that great mother, universal nature, as we grown up?

H. It is an undeniable fact that mothers become ill and afflicted when their fetuses are doing poorly either during their growth or birth, but, on the contrary, they rejoice if they feel that their infant is doing well in every way. But I desire further information about how this

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applies to the life of nature.

M. Could anyone imagine that the air, which in its essence is in every respect noble, penetrating, and active, could exist without order and in the foulest confusion?

H. I would never say such a thing since I know that so many heavenly powers flow down upon us in and through the air, in which the earth, water, and all the creatures always moves in due order. Indeed, such

omnibus creaturis suis congruo semper ordine moveri; imo in interioribus ejus recessibus tam nobilem aliquam latere essentiam, ut illam non satis potuerim mirari. Si enim (prout in charta 35. videri potest,) e vitro A extrahatur per Siphonem una Aeris uncia, eaque mox in Vitrum B intrudatur, quod etiam propterea hac uncia fit gravius, fieri solet, ut si illi vitro A (in quod propter clausum epistomium C, in operculo aeneo D, interea nihil extraneum penetrare potuit) adaptetur tubulus aeneus EE, aqua repletus, cui circa F & G sua quoque sunt epistomia, atque iste inseratur vasi cuidam H, aqua itidem pleno; fieri inquam, solet, ut apertis epistomiis, nobilis illa in Aere latens Essentia, ex praedicto vase viginti duas mensuras Aquae in altum attrahat, (quantum nempe Vitrum capere poterat) donec vitrum

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illud A penitus sit repletum. Porro, si in tubo vitreo IK, qui hydrargyro primum fuerat plenus, hydrargyrum LL, (postquam, aperto inferiori tubi foramine, in aliud vasculum M. hydrargyro similiter repletum sese exonerare potuerat,) spatium reliquerit NO: (in quo nullus aer crassior sed interior saltem ejus quasi nucleus existere potest) tum fiet, ut nobilis ista essentia, quam primum tubus paululum saltem a perpendiculo inclinatus fuerit, ut in RPQ. hydrargyrum P.Q. cum impetu in altum rapiat, totumque adeo tubum impleat, ut non appareat, quo ipsa jam loco contineatur: idque fiet quotiensque experimentum fuerit reptitum. Unde facile apparet, quam nobile sit illud spirituosum, quod Deus Aeri implantavit, cum illud corpora omnia tam gravia tam facile regere atque movere queat.

M. Ex istis igitur concludendum Tibi erit, magnam illam Matrem nostram, Terram nempe, cum circumstante undiquaque Aere, per omnes suas partes sensu praeditam adeoque animatam esse.

H. Illud negare non potero, si legitime circa ordinem creationis atque conservationis versari velim.

M. Quomodo ergo possibile erit,

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ut nos, tanquam duo foetus, ejus utero adhuc contenti, ab ea separemur, licet multis millibus milliarium ab invicem discederemus? annon enim idem fieret saltem, ac si quis in lectulo suo, facie tantum conversa, uno tandem eodemque loco decumbens permanet? Non possumus enim

a noble essence lies hidden in the innermost recesses of the air that I cannot sufficiently marvel. For if (just as can be seen in figure 35) an ounce of air is extracted from glass A through a siphon, and this is pumped into glass B, which on this account will be one ounce heavier, then if a bronze tube EE is fastened to glass A (closed with a valve C and with a bronze screw D so that no extraneous air may enter), and if the bronze tube EE, filled with water and fitted with valves F and G, is inserted into vessel H, also filled with water, the result is that when the valves are opened the most noble essence hidden in the air draws up twenty-two measures of water from the aforesaid vessel, almost as much as it can hold, until

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glass A is completely full. Furthermore, if a glass tube IK [actually LK], has first been filled with quicksilver, empties itself into vessel M, similarly filled with quicksilver, then an empty space NO is left, in which no more thick air can remain but only the inner air at its core. But as soon as the tube is tipped a little from the perpendicular, the quicksilver PQ rapidly fills up the space in RPQ, and the whole tube is filled so that it is not apparent where that subtle air was located. And this happens as often as the experiment is repeated. From this it is easy to see what a noble spirit God has implanted in the air since it can so easily move and regulate all heavy bodies.

M. From this you must conclude that our great mother, namely the earth, is surrounded by air on all sides and is animated and endowed with feeling in all its parts.

H. This cannot be denied if one wishes to contemplate properly the order of creation and its maintenance.

M. How is it possible that

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we, like two fetuses contained in the uterus of that great mother, can be separated from her, even if we are many thousands of miles apart from each other? Isn't it just like someone who lies in his bed with his face turned aside, yet he still remains in the same place. For although separate, we cannot be deprived of that life which unites everything,

quamvis separari, vita ejus carere, qua uniuntur omnia, unde nec Sympathia carebimus: aeque ac foetus in utero carere non potest vita materna, quae pari ratione in geminis principium Sympathiae est.

Margin note 11: *Regressus ad vivam hominis vocem.*

H. Jam cum post longam hanc digressionem ad vocem hominis redeundum sit, per quam tam efficaciter quam plurimae propagantur ideae, id concludo: quod illa cum perfecta est, admiranda quadam vitali atque penetrantissima polleat virtute. Ubi quidem alia adhuc occurrit quaestio, annon Vox aliqua tam viva tamque potens, praedita esse possit, facultate sedandi atque mitigandi omnes violentas animi passiones?

Margin note 12: *Quomodo illa affectus vehementiores mitigare queat.*

M. Id quidem non videtur negari posse: si illa modo prudenter atque modeste adhibeatur, atque natura & idea propositi affectus debite concipiatur atque intelligatur. Si enim quondam inventa sunt exempla eorum, qui Musices instrumentalis beneficio

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animum hominis variis modis lenire atque movere potuerunt: quanto magis vox humana, si ea moderante prudentia e vivo prorumpat spiritu, virtutem habebit non ea tantum, sed longe majora afficiendi. De modo autem procedendi in talibus, ob brevitatis studium, nihil hoc loco dici potest.

Margin note 13: *Et qua ratione a simulata fictaque voce discerni possit.*

H. Quomodo autem vox vera atque genuina discerni commode potest a fictitia atque hypocritica; & ea qua mendaces utuntur.

M. Ad istud non magno opus est artificio: vulgaris enim quilibet mendax, facillime sese prodit per aliquot haesitationes, aliosque quosdam gestus, qui in ipso coacti semper sunt, nec naturales: si quis audacior est, ille beneficio paucarum quaestionum, ex improviso ipsi propositarum facile deprehendi potest: qui politici sunt, naturamque vivae veraeque vocis omni conatu imitari student, eos, vel tormentes quasi atque obscuri eorum oculi, quibus nullum omnino lumen inesse videtur; vel oculi alterius generis, quos vere nequam appellare licet; vel denique signa quaedam alia minora produnt, quae a candidis si paulo sint prudentiores facile, ab aliis difficilius observari possunt. Veritas enim coactione & violenta non indiget,

and thus we must always be in sympathy with each other. In the same way, a fetus in the uterus cannot be deprived of maternal life, which is also the source of sympathy between twins.

Margin note 11: *A return to the living voice of men.*

H. Now after this long digression, we should return to the human voice, through which so many ideas are effectively produced. Thus I conclude that when this voice has reached perfection, it possesses a most admirable, vital, and penetrating power. Another question arises, namely, whether such a vital and powerful voice is capable of soothing and calming every violent passion of the soul?

Margin note 12: *How the voice can calm the most vehement emotions.*

M. Indeed, this cannot be denied as long as the voice is used wisely and sensibly and the nature and idea of the emotion is properly perceived and understood. One can find many examples of this, like musical instruments,

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which can mollify and move the human soul in various ways. If the human voice bursts forth prudently and with a living spirit, it will not only have this power but a far greater power to produce these effects. For the sake of brevity, however, nothing more can be said about such matters here.

Margin note 13: *How can a true voice be distinguished from a false and fictitious one.*

H. How, moreover, can a true and genuine voice be easily distinguished from a fake, hypocritical, and mendacious voice?

M. This matter requires no great skill: for every common liar readily reveals himself through certain hesitations and gestures, which are always compulsive and unnatural. The bolder liar is easily caught by means of a few questions unexpectedly posed. And political liars, who strive mightily to imitate the nature of true and living voices, are betrayed either by their dead and shady eyes, which seem to lack all light, or by eyes of another sort, if they can be called that at all, or by certain lesser signs, which can be easily observed by honest people if they are shrewd but with difficulty by others. For truth does not need coercion or violence,

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sed vivam rerum ideam, prout illa ab animo concepta est, simplicissimam atque nudam exponit; cum adverso, mendacem, in quo nulla veritatis idea invenitur, sibi vim inferre opporteat, ut ex eo, quod nihil est, fingat aliquid esse; assumptis in absentis materiae locum de ipsa essentia sua quibusdam quasi particulis.

Tempus autem monere videtur, ut in viam redeamus, a qua nimium fere recessimus: utque ipsum ad manus revocemus propositum: quod in eo potissimum consistit, ut ostendamus, istam linguae vocisque nostrae naturam praeclare expressam esse in Alphabeto Hebraico.

Colloquium Sextum

In quo Ipsae Alphabeti Hebraici literae cum annexa vocalium descriptione explicantur.

H. Jam magis semper, magisque crescit meum circa haec desiderium, dum nempe post longos in istis incertitudinis fluctibus errores Portum tandem veritatis ante oculos habeo, meque in terram firmam mox descensurum esse video.

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Margin note 1: *In genere, ubi excusatio adjicitur, quod unica saltem adhibita fuerit figura.*

M. Antequam hoc fieri poterit, hic prius monenda erunt quaedam: Nempe 1. Nos ut Lectori eo citius satisfieret, una saltem usos esse figura humanis oris ad omnes omnium literarum picturas; cum tamen, si accurate omnia fieri debuissent singulae literae propriis inserendae fuissent facierum suarum schematibus, cum novis semper dimensionibus atque variationibus oris, labiorum, genarum, menti, atque juguli; iisque ubique ad vivum expressis. Sicut autem esurienti propterea non diutius negandus est cibus, quod forte ad ornatius ministranda fercula non sufficiat discorum numerus; ita rectius fore putavimus, si res ipsa cum quadam imperfectione proponeretur, quam si propter accidentalem aliquem defectum diutius lateret in tenebris.

Margin note 2: *Simulque ponitur, quosnam Autores in pronunciandis literarum Nominibus potissimum secutus sit Autor.*

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but it reveals the living idea of things just as they are conceived in the soul most simply and nakedly. On the contrary, a liar who lacks any idea of the truth must force himself to fashion something from nothing, taking certain particulars from his own mind in the absence of something real.

It is time now to return to the path from which we recently digressed and to recall our purpose, which is chiefly to demonstrate that the nature of our voice and tongue is most wonderfully expressed in the Hebrew alphabet.

The Sixth Dialogue

in which the letters of the Hebrew alphabet are explained along with a description of the vowels.

H. My desire to understand these things grows greater and greater since, after drifting for so long in the tides of uncertainty, I finally have the harbor of truth before my eyes, and I seem to be landing on firm ground.

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Margin note 1: *An explanation is offered why only one figure of the letters is adopted.*

M. Before this can happen, certain things must be pointed out, namely: 1) That in order to make things easier for the reader we have used only one diagram of the human mouth to depict all the pictures of all the letters. For, if everything were depicted accurately, then each letter would have to have its own schematic image of the face since there are always new dimensions and variations of the mouth, lips, cheeks, chin, and throat when each letter is actually pronounced. Just as food should not be withheld from a hungry person because the number of plates is not sufficient for a proper serving of each course, so we think it better to set forth these matters with some imperfection rather than to let them hide any longer in the shadows on account of some incidental defect.

Margin note 2: *What authorities the author follows in pronouncing the names of the letters.*

2. De pronunciatione Nominum, quae literis vulgo tribui solent, sciendum, nos in eadem modo Schindlerum modo Balmesium secutos esse.

Margin note 3: *Et quare interdum saltem linguarum particulae adhibeantur.*

3. In genere de omnibus figuris notandum, in earum compositione quandoque non integras linguas, sed reflectas tantum adhiberi particulas, eoque indigitari, illius motum tum saltem hac ipsa particula perfici reliquis partibus interea quiescentibus. In illa

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parte figurarum; quae mitrae limbum refert,

Marginal note 4: *Quid sibi velint figurae in mitra figurarum?*

singularum literarum diversi appositi sunt characteres, & quidem n. 1. sicubi necessarium est figurae literarum Begadchephath exhibentur, cum illae lenius sunt pronunciandae, quibus suo loco adjicitur Sin, & ob certam aliquam causam Mem finale clausum. n. 2. exhibet literas communes Assyriacas, quas quadratas dicunt, juxta Balmesium, cum variationibus quibusdam ex eodem; n. 3. exprimitur antiquum aliquod Alphabethum juxta Scripturam transitus fluvii, quod in libro quodam vetutissimo inventum esse idem Autor tradit; n. 4. depinguntur antiquae Hebraeorum literae communiores olim, prout nimirum in antiquis numismatibus reperiuntur, quae cum hodiernis Samaritanis utplurimum concordant. Ex istis illi pro lubitu cum nostris conferri poterunt, ut veritate intellecta quid in illis rectum sit quid minus, eo commodius appareat.

Margin note 5: *In specie traditur, quid observandum sit circa singulas literas.*

H. Quid autem in specie circa singulas literas observandum est?

M. Primo literarum potestas traditur; secundo earum figura exprimitur, quomodo nimirum illa e situ motuque linguae atque spiritus oriatur; tertio Nomen earum, & quantum illud ad efformationem figurae conducat,

2) In pronouncing the names commonly ascribed to the letters, we have followed sometimes Schindler[89] and sometimes Balmis.[90] 3) In general, it should be noted that sometimes the entire tongue is not always employed in shaping these letters but only the parts that are bent, and in this way we see how a particular part of the tongue moves while the other parts remain at rest.

Margin note 3: *How other parts of the tongue are employed.*

In that part

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of the diagram that depicts the brim of the hat, diverse characters of each letter are placed. In the first position are shown the figures of the letters Begadchephath [*Beth, Gimel, Daleth, Caph, Pe, Thau*] when these are pronounced softly. *Sin* also belongs in this place, and for a certain reason the closed *Mem*.

Margin note 4: *What the figures mean on the brim of the hat.*

The second position shows the common letters of the Assyrian alphabet, which are called square according to Balmis (with certain variations from him). In the third position a certain ancient alphabet in use on the other side of the river,[91] which the author claims to have found in a very old book. In the fourth position are depicted the common letters formerly used by the ancient Hebrews exactly as they are found on ancient coins, which generally agree with contemporary Samaritan characters. Anyone can compare these with ours so that having understood the truth, whatever is right or wrong will easily appear.

Margin note 5: *What should be observed about the appearance of each individual letter.*

H. What should we note about the appearance of each individual letter?

M. First, we discuss the power of the letters; second, their shape, and how they arise from the positioning and motion of the tongue and breath; third, their names, and how these names lead to the formation of their written shapes

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exponitur 3 ubi tamen liberum erit cuique de ista cognatione suum ubivis interponere judicium, cum illa non tam ad ipsam rei veritatem, quam ad ejusdem illustrationem faciat. quarto Nominis etiam Interpretatio adjicitur, & quino tandem continuata literarum connexio, juxta quam concatenato semper ordine subsequens quaecunque e praecedente, velut e matre soboles, progeneratur. Et quamvis ad singulas adjicienda fuisset significatio mystica, quae in compositione quasi vita totius sententiae esse videtur, illa tamen in brevi hac delineatione commode tradi non potuit. Si quid autem radices Hebraicas cum judicio saepe perlegere contenderit, ille procul dubio tandem inveniet, in concursu earundem Radicalium analogicam aliquam occurrere concordantiam significationis; ex qua semper magis magisque deprehendi poterit, quantum haec vel litera ad illam significationem naturaliter conferat, tandemque apparebit, in quo potissimim ejus natura consistat.

Margin note 6: *Ipsa explicatio literarum specialissima proponitur.*

H. Nunc igitur de speciali literarum explicatione sermo tandem institui posse videtur: sit ergo prima de prima litera quaestio, quaenam sit ejus potestas?

M. Hic evolvenda erit figura 1.

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qua Dux ille ac Pater reliquarum literarum omnium depictus est. Sciendum ergo literam *Aleph* initium potius sonorum omnium, quam sonum esse proprie dictum, sicut punctum initium potius quantitatis continuae quam quantitas dicendum est, & unitas initium rectius numerorum quam numerus dicitur. Efformatio ejus non in gutture vel pectore, sed ex gutture pronata in ore perficitur: eaque, cum in reliquis literis ubique compositio occurrat, simplex omnino est, nec unquam actua[li] motu destituitur, quamvis ille occultus sit admodum.

H. Quisnam autem hic linguae motus est, & quomodo exinde figura hujus literae exurgit?

M. Si ille paulo exactius consideretur, tum apparebit, ut in pictura habetur, linguam primo aliquantum extolli e quiete sua; quia autem haec litera Pater est reliquarum omnium, adeoque & pluribus opus habet perfectionibus, hinc illam per omnes Oris dimensiones moveri videmus, ut semel inchoatum sui motus circulum, debito naturalique ordine absolvat: hinc ascensus ille Lingualis continuatur ad summam

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(nevertheless, everyone is free to consider this relationship in whatever way he wishes since this has less to do with the truth itself than with the representation of the letters); fourth, the interpretation of the names; and finally, fifth, the unbroken connections between the letters, in which each follows the previous one in an orderly chain just as offspring are produced from a mother. And although the mystical significance ought to be given for each letter, since this gives life to the meaning of the combined letters, we cannot do this in such a short sketch. If anyone often and judiciously peruses the Hebrew roots, he will surely find that there is some analogy and harmony with their meanings, from which more and more can be learned about how this or that letter reveals its natural significance. And finally, the essential nature of each letter will be made clear.

Margin note 6: *A detailed explanation of each letter.*

H. Now that we have arrived at a discussion of the particular explanation of each letter, let us ask, therefore, what is the power of the first letter?

M. Now is the time to bring out diagram 1,

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which letter is the leader and the father of all the other letters. The letter *Aleph* must be regarded as the beginning of all sounds rather than a sound in itself, just as a mathematical point is the beginning of a continuous extension rather than the extension itself, and just as a unity is the beginning of numbers rather than a number in itself. The *Aleph* is not formed in the throat or the chest but emerges from the throat into the mouth. And thus, *Aleph*, when combined with other letters is altogether simple and does not lack actual motion, although that motion is completely hidden.

H. But what is the motion of the tongue here, and how does the shape of the letter arise from this?

M. If one looks a little more closely at the illustration, it will appear that the tongue is at first raised somewhat from a position of rest. Moreover, because this letter is the father of all the others and thus must necessarily have the most perfection, we see that it moves through all the dimensions of the mouth so that it completes the circle of motion just begun in its proper and natural order.[92] Then the tongue continues

usque palati altitudinem, ubi etiam cum ulterius pergere non liceat, mucronem ita adpressum

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aliquantulum dilatari videmus, unde in tota lingua & posterius & anterius curvatura quaedam exoritur: Hac violentia efficitur, ut juxta axioma 5. tota lingua violenter iterum descendat, & quidem longe infra locum quietis suae: & quia illus absque maxima oris apertura fieri nequit, juxta axioma 7, nec lingua in illo situ per naturam diu permanere queat, hinc juxta axioma 4. naturali motu iterum ascendit in locum quietis, cumque illa maxillae leniter ascendunt, cessante nimirum ut solet in fine actionis, impetu: unde etiam tandem non plane clauduntur labia. Atque ea, quae hic tam prolixe describuntur, uno ferme perficiuntur momento, nec observari queunt commode, nisi quis, quod facile fieri potest, hos motus tarde velit imitari. Inde jam configuratio literae hujus facile intelligi potest: Ascendens nimirum lingua, medium; palato affixa dextrum, & tandem ad quietem revertens, sinistrum locum occupant; situ omnia naturali: & haec configuratio juxta axioma 9. nunquam diminuitur.

H. Quare ab Antiquis haec litera appellata est *Aleph*?

M. Quia quaevis hujus vocabuli litera ad efformationem figurae suae aliquid conferre videtur. Obscurum

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enim *A* mox ab initio motus ascendente lingua percipitur, ubi prorumpens per cavum ejus halitus communiter sonum tam obscurum producere potest, qualis per vocalem *Kametz* designari solet. *Lamed* media nominis, & simul quasi Alphabeti litera in media actione aperte satis in medium prodit, cum lingua nempe ad summum elevata est: Imum E, quod [*Eta*] Graecorum sono refert, in descensu linguae ad imum oris observatur: & *Pe* lene ex naturali maxillarum ad quietem reditu, ubi lenissimo quasi statui locus relinquitur, resultat: hic enim labia tam arcte non clauduntur, ut in efformanda litera M. Fortassis Antiqui id quoque observari voluerunt, quod ultimae hujus literae potestas idoneum reddat os nostrum, ad incipiendum sequentem literam *Beth*; idque juxta ipsum

to rise up to the highest part of the palate, where it can go no further, and we see its tip flatten

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to some extent, whence a certain curvature arises in the entire tongue in the front and back. This occurs with such force that, according to axiom 5, the entire tongue descends again forcefully and settles far below its place of rest. And because this cannot happen unless the mouth opens to its widest extent (according to axiom 7), the tongue cannot remain naturally in that position for very long (according to axiom 4). Thus, once again, it naturally ascends to its place of rest. And then the jaw ascends smoothly, its motion ceasing as is customary at the end of an action, with the lips not fully closed. And these things described at such length take place almost in a single moment and cannot be easily observed unless someone wishes to imitate these motions slowly, which is easily done. From this diagram the configuration of the letter *Aleph* can easily be understood: the ascending tongue in the middle, the tongue affixed to the palate in the upper right-hand side, and finally the tongue coming back to rest on the lower left-hand side. All these things happen naturally, and this configuration (according to axiom 9) never changes.

H. Why did the ancients call this letter *Aleph*?

M. Because the name of this letter gives some notion as to how the figure is formed. For the indistinct

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A is immediately perceived with the initial raising of the tongue, when the breath bursting forth from the cavity of the mouth produces a sound as indistinct as that sound designated by the vowel *Kametz*. *Lamed* is the middle letter in the name *Aleph*, and just like the letter of the alphabet, it appears in the middle of the action of pronouncing *Aleph*, when the tongue is raised to its highest point. The lowest E, which the Greeks call *Eta*, is observed in the descent of the tongue to the lowest part of the mouth. And the soft *Pe* appears when the jaws come naturally to rest with a narrow opening left for the breath. For here the lips do not close as firmly as they did when forming the letter M. It is possible that the ancients observed from this that the power of this last letter [*Pe*] rendered the mouth suitable for forming the following letter *Beth*,

naturae ductum: atque hoc in universum de omnibus Nominum finalibus notari potest, qui quasi proprii illi sunt annuli, ex quibus catena totius ordinis atque connexionis producitur.

H. Quaenam est hujus Nominibus significatio?

M. Quidam illud per Doctrinam exponunt, eo quod ex ista litera quasi sequentes omnes addisci debeant: aliis Taurum denotat, quod Aleph

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quasi Ductor sit totius literarum gregis: Quibusdam idem sonat ac Princeps, ob similem analogiam. Est quoque aliqua ejus significatio, quae numerum millenarium respicit.

H. Quomodo tandem prima haec litera cum sequenti secunda connectitur, & quomodo haec ex illa quasi nasci dicenda est?

M. Ultimus primae literae actus constitit in leni oris conclusione, consentientibus ibi lingua atque labiis; atque tum totum Os nostrum ita conformatum est, prout ad incipiendum sequentis literae actum conformandum erat: unde non incongrue litera *Beth* primae illius foetus atque suboles dici posset.

H. Jam ad iconem 2. respicio, atque ut, ex illa, secunda litera *Beth* explicetur, peto; adeoque primum quaero, quenam sit illius Potestas?

M. Illa a pronunciatione literae B. Latinae nihil differt; estque muta ex illis, quae Labiales communiter cognominantur.

H. Quaenam hic Lingua est actio, & qua ratione ex illa figura, ejus exoritur?

M. Quando os nostrum e sua quiete ad aperturam atque motionem procedit, lingua cum maxima corporis sui parte, valide admodum palato applicatur;

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adeo, ut propterea mucro ejus antrorsum quadantenus incurvetur: cum autem hic non sit situs ejus naturalis, necesse est, ut cum impetu juxta axioma 5. celeriter iterum delabatur, ubi ex isto lapsu mucro ejus iterum paululum assurgit. Atque hinc facile est admodum figuram hujus literae addiscere: superior enim illius pars imago est linguae superius applicitae, inferior, linguam delapsam exhibet. Hic autem notandum, quod, cum Lingua tam violenter a Palato resultat, spiritus e gutture ad superiorem dentium ordinem allisus reciprocetur sub ipsam linguam,

which happens naturally. And this can be universally observed in regard to the endings of all names, which are like individual links from which the chain of the entire order and connection of letters arises.

H. What does the name of this letter signify?

M. Some scholars explain that this letter teaches how all the following letters must be learned from this one. Others see *Aleph* as a "bull," which

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leads the whole herd of letters. To certain others it stands for a "prince," through a similar analogy. It may also signify the number "one thousand."

H. How is this first letter connected to the second, and how is the second letter born, as it were, from the first?

M. The final motion made in pronouncing the first letter consists in a gentle closing of the mouth with the tongue and lips coming together. And our entire mouth is shaped so that it conforms to the initial motion in pronouncing the second letter. Thus, it is appropriate to call *Beth* the fetus and offspring of the first letter.

H. Now, I ask, how the second illustration explains the second letter *Beth*, and, furthermore, what is its power?

M. This letter differs in no way from the pronunciation of the letter B in Latin. And it is one of the silent letters commonly called labial.

H. What, then, is the action of the tongue, and how does the shape of this letter arise from it?

M. When our mouth proceeds from its place of rest and begins to open and move, the tongue, for the most part, cleaves strongly

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to the palate, so that that the tip of the tongue curves forward slightly. And since this an unnatural position, the tongue must fall swiftly back again (according to axiom 5), and having fallen, its tip rises up a little bit. From this, it is easy to discover the shape of the letter, for the upper part of the diagram shows the tongue pressing upwards and the lower part shows the tongue falling downward. It should be noted here that when the tongue rebounds forcefully from the palate, then the breath coming from the windpipe pushes against the upper teeth and rebounds back under the tongue. Hence, this letter acquires a certain harshness.

unde aliqua huic literae connascitur durities: si autem lingua, prout in Syncipite figurae numero 1. expressa est, lenius aliquantulum palato applicetur, ut mucro ejus nec illo in statu curvatura opus habeat, nec in delapsu resultantia aliqua, sonus literae aliqua ex parte mitescit, unde & raphata tum appelatur atque lenis.

H. Quam ob causam Veteres huic literae nomen *Beth* indiderunt?

M. Probabile est illos in curvatura mucronis, cum lingua palato affixa haeret, analogiam aliquam reperisse cum litera *Jod*; descensum quoque observasse videntur ulterius non fieri quam ad aperturam usque, quae requiritur

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ad formandam vocalem magnam E; tandem literam *Thau* adjecerunt, cujus ratio ut in hac ita in aliis literis non una videtur: primo enim hac ipsa quandoque applicatio partis post-mucronalis ad palatum, vel alias partes superiores, deinde quoque aliquando mucronis in descensu allisio violenta, denotari videtur, (in istis enim motibus natura literae hujus potissimum consistit) tandem non raro hac ipsa commoditas tantum ostenditur sequentem literam cum praecedente connectendi; Quae rationes hic omnes locum habere posse videntur. Vox *Beth* autem domum significat.

H. Quomodo connexio hujus literae cum subsequenti ex ipsa literae naturae deduci potest?

M. Finis actionis ejus consistit in adscensu linguae, in quo parum opus habet ut pergat, ad initia literae *Gimel*, prout quilibet facile judicare poterit.

H. In quo jam igitur consistit Potestas literae *Gimel*, & quomodo figura ejus ex linguae motu juxta iconem 3. addisci potest?

M. Hic traditur litera G, quae quidem inter mutas palatinas numeratur, aliquantulum tamen asperata est cum quadam risus analogia. Atque

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hîc lingua firmiter premitur ad superiora palati, praecipue cum robore partis postmucronalis ita tamen ut superiori parte quasi excavata ad modum canalis, ab expirato aëre cum adspirante sonitu perstringatur: quia autem pressura potissimûm sit parte postmucronali, hinc fieri solet, ut mucro ipse aliquantum profundiùs dependeat, idque incurvata paululum antrorsum parte extremâ: ubi simul quoque ex illo impetu

If, however, the tongue (as is shown in diagram 1) cleaves to the palate a little more softly so that the tip does not have to curve in that position or rebound backwards, then the sound of the letter softens somewhat and becomes gentle and mild.[93]

H. Why did the ancients call this letter *Beth*?

M. Probably because they saw in the curve of the tip of the tongue when it is fixed to the palate a certain similarity to the letter *Jod*. They also observed that the tongue descends no lower than the opening of the mouth, which is also necessary

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for forming the long vowel E. Finally, they added the letter *Tau* for different reasons than for other letters, namely to indicate: first, how the middle or upper parts of the tongue cleave to the palate; second, how the tip of the tongue sometimes strikes violently in its descent (for these are the characteristic motions of the letter *Tau*); finally, how easily the following letter connects with the preceding letter. All these reasons apply. The word *Beth* signifies a "home."

H. How can the connection of *Beth* with the following letter be determined from the nature of the letter itself?

M. The end of the action in pronouncing this letter consists in the rising of the tongue, which needs to go forward only a little in order to begin the letter *Gimel*, as anyone can easily ascertain.

H. What is the power of the letter *Gimel*, and how can its shape be deduced from the motion of the tongue (according to diagram 3)?

M. The letter G is one of the silent palatals, even though it is slightly aspirated like a partial laugh.

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Here, the tongue presses firmly against the upper palate, especially the strong part behind the tip, in such a way that the upper part of the tongue is hollowed out like a channel and struck by the exhalation of air with a whistling sound. Moreover, because pressure is chiefly applied by the part of the tongue behind the tip, the tip hangs down somewhat lower and curves forward a bit. Immediately afterwards strong pressure is applied to the back of the tongue with the midsection stretching forward so that the root of the tongue lifts up a little at the same time. Finally, when this action has been completed in the highest part of the

dorsum linguae patitur, protenso nimirum versus anteriora ventre, unde & partes radicales tantillum insimul elevantur: finitâ hac in summitate oris actione, juxta axiom. 5. descendendum est linguae ad imum usque, unde mox ascensus exoritur alius cum quadam elevatione mucronis.Hic quoque notandum, quod linguâ à palato resiliente spiritus ad summos dentes evibratus sub linguam usque repercutiatur, unde & haec litera paululum *indurescit*. Si autem actio linguae prima non sit tam violenta, ut mucro proptereà versus anteriora incurvetur, nec facto descensu rursum exugat, prout in figurae syncipite num. 1. apparet, litera *lenior* est & dicitur.

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H.Quare antiqui huic literae nomen *Gimel* imposuerunt, & quomodo hoc nomen connexionem ordinis indigitat?

M. Illi videntur respexisse ad sequentia: 1. quod dependens cum incurvatione linguae mucro figuram literae *Jod* exhibeat, atque spiritus eâdem hîc figura prodeat, prout in efformatione vocalis *Chirek* natura requirit: 2. quia delabente lingua ita disponitur Os nostrum prout disponi solet, cum quis pronunciare vult literam *M*; quod autem ad unum usque tunc descendat lingua, denotare videtur vocalis *Saegol*, quae pronunciari non potest nisi ad imum deducto ore. 3. Litera *Lamed* in figura του *Gimel* occultatur, sub protensione ventris & incurvatione dorsi linguae: atque haec Litera linguam simul in eum deducit locum, à quo fieri debet initium actionum ad sequentem literam pertinentium; quamvis illa eodem etiam deducatur, continuando ascensum ex imo, in fine literae inchoatum: unde evidens est harum literarum connexio. Ipsum Nomen designare dicitur Camelum, juxta alios retributionem; de vulgari ratione appellationis verò videri possunt alii.

H. Nunc ex icone 4. explicanda venit quartae literae Potestas atque figura.

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M. *Daleth* est litera muta, lingualis communiter dicta; potestas ejus est in sono του D. In ipsius efformatione lingua ad lingua radices dentium atque gingivarum superiorum premitur mucrone aliquantum elevato, factoque in parte anteradicali quasi angulo recto. Cumque, illa resiliente, spiritus à dentibus repercussus non nisi sub linguam refugere queat, fieri necesse est, ut hic non minus, quàm in duabus praecedentibus, duritas quaedam subnascatus; quae tamen si linguae, ut in syncipite figurae

mouth, the tongue must descend to the lowest part (according to axiom 5), from where the tip of the tongue quickly ascends to a certain height. One should also note that as the tongue rebounds from the palate, the breath, having struck the upper teeth, bounces back under the tongue. Therefore, this letter becomes a bit harsh. If, however, the initial action of the tongue is not so violent that the tip curves forward, it does not rebound again in its descent, as is shown in position number 1 on the headband. This letter is softer and is called the softer *Gimel*.

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H. Why did the ancients name this letter *Gimel*, and how does the name indicate its connection with the following letter?

M. They seem to have taken into account the following: 1) The curved tip of the tongue, hanging downwards, exhibits the figure of the letter *Jod*, and the breath exits from this figure just as nature requires in forming the vowel *Chirek*. 2) Because with the falling down of the tongue, our mouth is shaped in the way necessary to pronounce the letter M, and because, moreover, the tongue descends all the way to the bottom, it appears to signify the vowel *Saegol*, which cannot be pronounced unless the mouth is opened to its lowest part. 3) The letter *Lamed* is hidden in the shape of *Gimel* when the mid part of the tongue protrudes and the back part is curved. And this letter puts the tongue in position from to begin the action for the following letter. The tongue reaches this position when it begins to ascend from below at the end of the letter. Thus, the connection of these letters is obvious. The name *Gimel* signifies either a "camel" or, according to others, "retribution." As for the common explanation for this name, other authors can be consulted.

H. The power and shape of the fourth letter *Daleth* should now be explained (according to diagram 4)

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M. *Daleth* is a silent letter, commonly called lingual. Its power resides in the sound of D. In forming it, the tongue presses against the base of the teeth and upper gums with the tip slightly raised and the mid part of the tongue bent at a right angle. Since the breath, pushed back by the teeth as the tongue rebounds, must take refuge under the tongue, it necessarily acquires a certain harshness just as in the previous two letters. If, however, the tongue in its first motion does not have sufficient

n. 1., in actu primo, tantus non sit impetus, ut mucro proptera incurvetur, naturaliter perit; unde lenius proferri dicitur litera.

H. Quare à Priscis haec litera *Daleth* appellata est, & quomodo ex hoc nomine deducitur ordinis connexio?

M. Lingua ad palarum quasi in lineâ rectâ extensa, ob pressionis impetum his in partibus inflexionem aliquam patitur, orisque apertio tum analoga est aperturae του *Kametz*: Angularis incurvatio linguae ad formam του *Lamed* aliquâ ratione accedit; Vocalis *Sagol* ex altera oris apertura prodire posset, si illa hîc formanda esset: *Thau* autem occurrit in pressione partium linguae anteriorum; atque

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occasionem ostendit, quomodo processus fiat ad literam sequentem. Quia enim Os cum linguâ ex descensu in quietem redire necessum est, interea talis in ipso oritur partium situs, ut litera He commodè queat incipi. Nomen Daleth explicatur per Ostium.

H. Jam sequitur litera 5. cujus potestas & figura ex icone 5. quaerenda erit.

M. *He* est litera Gutturalis aspirata, quae viam suam ex aëre petit, suamque energiam exhalando ostendit. In formation ejus linguae situs est, ut figura habet; in media nempe exaltatione protensa, eaque expiratione facta, ad quietem iterum tendit, & cum aliquali oris dilatatione descendit: atque ita figura literae, ex elevatione & descensu linguae componitur.

H. Quare Priscis hîc placuit usurpare nomen *He*, & qua ratione illud dicendum est promovere connexionem hujus literae cum subsequenti?

M. Cum lingua delabitur, atque os asperitur, talis est mensura aperturae ejus, qualem requirit vocalis *Zere*. *Aleph* adjectum videtur propterea, quod cognatione specificâ huic literae sit affinis, est enim gutturale ut

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ista, & sicut influxus ejus ad omnium literarum formas requiri videtur, ita nullibi rectius quam hoc in loco accommodari potuit. Cum igitur os apertum fuit, necessum est, ut ad requiem tendens iterum claudatur; atque tum lingua quoque sensim elevatur, & idonea fit ad productionem literae sequentis. Nomen ipsum hujus literae non est nisi particula demonstrativa, idem quod Ecce, vel Haec denotans. Videtur autem in

force to bend the tip of the tongue (as shown in position one on the headband), it naturally weakens and produces a softer letter.

H. Why did the ancients call this letter *Daleth*, and how does its name indicate its connection with the following letters?

M. The tongue, extending toward the palate as if in a straight line, bends somewhat because of the pressure applied, and the mouth opens as it does for a *Kametz*. The angular curvature of the tongue resembles the shape of a *Lamed*. The vowel *Saegol* can be produced by a second opening of the mouth. Moreover, *Tau* appears in the pressing of the forepart of the tongue, and

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this prepares for pronouncing the following letter. Because the mouth and the tongue, after their descent, must return to the place of rest, it assumes a position from which the letter *He* may easily begin. The name *Daleth* signifies a "door."

H. Now comes the fifth letter, whose power and shape must be explained according to diagram 5)

M. The letter *He* is an aspirated guttural, made from air, which reveals its energy through exhalation. In forming this letter, the tongue is positioned just as in the diagram, with the midsection raised and stretched forward. And when the breath is exhaled, it returns again to rest, descending with the mouth a little bit open. Thus, the shape of the letter is formed from the rising and lowering of the tongue.

H. Why did the ancients decide to appropriate the name *He*, and how does this letter connect to the next one?

M. When the tongue descends and the mouth opens, it opens to the same extent necessary to pronounce the vowel *Zere*. *Aleph* seems to be attached because of its special affinity with this letter, for it is also a guttural

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and its presence is necessary for the formation of every letter. And so, it properly appears in this place. When, therefore, the mouth opens, it must close again when it seeks rest; and then the tongue rises perceptibly, as is suitable for producing of the next letter. The name *He* is a definite article, meaning "this" or "that." A certain mystical meaning

illâ mystica quaedam signification genrationis occultari: omnia enim animantia, fervore libidinis agitata hujus quasi literae sonum anhelando producere videntur; & propterea factum esse

Margin note 7: *Ubi inseritur, quare litera He inserta sit Nominibus Abrahae & Saraeh.*

probabile est, quod haec imposita sit nominibus Abrahami & Saraeh, & non alia, quia ex illis generari debebant multi populi.

H. Quomodo figura & potestas literae *Vav*, quae sexta est, ex icone 6. cognosci potest?

M. Vav est litera muta, & medium habet sonum inter F & W. Lingua in ipsius productione admodum exaltata est, & anterius ad modum uncini incurvatut, quia paululum versus palatum premitur; absque excessu tamen: & tum sonus ejus obscurus aliquan tum & quasi moribundus est. Leniori

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illa pressurâ remittente lingua ad quietem reddit, sed quasi debilis & admodum enervata.

H. Quare nomen *Vav* ipsi inditum est, & unde potissimum elucet ejus cum sequenti connexio?

M. Litera *Jod* analogon quid invenit in curvatura mucronis; ultimum *Vav* autem ex leni ascensu oris exculptum esse videtur, descensusque linguae sit ad talem aperti oris mensuram quam requirit vocalis *Kametz*. Nomen ipsum uncinum designat. Cum autem os apertum leniter iterum ad quietem tendit, tum partes ejus talem adipiscuntur situm, ut ex ista litera Mortis subsequens litera Resurrectionis commodè nasci queat.

H. Cùm ex prolixiori ista praecedentium literarum descriptione facilè appareat, quomodo Natura in formatione sanctorum horum characterum colluserit; in posterum contentus ero, si omnia brevius tantum proponantur: Ad septimam igitur iconem conversus, de septima quoque litera paululum informari cupio.

M. *Dsain* semivocalis est ex earum numero, quae dentalis communiter dicuntur, potestas ejus in leniori sibilo, qualis est literarum ds, consistit. Lingua in conformatione ejus tremula est, inque tremore isto mucronem

concerning generation seems to be hidden in this letter, for all animals produce this sound when panting from the heat of lust.

Margin note 7: *Where it is inserted, and why the letter He was inserted in the names Abraham and Sarah.*

And for this reason it is probable that a *He*, but no other letters, was added to the names of Abraham and Sarah because many people were descended from them.

H. How can one recognize the shape and power of the letter *Vav*, which is the sixth letter, from diagram 6?

M. *Vav* is a silent letter and a sound in between F and W. In its formation the tongue lifts completely up, and the tongue curves forward like a hook because it presses against the palate a little bit, but not excessively. It has a faint sound as if dying. And once that lighter

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pressure is released, the tongue returns to rest, but weakened and utterly enervated.

H. Why does it have the name *Vav*, and how does this name throw light on its connection with the next letter?

M. The letter *Jod* resembles the tongue when the tip is curved. The final *Vav* seems to be formed from the gentle opening of the mouth. And the tongue descends as far as necessary for the open mouth to form the vowel *Kametz*. The name itself signifies a "hook." When the open mouth comes softly again to rest, then all its parts take up a position so that from this letter of death the next letter of resurrection can be easily born.

H. Since one sees easily enough from detailed descriptions of the previous letters how nature assists in the formation of these holy letters, I will be satisfied if the remaining letters are explained more briefly. Therefore, turning to diagram 7, I wish to learn a little more about the seventh letter.

M. *Dsain* is a semi-vowel among those letters called dental. Its power lies in a soft whistle, like a Ds. In its formation the tongue quivers, and in that trembling it moves very gently

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suum superioribus dentibus lenisssimè adomovet: haec omnia autem situ planè erecto fiunt, quoad partes exteriores, ut mucro etiam aliquantò profundiùs dependeat, quàm in litera *Vav*; posterior autem medietas plana in ore extensa jacet. Tremore illo allidente finito, natura monet, ut à palato atque gingiva lingua iterum descendat, ad locum quietis; unde & os iterum clauditur, & omnía majus acquirut robur beneficio quietis illius, atque hinc idonea fiunt organa, ad producendam vehementiorem illam literam Chet, quae sequitur. Prisci hîc Nomine *Dsain* usi sunt, quia hujus Nominis partes in ipsa figura istius characteris deprehendi possunt, prout pictura docet: Mucro enim linguae habet formam literae *Jod*, caput verò corpusque literae *Nun* non sunt absimilia: Apertura oris quoque hoc loco fit juxta dimensionem vocalis *Patach.* Nomen autem hoc communiter per telum vel arma exponitur.

H. Jam ad literam octavam accedo, cujus natura icone 8. explicatur.

M. *Cheth* est litera gutturalis vehmentior, quae sub formâ duplicatae aspirationis effertur crassiori anhelitu. In efformatione illius totum

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fermè corpus linguae firmiter applicatum est palato, superiori tamen facie aliquantum incurvatâ, ut exhalatus aër suam ibi aspirationem commodiùs producere queat: finito hoc actu, mucro cum impetu celeriter delabitur, & quia os hac occasione quoque apertum manet, natura, quae tandem quietem intendit, illud leniter claudit, hanc verò parum elevat, unde omnia ad inchoandam sequentem literam nomine *Cheth* appellasse videntur, quia mucro linguae similis est literae *Jod*; applicatio autem linguae ad superiora cum ejusdem descensu cum literâ *Thau* conveniunt, unde simul occasio nascitur demonstrandae connexioni. Descensus linguae aperturam oris refert juxta dimensionem vocalis *Zere*, quae media fermè est vocalium omnium. Nomen *Cheth* communiter veritur per bestiam viventem.

H. Quomodo ex icone 9. intelligi potest Natura literae nonae?

M. *Theth* est muta ex iis, quae linguales vulgò audiunt, exprimiturque per T. purissimum. Lingua hoc loco gingivae dentibusque superioribus contranititur, ore fermè immoto, unde juxta axiom. 6. retrorsum cedere cogitur, ad querendam

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toward the upper teeth. All these things happen with the tongue in an upright position so that its tip hangs down a bit lower than in the letter *Vav*. However, the back part of the tongue lies flat in the mouth. When that tremor finishes striking against the teeth, the tongue naturally descends again from the palate and gums to the place of rest; and then the mouth closes again, and all things acquire greater strength as a result of rest. The organs of speech are then ready to produce that violent letter *Chet*, which follows. The ancients called this letter *Dsain* because all the parts of the name can be recognized in the shape of the letter, as the diagram shows; for the tip of the tongue has the shape of the letter *Jod*, and its head and body are similar to the letter *Nun*. The opening of the mouth is also similar in dimension to the vowel *Patach*. The name, moreover, commonly signifies a weapon or arms.

H. Now I come to the eighth letter, whose nature is explained according to diagram 8.

M. *Chet* is a forceful guttural, which is expressed with a heavy breath in the form of a double aspirate. In its formation, almost the

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whole body of the tongue presses against the palate with a little curvature of the upper surface so that the breath can be easily exhaled. When this action is completed, the tip falls down quickly and forcefully; and because the mouth also remains open, it smoothly and naturally closes, seeking rest. The tongue is slightly elevated in preparation for the following letter. The ancients called this letter *Cheth* because the tip of the tongue is like the letter *Jod*. Moreover, the upward pressing of the tongue and its descent corresponds to the letter *Tau*. From this, the opportunity arises for demonstrating a connection with the next letter. When the tongue descends, the mouth opens with the same dimension as it does for the vowel *Zere*, which occupies a middle position in the mouth. The name *Cheth* commonly means a "living beast."

H. How can the nature of the ninth letter be understood according to diagram 9?

M. *Theth* is a mute consonant among those letters called linguals. Its sound is like a pure T. The tongue strikes against the gum and upper teeth with the mouth hardly open at all. According to axiom 6, the tongue is compelled to go backwards

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lineâ recta quietem: cum autem illa eodem in loco non inveniatur, necessum est ut lingua, naturâ ducente anteriora iterum petat, unde occasio ipsi enascitur ad inchoandam sequentem literam. Prisci in motibus istis videntur invenisse partes quasdam illius vocis, qua nomen ejus exprimitur: Dum enim antrorsum vergit lingua, litera *Jod* in ipsius mucrone apparet; & quia ad superiora dentium etiam hîc applicatur pars ejus post-mucronalis, facilè apparet; & quia ad superiora dentium etiam hîc applicatur pars ejus post-mucronalis facilè apparet quare litera *Thau* ultimo loco ajecta sit. Apertura oris ad dimensionem vocalis *Zere* quam proximè accedit. Ipsum nomen aliqui per declinationem, alii per *volvulum* explicant.

H. Jam accedimus ad iconem 10. qua explicatur natura literae decimae, quae *Jod* appellatur.

M. *Jod* est litera palatina, quae sonat ut jot consonans latinorum, cum quadam nimirum aspiratione, risui quadantenus analogâ; Atque hic tota ferè lingua in ore decumbit prona, & prima faltem sui parte erigitur versus palatum & dentium ordinem superiorem; ubi tamen aliqua quasi crena, expirantem, cum analogia sibili, transmittit anhelitum. Mucro paululum dependet, & quia

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illius ferè solius energia hîc cernitur, ideoque abscissus etiam atque à reliquo corpore solutus depictus est. Quia etiam lenissima est ejus actio, nec magno impetu ad varia rapitur, ideò, eodum in loco commoditas enascitur, sequentem literam inchoandi. Antiquis in hâc literâ placuit nomen *Jod*, quia lenis illa linguae exaltatio literam *Vav*, ejusdem verò ad anteriora applicatio literam *Daleth* repraesentare videntur: Apertura autem oris ordinaria, mensurae vocalis *Cholem* analoga est. Significatio Nominis diversa est, juxta quosdam enim *Jod* idem est ac *manus*, juxta alios, idem ac *principium.*

H. Quomodo ex icone 11. addisci potest natura literae 11?

M. *Caph* est litera muta, ex iis quae palatinae dicuntar; sonus ejus accedit ad K. Sed lenius, si cum G duriusculo conferatur, fortior est. Lingua hoc loco firmiter palato sese applicat, ideoque mucro profundius dependet; & quia vis pressionis satis est magna, necessum est, ut linguâ resultante os paulò latiùs diducatur; donec illa prono situ in loco suo quiescat. Ubi tamen notandum, quod linguâ revulsâ, spiritus ad

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in a straight line to find rest. When the tongue is no longer in that place of rest, it must naturally move forward again in order to give birth to the next letter. The ancients seemed to have discovered in these motions certain aspects of the sounds expressed in its name. For while the tongue moves forward, the letter *Jod* appears in its tip. And because the part of the tongue behind the top presses against the upper teeth, it is easy to see why the letter *Tau* appears in the final place. The mouth opens almost in the same way as for the vowel *Zere*. Some say the name means a "bending down," others a "winding."

H. Now we come to diagram 10, which explains the nature of the tenth letter, *Jod*.

M. *Jod* is a palatal letter, which sounds like a J in Latin but with some aspiration, like a half laugh. Here, the entire tongue lies completely prone in the mouth, with the forepart turned a little toward the palate and the upper teeth. And the breath is exhaled as if through a crevice in a whistle. The tip of the tongue hangs down, and because

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only its energy is perceptible, it alone is depicted, cut off from the rest of the tongue. And since its movement is gentle and rushes with great force, the next letter easily begins in the same place. The ancients called this letter *Jod* because a gentle lifting of the tongue and its pressing forward seem to represent the letters *Vav* and *Daleth*. The mouth opens in the same way as for the vowel *Cholem*. The meanings of the name are diverse. According to some, *Jod* is the same as a "hand" or "force"; according to others, it is a "beginning."

H. How can the nature of letter number 11 be ascertained from diagram 11?

M. *Caph* is an unvoiced letter among those which are called palatal. Its sound is like K, but softer. But if it is compared with a hard G, it is harsher. The tongue presses itself firmly to the palate with its tip hanging down. And because the pressure is forceful enough, the mouth must open somewhat with the tongue springing back until it flattens out and comes to rest. Nevertheless, it must be noted that when the tongue is pushed back, the breath reverberates beneath the tongue,

superiora dentium allisus reverberetur sub linguam, unde paulalum, indurescit sonus

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literae, qui lenior est, si lenior sit linguae actio, prout n. 1. in figurae nostrae syncipite apparet. His peractis Os atque lingua ut ad plenam quietem redeant paululum porrò assurgunt, & inde situs exoritur, quo litera sequens gaùdet. Antiqui huic characteri nomen *Caph* imposuerunt, quia os non ultra mensuram vocalis *Pathach* aperitur; & oris in fine actionis reclusio analoga est formationi literae *Pe*. Significatio nominis *carum* aliquod quale est *vola*, exprimere dicitur.

H. Quid ex icone 12. de litera 12. ejusque natura addisci potest?

M. *Lamed* est liquida lingualis, quae per L commune effertur. Lingua in elaboratione ejus in altum erecta palato contranititur, ut mucro ejus ob impetum figuram quasi clavatam accipiat, & quia extensio ejus adeò in longitudinem protenditur, fieri non potest, quin antè & retrò curvaturae exoriantur. Cum avulsa est lingua à palato, & deorsum prolapsa, necessum est, ut ex imo illo loco ad quietem suam resurgat, unde commoda fiunt omnia ad efformationem literae *Mem* inchoandam. Antiqui, ut videtur, diversas comopositionis hujus partes diversis literis uno nomine Lamed comprehensis

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exprimere voluerunt. Nam quia lingua delabitur & iterum rotunda quasi resurgit, analogiam literae *Mem* repraesentare videtur; *Daleth* verò ex pressura desumtum esse potest. Dimensio oris in actionis initio, vocalem *Kametz* sequitur; in fine, dum in imum usque sese extendit violentia, mensura vocalis infirmae *Saegol* expressa est. Nomen ipsum significare dicitur doctrinam, alii stylum esse volunt.

H. Quodnam est argumentum iconis 13. & quomodo ex illa litera 13. naturam indagare licet?

M. *Mem* est muta labialis: sonus ejus in recluso obscuroq; aliquo murmure consistere censendus est, & ex communi litera M facilè dignosci potest. Lingua palatum leniter attingit, prout & labia sese leniter exosculantur: inde descensus fit ad inferiora, ad quem necessariò oris apertio requiritur; sed cum nullus adeò impetus urgeat, organa mox quietem repetunt, unde congrua oritur occasio sequentem inchoandi

striking against the upper teeth. And because of this the sound of the letter hardens a bit,

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but it becomes softer if the movement of the tongue softens as appears in the first position on the headband. After this, when the mouth and the tongue return to full rest, they rise up again a bit, and thus a place appears for the enjoyment of the next letter. The ancients gave this letter the name *Caph* because the mouth opens no farther than necessary for the vowel *Patach*, and the final closing of the mouth is analogous to the formation of the letter *Pe*. The name means something "hollow" like the palm of the hand.

H. How can the nature of the twelfth letter be ascertained from diagram 12?

M. *Lamed* is a liquid lingual, commonly called L. In forming it, the tongue reaches up against the palate so that from its impetus the tip assumes the shape of a cudgel. And because the tongue is so elongated, it must curve in the front and back. When the tongue turns from the palate and falls downwards, it must rise up from the very bottom to its place of rest. Thus, everything is ready to form the beginning of the letter *Mem*. It appears that the ancients wished to express in this one name *Lamed* its diverse components through the combination of different letters.

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Because the tongue descends and rises again it makes a circle analogous to the letter *Mem*. The forward pressure of the tongue produces a *Daleth*. The shape of the mouth in the beginning of the action follows the vowel *Kametz*. Finally, as it stretches forcefully downwards, it expresses the lowest vowel *Saegol*. The name itself is said to signify "teaching"; others consider it a "pen."

H. What is the explanation of diagram 13 and what does it tell us about the nature of the thirteenth letter?

M. *Mem* is a mute labial. Its sound consists of a hollow, interior, and enclosed murmur and is easily recognized by the common letter M. The tongue touches the palate lightly and the lips kiss each other lightly. Afterwards, the tongue falls down, and at the same time the mouth opens. But since little force is exerted, the organs of the mouth soon return to rest, from which arises a suitable beginning for the next letter.

literam. Figura igitur literae hujus formatur ex assurgente paululum, descendente, & resurgente lingua. In fine vocum figura ejus immutatur, quia tunc unà cum lingua quoque mutatur oris commotio, quippe cujus finis est conclusio labiorum: prout figura illa

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videri potest n. 1. in syncipite imagunculae nostrae. Antiqui hanc literam nomine *Mem* insigniverunt, qui descensus linguae dimensionem vocalis *Zere* imitatur, & tandem os clauditur prout clausum fuerat initio. Nominis significatio diversimodè traditur, quibusdam dicitur esse macula, alii explicant, per ex ipsis, quasi sensus nascendi ibidem subintelligeretur: Et si quis aliquantò exactìus ad mysticam ejus significationem respicere velit, praesertim quatenus finalis est, ubi os nostrum spiritu & quasi semine vivo repletur, facilè animadverti posse videtur aliqua harum rerum analogia: per ipsam enim omnis multiplicatio & pluralitas indigitatur, & tum figura ejus clauditur, tanquam praegnans aliqua Mater, quae virutem sui multiplicativam utero suo firmiter inclusit.

H. Mallem, ut sepositis mysticis istis simpliciùs de natura figurarum sermo nobis esset; ideoque ex icone 14, de litera *Nun*, quae decima quarta pariter est, jam quaerere institui.

M. *Nun* est litera liquida lingualis, cujus sonum vulgare omnium linguarum N refert. In ipsius efformatione tota medietas linguae posterior quiescit, & prior saltem ad modum serpentis erecta extat: Et ista quidem contranititur superiori

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gingivae, ut mucro quasi clavatus fiat: Remittente impetu lapsum sequi necesse est, & tunc simul os aperitur; tandemque ex imo fit reditus ad medium usque oris vacuum; ubi apta sit ad inchoandum simplicem illam humilemque literam *Samech* quae sequitur. Antiqui nomen Nun adhibuisse videntur, quia tota figura linguae literae *Vav* non est absimilis, & prima oris apertio dimensionem vocalis *Schurek* non excedit; tandem quoque *Nun* finale ex ipso charactere fluit. Dictio autem ipsa significare dicitur Prolem, aliis idem est ac sempiternum.

H. Qua ratione ex icon 15. natura literae *Samech* elucet?

M. *Samech* est S. lenius, semivocalis nempe ex dentalibus sibilans. Lingua applicat sese ad gingivam superiorem, ut mucro, illius ordinis dentes contingat, ita tamen ut iidem non planè contegantur, sed per canalem quasi, in lingua expressum, anhelitu è gutture expirato leniter

The shape, therefore, of this letter is formed from the gentle rising, falling, and rising again of the tongue. Finally, the shape of the voice changes because the movement of the mouth and tongue also changes. Indeed, it ends with the closing of the lips, as can be seen

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in the first position on the headband of our diagram. The ancients distinguished this letter with the name *Mem* because the descent of the tongue imitates the form of the vowel *Zere*. Finally, the mouth closes just as it had in the beginning. The name has different meanings. Some say it is "stain;" others say that its shape expresses "birth." And if anyone wishes to look more closely at its mystical meaning, especially for the final *Mem*, when our mouth is filled with air and living seed, as it were, one can easily note a certain analogy: for through this letter every kind of multiplication and plurality is indicated. Then, the figure closes like a pregnant mother, who encloses her propagating power firmly within her womb.

H. I would prefer to discuss the basic nature of the figures rather than their hidden, mystical meanings. Therefore, I ask now about diagram 14 and the fourteenth letter, *Nun*.

M. *Nun* is a liquid lingual, whose sound is like N in all languages. In forming this letter the entire midsection of the back part of the tongue is motionless, and the front part stands erect like a snake. It presses against

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the upper gums so that the tip is like a cudgel. Then, it must fall down with its force depleted, as the mouth opens. Finally, the tongue returns from the bottom to the middle of the mouth, where it is ready to begin that simple and humble letter *Samech*, which follows. The ancients seem to have used the name *Nun* because the entire shape of the tongue is not unlike the letter *Vav*, and the first opening of the mouth is not larger than for the vowel *Schurek*. The final *Nun* flows from this figure. This word is said to signify a "child"; to others it signifies "everlasting."

H. How is the nature of the letter *Samech* shown by diagram 15?

M. *Samech* is a soft S, a semi-vocal sibilant coming through the teeth. The tongue presses itself against the upper gums so that the tip reaches the upper teeth. However, it does not fully cover them, but, like a channel, the tongue allows the breath exhaled from the throat to

feriri queant: Sicut autem debilis est saltem status iste linguae prior, ita paululum quoque illa in descensu movetur, & leniter admodum, sursum rendente mucrone, incurvatur. Et quia tum in debilitate jacet atque velut in morte, tunc commoda exoritur

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occasio sequentem formandi literam. Antiquis hoc loco nomen *Samech* placuit, quia primo motu os non ultra mensuram vocalis *Kametz* aperitur; *Mem* ob lenem ascensum & descensum adhibitum esse videtur, quanquam certum est, *Mem* finale & *Samech* figuris parùm differre. *Reliquae nominis partes* viam sternere videntur ad subsequentis literae productionem. Significatio nominis *Samech* quibusdam per adjutorium, aut fulcrum aliis per coronam exprimitur.

H. Quid tradit icon 16. de litera *Ajin* decima sexta?

M. *Ajin* est litera A gutturalis, aut pectoralis potius, prout primum A orale potissimùm est; sonus ejus est veluti aegrotantium, quibus nulla amplius in ore reliqua est virtus. Ideoque lingua tanquam infirmata in ore prona extenditur, non sine illius appertione insigniori. Finita autem, ut ita loquar aegritudine, homini spiritus atque robur restituitur, adeò, ut pars post-mucronalis, reliqua linguae medietate in situ suo relictâ, erigi queat. Atque tum paululum incurvatur mucro ejus ad formam literae *Jod* versus dentes, caeterum autem statura ejus quoad partem quam dixi anteriorem, à figura του *Nun* parùm

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differt; quod quasi novam designare vitam videtur. Vocalis *Patech* jam dictis literis in isto nomine adhibita est, quia juxta ejus dimensionem primo actu os aperitur; *Chirek* autem mensuram suam tum accommodare videtur ori, cum lingua resurgere coepit. Tandem ad quietem iterum tendentibus omnibus manifesta in organis exoritur aptitudo ad inchoationem literae *Pe* sequentis. Nomen *Ajin* fontem vel oculum significat.

H. Quomodo addisci potest natura literae 17. ex iconismo 17?

M. *Pe* est muta labialis, durissima ex illis, quae hoc nomine veniunt, potestatem ejus ex vulgari litera P. colligere possumus: & cum hac illae literae, quae sequuntur, majus acquirere robur videntur, ut propterea quasi masculo quodam & virili robore praeditae appareant, usque ad partem anteradicalem summo palato applicata sit, & ita quidem, ut anterius retrorsum sese inflectat; ubi simul labia fortius comprimuntur quam in litera B. unde quoque resultante è summitate lingua, Spiritus

strike them softly. As the first upright position of the tongue weakens, it moves downward and bends slightly with the tip stretching upwards. And because it lies weakened, as if dead,

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an opportunity arises for forming the next letter. The ancients liked the name *Samech* because the mouth, in its first motion, opens no wider than for the vowel *Kametz*. *Mem* appears to be used because of its gentle ascent and descent, although it is clear that the shape of *Mem* and the shape of *Samech* differ a little. The remaining part of the name seems to pave the way for producing the next letter. For some people *Samech* means "help" or "support," to others, a "crown."

H. What does plate 16 tell us about the sixteenth letter, *Ajin*?

M. *Ajin* is a guttural formed in the chest just as the first A is formed in the mouth. Its sound is like that of a sick person, who has no more strength left in his mouth. Therefore, the tongue stretches out weakly in the mouth, which is wide open. When the illness, as it were, has come to an end, the man regains strength and breath so that the part just behind the tip can rise up with the rest of the tongue remaining in its former position. And then the tip bends somewhat to form the letter *Jod* against the teeth. Moreover, just as I said before, its posture differs very little from the shape of the letter *Nun*,

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which is like a new life. The vowel *Patach* is used in this letter because the mouth opens at first in the same way. *Chirek* also seems to fit in the mouth when the tongue begins to rise. Finally, when everything comes to rest again, the ability to form the following letter *Pe* arises. The name *Ajin* means a "fountain" or an "eye."

H. How can the nature of the seventeenth letter be ascertained from diagram 17?

M. *Pe* is a silent labial, the harshest of all the labials. We can deduce its power from the common letter P. These letters, which follow along with *Pe* gain greater strength so that they seem endowed with a certain manly and virile force all the way to the end of the alphabet. Its shape arises when the tongue almost up to its root presses against the upper palate, and thus its tip bends downwards and backwards, and the lips are more tightly compressed than in the letter B. And as the tongue

à dentium superiorum ordine subter eandem repercutitur. Solutione à palato cum impetu facta, descensus ita per naturam

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dirigitar, ut aliquantum sit ad superiora regrediendum. Antiqui hoc loco usi sunt nomine *Pe*; quia observasse videntur descensum organorum ultra mensuram vocalis *Zere* non extendi. *Aleph* in fine actionis suo more immisceri videtur, & simul commoditatem praebet connexionis. Cum vis prima linguae tanto impetu ad summa non fertur, figura lenioris *literae* talis exoritur, qualis in syncipite iconis n. 1. expressa est. Nomen Pe latinè per *Os* redditur.

H. Jam ex iconismo 18. de natura literae *Zade*, quae decima octava est, informari cupio.

M. *Zade* est ex dentalibus, quos vocant, validissima, sono imitans literam Z vulgò satis notam. In hujus conformatione lingua valdè premit gingivas superiores atque palatum anteriùs, ad usque posteriorem ejus partem membranosam, & quia tantus in hoc conatu est impetus, fieri necessum est, ut ejus extensio in longitudinem quoque adaugeatur, adeò ut ventris pars media aliquantum deorsum versus inflectatur, & ima partium ultimarum antrorsum prominere incipiant; quibus peractis lapsus sequitur prout natura requirit. Antiqui hanc literam nomine *Zade* appellarunt,

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quia in flexura angulari invenisse videnur analogiam literae *Daleth* in curvatura mucronis literam *Jod*; apertura priori dispositionem oris juxta requisita vocalis *Kametz* mensuratam, & in fine actionum mensuram vocalis *Zere*. Aliàs significatio hujus nominis *hamum* designare dicitur; aut juxta alios justitiam. Connexio ordinis ex regressu linguae ad requiem suam resultat; promoto enim paululum ascensu natura literae *Kuph* initia sua ostendit.

H. Quaenam est illa natura literae *Kuph*, quae decima nona est, & quomodo huc facit iconismus 19?

M. *Kuph* est è mutis palatinis validissima, habetque potestatem durissimi K. Atque hîc lingua summitati oris coëxtensa palatum premit, non minus circa partem ejus posteriorem membranosam, quam anteriorem duram, mucro autem incurvatus ima oris respicit: soluto hoc conatu impetus illam deorsum reducit, & quidem ultrà quam par esset, unde

springs upwards to its height, the breath reverberates from the upper teeth under the tongue. With its force spent, the tongue naturally

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descends from the palate and afterwards rises up a bit. The ancients employed the name *Pe* because they observed that in falling the organs did not go farther than the vowel *Zere*. *Aleph* seems involved in the end of the movements and furnishes a connection to the next letter. When the force of the tongue is not carried to the full, a softer letter arises as appears in the first place on the headband. The name *Pe* in Latin signifies *os* in Latin, which is "mouth."

H. Now, I wish to be informed about the nature of the eighteenth letter *Zade* in diagram 18)

M. *Zade* is the strongest of the dentals, which in its sound imitates the letter commonly known as Z. In its configuration the tongue presses forcefully against the upper gums and the front of the palate up to its membranous part; and because this requires such great effort, it is necessary that the tongue stretch out in length so that its mid section, or belly, bends slightly downwards and the underside of the tip begins to hang downwards. Afterwards the tongue falls down as nature requires. The ancients called this letter *Zade*

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because they saw an analogy in its angularity with the letter *Daleth* and in the curve of its tip with the letter *Jod*. At first the mouth opens just as it does for the vowel *Kametz*, and it closes just like the vowel *Zere*. Some say this name signifies a "hook," others "justice." When the tongue returns to rest, it prepares the way for the next letter because as it starts to ascend it makes the beginning of *Kuph*.

H. What is the nature of the nineteenth letter, *Kuph*, and what does diagram 19 tell us about it?

M. *Kuph* is the strongest of the mute palatals, and it has the power of the harshest K. From the summit of the mouth the tongue stretches out and presses against the palate—both the membranous back part and the hard front part with the tip curved down. After this effort the tongue is forced downward more powerfully than is necessary so that it is compelled to rise up suddenly. Then everything returns to the place

subitò resurgere cogitur, & tum omnia in eum situm deveniunt, quem formatio literae sequentis requirit. Antiquis haec litera dicta est *Kuph*, quia animadvertisse videntur in regressu ex imis linguam assumere figuram literae *Vav* non disimilem, quae simul

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juxta mensura vocalis *Schurek* oris aperturam metitur; litera *Pe* autem non saltem ex primo circa superiora impetu resultat, sed & ex lenta oris conclusione. Nomen *Kuph* significare dicitur *Circulum*; aut juxta alios Vocationem.

H. Quid dici potest ex iconismo 20. de natura literae *Resch* quae vigesima est?

M. *Resch* est liquida, quae inter dentales nescio quo jure numerari solet; potestas ejus à canibus cum ringuntur, exprimitur, ad modum nempe του R. Atque tum lingua simplicter in altum sese extollit, mucrone undiquaque libero, palato tamen vicino: ille autem mucro tremorem edit insignem, & in iracundis praesertim motus ille tremulus quandoque tum sit inordinatus, ut lingua contineri nequeat, cujus posteriora tum gravia plerumque fiunt & immobilia, atque mox apoplexia sequitur. Antiquis haec litera dicta est *Resch*, non quasi hujus nominis literae aliquid ad figuram ejusdem contribuerent; illa enim simplex est admodum: sed quia vel concatenationem his ipsis indicare vellent, connotatâ simul aperitione oris, quae hic analoga est vocali *Zere*; vel aliquid mystici hîc latere augerent; Videtur enim significatio

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generationis hic iterum occurrere, ad quam cum necessaria sit vita ipsa, hujus nota hoc loco dici posset litera *Jod*, quippe quae vivum illum doloris sensum, in parturientibus praesertim, denotat: deinde cum ad generationem vir requiratur, illius nota hoc loco dici posset litera *Schin*, quae sonum viri silentium cum autoritate imperantis, refert; inque cujus figura primò *Resch*, deinde *Jod*, & tertiò *Nun* occurrit, quae sobolem denotat; huc quoque vocalis *Zere* accedit; quae est nota risus puerilis: adeoque omnia illa, ad significandam generationem, hoc nomine comprehensa videntur: sed hae conjecturae sunt. Significatio vocis *Resch* dicitur denotare *Caput*.

H. Quomodo ex iconismo 21. litera *Schin* eusque natura intelligi potest?

required for forming the next letter. The Ancients called this letter *Kuph* because they recognized that when the tongue returns from the bottom of the mouth it resembles the letter *Vav*. And the mouth opens

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as it does for the vowel *Schureck*. The letter *Pe* does not arise from the first motion but from the slow closing of the mouth. *Kuph* signifies a "circle" or, according to others, a "calling."

H. What can be said about the nature of the twentieth letter *Resch* from diagram 20?

M. For some reason, *Resch* is considered a liquid dental. Its power is expressed like the growling of dogs in the manner of an R. The tongue simply rises up with the tip standing free yet close to the palate. The tip produces a noticeable tremor, and that trembling motion becomes especially pronounced among angry people so that the tongue cannot be restrained. The back part becomes heavy and motionless, and an apoplexy soon follows. The ancients called this letter *Reseh* not because the letters of the name contributed to its shape, which is very simple, but either because they wished to indicate a connection between these letters when the mouth opens as it does for the vowel *Zere* or because they saw some hidden mystical meaning.

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Resch also signifies generation, for it is necessary for life itself. The letter *Jod* is a sign of this because it gives a living sense of the pain of childbirth. Furthermore, since strength is necessary for generation, it is signified by the letter *Schin*, which carries the sound of a silent man ruling with authority. In the figure of this letter *Resch* appears first, then *Jod*, and finally *Nun*, which signifies a "child." The vowel *Zere*, which signifies childish laughter, is also included. And everything contained in this name seems to signify generation, but these are my conjectures. The sound *Resch* is said to signify a "head."

H. How can the nature of the letter *Shin* be understood from diagram 21?

M. *Schin* est è semivocalibus fortissima, communiter dentalium numero adscripta; vis ejus mascula omninò est & virilis, cum sibilo duriori & crasso proferenda, sicut Sch. Hic autem occurrit sonus quasi triplex; primus nempe superius circa palatum, ubi spiritus sibilando per elatam eousque linguam prorumpit; Lingua autem versus gingivam inclinatur, cum quadam analogia ad literam *Jod*; exinde ad inferiorem dentium

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ordinem protrahitur, cum similitudine literae *Nun*; atque triplex ille linguae ductus, una tamen actione perficitur. Si sibilius lenior est mucro linguae non sursum sed deorsum respicit, prout in syncipite imaginis n. 1. apparet. Quia ergò actio à summis inchoata in imo cessavit, necessum est, ut organa ad quietem tendentia iterum paululum ascendant; atque inde fluit hujus literae cum sequenti ultima connexio. Antiqui hanc literam *Schin* appellarunt, quia omnes hujus vocis literae in figura ejus extant, & os nostrum in descensu aperitur juxta dimensionem vocalis *Chirek*. Nominis significatio *dentem* denotat.

H. Jam ad ultimam tandem literam accedimus, quam iconismus 22. exhibet; quid igitur de hujus natura sciendum est?

M. *Thau* est litera dentalis, potestate T. medium exprimens nimirum inter *Daleth & Theth*. Lingua hîc à partibus palati posterioribus antrorsum premit duriorem ejus potissimùm partem, & mucro, quia pressura tam fortis est, incurvatur sursum versus dentes superiores, inde summa vi instar fulminis delabitur, adeò ut ad quietem rediturae iterum ascendendum sit. In revulsione ejus spiritus ad

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dentes appulsus subter illam reverberatur, unde literae accedit aliqua *durities*, quae tamen, si actio pima sit lenior, admodum mitigatur, ut sonus literae medius quasi evadat inter S lene & T durum, & paululum durior sit S. blaeso. Unde Judaei Germani, qui medium tenere nequeunt Thau raphatum pronunciant ut S, Lusitanis quasi è diametro in hoc oppositi, quippe qui nullam planè in ejus pronunciatione observant differentiam: figura literae lenioris in syncipite imaginis n. 1. exhibetur; atque exinde cuilibet facilè erit verum controversae hujus literae sonum invenire. Antiquis haec ultima litera dicta est Thau, i.e. limes juxta quosdam; juxta alios signum, idque rectius: in isto nomine *Kametz* adhibetur, quia primus oris in formatione ista situs, mensuram illius vocalis

M. *Shin* is the strongest of the semi-vowels, commonly included among the dentals. Its power is altogether masculine and may be made with a hard and thick whistle just like Sch. It has a threefold sound. The first sound is in the upper palate when the breath breaks forth in a whistle above the tongue. But when the tongue moves toward the gums, as in the letter *Jod*, then

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it moves toward the lower teeth as in *Nun*. This threefold movement of the tongue is performed with one action. If the whistling is soft, the tip of the tongue does not go upward but downward as in the first position on the headband. Therefore, because the movement begun high up ceases low down, it is necessary that the organs of the mouth ascend slightly again to the place of rest. From here flows the final connection with the following letter *Shin* because all the letters of this sound exist in its figure, and our mouth opens as it does for the vowel *Chureck*. This names signifies a "tooth."

H. Now that we have finally come to the last letter illustrated by diagram 22, what can be known about its nature?

M. *Thau* is a dental letter with a power between that of *Daleth* and *Theth*. Here the tongue forcefully presses against the hard part of the palate, and because the pressure is so great, the tip curves toward the upper teeth. Then it forcefully plummets down like lightning so that it must seek rest by rising up again. The air

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rebounds from the teeth under the tongue, and this gives the letter its harshness. But if the first movement is softer, the sound of the letter is mitigated and emerges half way between a soft S and a hard T, but if the sound is harder, it produces a lisping S. Thus German Jews, who are not able to hit upon the middle course pronounce the *Tau* in *raphatum* like an S, while the Portuguese do the exact opposite and treat it no differently than a T.[94] The first figure of the soft letter is shown in position 1 on the headband, and from this it is easy for anyone to discover the true sound of this controversial letter. The ancients called this last letter *Thau*, i.e. a "threshold," and a "sign" according to some, which is more correct. A *Kametz* is used in this name because in its first formation the mouth exhibits the shape of this vowel. The curvature

exhibet: literae *Jod* analoga est curvatura mucronis, & quia nihil restat amplius, cum quo ista litera connectatur, mirum non est, nomen ejus finitum esse litera *Vav*, quae mortis atque quietis symbolum est. Aliàs haec litera apud omnes fermè Nationes *executionem mandati* designat; unde & ultimum nacta est locum.

Jam dicendum quoque aliquid esset de 5. literis finalibus, quae à Judaeis

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inter numerorum signa adhibentur; quam ob causam etiam inventae esse videntur: sed hoc loco studiò illas praeteribimus.

H. Jam nihil ergò restat, quàm ut Vocalium quoque natura beviter conjunctim explicetur.

Margin note 8: *De formatione Vocalium in genere, è diversa oris atque Dentium; apertione.*

M. Iconismus 34. quinque vocalium sonos exhibet juxta diversam oris nostri apertionem; quae tam necessaria est singulis, ut qui A pronunciat, eadem dimensione nullam pronunciare possit aliam: quae jam intermediae sunt, juxta proportionem soni, locum facilè inter has invenire possunt: atque tum externam oris conformationem intùs quoque lingua & spiritus imitantur. Hîc autem porrò de Vocalium Nominibus monendum est,

Margin note 9: *De Vocalium nominibus atque; figuris.*

quod de iis tanta non habeatur certitudo, quam de Nominibus Consonantium. Notum enim est, Antiquos scribendo raro aut quasi nunquam adhibuisse Puncta; unde non tantùm Pentateuchus Judaeorum, quem in hodiernum usque diem in Synagogis suis publicè legunt, punctis ubique caret, sed Antiqui quoque Interpretes Graeci nempe & Chaldaei, in versionibus suis, non-punctatis usi sunt Exemplatibus, prout illud diversitas translationum illarum à Textu Hebraeo quamplurimis in locis ostendit. Ad

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haec accedit Scriptura Hebraeorum antiquissima Samaritanorum literis exarata, quae itidem punctis caret. Qui jam antiquitatem punctorum vocalium omni studio defendunt, ulterius progredi non possunt, quàm

of the tip is like the letter *Jod*, and since there is nothing further to which this letter can be connected, it is no wonder that the name ends with a *Vav*, which symbolizes "death" or "quiet." Elsewhere, among all nations, this letter signifies the carrying out of a command. Thus, it has acquired the final position. Now we should say something about the five final letters, which the Jews

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used as signs of numbers, for which reason they seem to have been invented. But we will omit these matters here.

Margin note 8: *Concerning the formation of the vowels in general in respect to the different openings of the mouth and teeth.*

Nothing further remains but to give a brief and comprehensive survey of the vowels.

M. Diagram 34 shows the sounds of the five vowels according to the different openings necessary for each one so that whoever pronounces an *A* can pronounce no other letter with that same opening. And those vowels which are in between can easily find their place according to the proportion of their sounds, and the tongue and the breath imitate the external arrangement of the mouth.

Margin note 9: *Concerning the names and shapes of the figures.*

One should note, however, that unlike the names of the consonants there is no great certainty concerning the names of the vowels. For it is well known that the ancients rarely, if ever, used vowel points in writing. Not only does the Pentateuch of the Jews, which is publicly read every day in synagogue, lack vowel points, but the ancient Greek and Chaldean interpreters used unpointed texts in their translations as the divergence of their translations from the Hebrew text shows in many places.

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In addition to this, the most ancient Scriptures of the Jews are written in Samaritan characters and lack vowel points. Those who zealously define the antiquity of vowel points can go no farther back than the time of Ezra, who used vowel points in writing down sacred Scripture

usque ad tempora Esdrae, qui post captivitatem Babylonicam Sacram Scripturam, characteribus communibus relictis, Chaldaeorum literis descripsisse dicitur; & id quidem adhibitis punctis vocalibus. Quamvis autem apud antiquos quosdam Cabbalistas, e.g. in libris Zohar & Bahir, nec non in Masora atque alibi quaedam inveniantur testimonia, quod illus temporibus Vocalium puncta adhibita fuerint; tamen ibidem quoque alia subinde inveniuntur Nomina, aut certè non omnia quae hodiè in uso sunt. Unde conjectura enascitur, quod, licet praedicta omnia veram antiquitatem Vocalium in se non subverterent, illarum tamen nomina exinde Novitatis argui possint, quippe quae illis demùm temporibus inventa esse dicenda erunt, cum verus antiquae literaturae sensus inter Judaeos jam perierat. Ideoque hoc in loco non nisi de solis Vocalium figuris sermo erit: idque etiam cum minori fiducia quàm superius factum est. Nec enim hoc urgebitur, quod illae vocalium figurae statuendae sint literis

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suis coaevae esse; quia non est absonum, Vocales olim connotatas esse modo quodam alio: sive id factum sit per accidentalem aliquam consonantium mutationem, tot modis factam quoties rudis illa & simplex primorum temporum pronunciatio mutabat syllabas: sive per matres lectionis, literas nempe *Aleph, He, Vav, Jod* &c. quae opinio fortismima omnium fundamenta habet; nec absurdum est dicere, Vocales penitùs olim fuisse omissas, quia illis, quibus lingua erat vernacula, non potuit esse difficilè absque adjectis vocalibus legere. Id solummodò hîc intenditur: ostendere, quod illi, qui has figuras excogitarunt, quicùnque demùm illi fuerint, & quoconque id factum sit tempore; non usque adeò à Natura vocalium aberrverint.

Atque ut de illarum formatione in genere aliquid dicatur; quia ad illam non sufficit (1.) ut Os debita mensura aperiatur, prout illud fig. 34. exprimitur, (2.) ut cum eodem lingua debitè se conformet, (3.) ut spiritus debito vigore huic quasi oris atque linguae modulo infundatur, eademque forma ex ore prorumpat; (prout vigor ille beneficio trutinae cujusdam, & forma haec spiritus, beneficio flammae

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candelarum facilè ostendi potest.) Sed (4.) praeterea & quidem inprimis requiritur inflexus arcani illius seminis ad sermonem summè necessarii, de quo superius actum est prolixiùs: hinc probabile fit, Inventores

in Chaldean letters, the common characters that remained after the Babylonian captivity. Although among certain ancient Cabbalists, for example in the book of the *Zohar* and *Bahir* and also in the *Masora*, certain testimony may be found that vowel points were used at that time, nevertheless, one finds that they had different names than those in use today. Thus, it can be conjectured that although everything previously said does not undermine the true antiquity of the vowels, nevertheless it can be argued that their names are recent; indeed, they must be said to have been invented in those later times when the true sense of the ancient Scriptures had perished among the Jews. Therefore, I will only discuss the shapes of the vowels and with less certainty than when I discussed the consonants. For I will not insist that the shapes of the vowels are the

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same age as the letters because it is likely that the vowels were at one time understood differently. Either this occurred by some accidental change of the consonants, which happened in so many ways that the primitive and simple pronunciation of earlier times changed the syllables, or through a change in the "mother" letters, namely *Aleph, He, Vav, Jod*, etc., which have the strongest foundation as letters in the opinion of everyone. Nor is it absurd to say that the vowels were completely omitted long ago since those for whom Hebrew was their mother tongue had no difficulty in reading it without vowels. I only intend to show that whoever devised these figures, whoever they were and at whatever time they lived, did not stray from the nature of the vowels.

But something should be said in general about the formation of these vowel points because it is not enough to say that (1.) the mouth opens in the proper dimension as shown in figure 34; (2.) the tongue conforms correctly to the mouth; (3.) the breath flows with the force proper to the modulation of the mouth and tongue, and it breaks forth from the mouth in a way that can be easily demonstrated with the help of a balance and

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candle flame; (4.) above all, the first and most important thing required for speech is the influx of hidden seeds, which I have already discussed at great length. It is probable that the inventors of vowel points had the greatest possible foresight because most of them were formed from

harum figurarum ad hoc ultimum potissimum respexisse, quia plerasque ex rotundis efformarunt globulis, & guttulis quasi, materiae eujusdam seminalis homogeneae, purissimis: de quibus tamen liberum ubique relinquitur Lectori judicium.

Margin note 10: *De loco formationis illarum.*

Notandum autem porrò est Vocales magnas in superiore parte oris, parvas autem in inferiori ejusdem parte formari.

Margin note 11: *Ipsa vocalium explicatio specialissima proponitur.*

Est ergo n. 23. *Kametz* A obscurum, in cujus productione lingua in ore quasi cavitatem aliquam assumit; os verò non admodum latè diducitur; unde spiritus prodit, qui figurâ fermè imitatur linguam ipsam; in tali enim modulo talis effingitur effiguratio.

Zere n. 24 est E. Longum & quasi duplicatum, quod analogiam habet cum risu blandiori; initium soni ejus est circa epiglottidem, finis autem anterius circa superiorem dentium ordinem; ideoque duobus globulis denotatur, qui quasi transparentes quaedam atque spirituosae, aut igneae

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potius, plenae tamen bullulae sunt, quae vim suam auribus hominum totam juxta omnes partes communicant, sicut speculum, etiam fractum, omnibus suis partibus totam imaginem reflectit; idque sit absque omni distractione, quia spiritus ille homogeneus est undiquaque, ut aqua, hydrargyrum & similia.

Cholem n. 26 est O longum, in cujus prolatione lingua undique soluta erigitur, mucrone ad uncini morem incurvato; nec ad palatum pertingente: Oris apertura tantilla est, ut vox aliqua subobscura per linguae convexum prodeat, quae designatur unico globulo, superiori linguae convexum prodeat, quae designatur unico globulo, superiori linguae parti appicto: atque illa vox subtristis si mutatâ scenâ homine ideâ tristitiae, majori spiritu prorumpat, signum summae laetitiae fieri potest.

Schurek n. 27, est U, formaturque situ linguae fermè eodem, quo Cholem; lingua tamen magis hîc delabitur &

round balls and from pure drops, as it were, of a certain homogeneous seminal substance, concerning which, however, the reader is free to form his own opinion.

Margin note 10: *Concerning the place in which the vowels are formed.*

It is important to point out here that the big vowels are formed in the upper part of the mouth and the small vowels in the lower part.

Margin note 11: *A detailed explanation of the vowels.*

Thus in diagram 23 *Kametz* is an obscure A, in the production of which the tongue is hollowed out a bit, and the mouth does not open very wide. For this reason, when the breath comes out, it closely imitates the shape of the tongue itself, and it is fashioned in the same way.

Zere (diagram 24) is a long E analogous to a pleasant laugh. Its sound begins near the epiglottis and proceeds toward the upper teeth. For this reason, it is depicted as two balls, which are almost transparent and spiritual, or very fiery.

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Nevertheless, they are solid bubbles, which communicate their force in every respect to human ears just as a broken mirror reflects the entire image in all its parts. And this occurs without any distraction because that spirit is everywhere homogeneous, like water, quicksilver, and similar things.

Chirek (diagram 25) is an I, in the formation of which the tongue is somewhat convex and presses against the palate just as in the letter *Jod*. The mouth is not yet fully open and the breath rebounds from the gums and teeth against the concave tongue. This vowel is depicted as one little ball.

Cholem (diagram 26) is a long O in the pronunciation of which the tongue freely rises up, but without reaching the palate, with its tip curved like a hook. The opening of the mouth is so great that the voice comes out somewhat muffled through the convex tongue. This is depicted with a single ball represented on the top part of the tongue. This lugubrious voice conveys the idea of sadness, but, with a change of scene, it can break out with great spirit and become a sign of the greatest joy.

Schurek (diagram 27) is a U, and it is formed in almost the same position as a *Cholem*. But the tongue falls farther down

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ad gingivas propiùs accedit, ita ut iste spriritus à dentibus & gingiva ad linguae concavum reverberetur, id quod per globulum in illo loco appictum designari solet; inde jam sonus quasi feralis & lugubris prodit; ore nimirum quasi semi clauso.

Patach n. 28. est A clarum, ubi os patentiùs apertum est quam superius: lingua directo situ prona in ore decumbit, unde sonus per lineam rectam designatur. Haec oris apertio ipso nomine hujus vocalis expressa videtur?

Saegol n. 29. imitatur sonum literae ητα apud Graecos, sonumque quasi vomentis exprimit; os hoc in loco ad imum usque diducitur, adeoque patentissimum est: initium autem sonorum ab epiglottide procedit, ut globulus ibi depictus ostendit; & quia mandibula ad imum usque descendit, lingua posteriori sua medietate elevari incipit, unde à dentibus anterioribus retrahitur, ut inferiores gingivas non attingat, atque tunc anhelitus, quia tantoperè patet arteria aspera, ad summos dentes, eorumque gingivas alliditur, (unde ibi globulus) atque deorsum inter linguam dentesque inferiores repercutitur, ubi tertius globulus habetur.

Chirek parvum n. 30. est I breve, quod lingua efformat, cum à summitate

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deorsum pressa est, & mucrone suo radices dentium iterum attingit; unde sonus ipsius admodu acutus est.

Kübbuz n. 31. est ü parvum, Gallico more pronunciandum, cum triplici quasi sonitu, quem tres etiam globuli designant, quorum primus circa mucronem linguae & inferiorem gingivam, ore paululum primùm aperto, alter in anteriore dentium parte, ore magis clauso, & tertius supra, versus palatum producuntur.

Scheva n. 32. depingitur duobus globulis, quorum unus in summa anterioris palati parte, alter inferius ad imas gingivas exoritur: sonus imperfectus est atque non plenè elaboratus, quem omni situ & motu lingua formare potest, unde à quibusdam vocalium vicarius appellatur haec vocalis, videtur autem quam proximè accedere ad primos loquendi conatus, qui in infantibus observari solent.

Margin note 12: *Car Scriptura Hebraeorum à dextra & non à sinistrae incipiat.*

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and comes close to the gums so that the breath rebounds from the teeth and the gums against the concave tongue, which is shown as a little ball in that place. Then the sound comes out as gloomy and mournful with the mouth half closed.

Patach (diagram 28) is a loud A when the mouth opens more widely than before, and the tongue lies flat. Hence, its sharp sound.

Saegol (diagram 29) imitates the sound of the Greek *Eta* and expresses the sound of someone vomiting. To form this vowel, the mouth opens up all the way from top to bottom. The sound begins in the epiglottis as is depicted by the small ball; and because the lower jaw drops down all the way, the mid back part of the tongue begins to rise up and draws away from the front teeth so that it does not touch the lower gum. Then the breath, because the windpipe is wide open, strikes against the upper teeth and gums depicted there by a little ball. Then the breath strikes again between the tongue and the lower teeth, which is depicted there by a third little ball.

The small *Chirek* (diagram 30) is a short I, which the tongue forms when it presses from the top

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to the bottom of the mouth. The tip of the tongue touches again the base of the teeth, from which its sharp sound comes.

Kübbutz (diagram 31) is a small U pronounced in the French manner, with a threefold sound shown by three little balls, the first of which is produced near the tip of the tongue and the lower gums with the mouth slightly open; the second, in the front part of the teeth with the mouth for the most part closed; and the third, above toward the palate.

Scheva (diagram 32) is shown by two little balls, the first of which arises in the highest part of the palate, the second toward the lower gums. The sound is imperfect, not fully expressed, and formed by the motion of the tongue alone. Thus, some people call it the "viceroy" of the vowels. Moreover, it closely resembles the first attempt at speech, as can be observed among infants.

Margin note 12: *Why Hebrew writing begins from the right and not from the left.*

H. Jam satis instructus sum de natura literarum atque vocalium, in se consideratarum; cum autem ad compositionem dictionum accedo, illud ignoro, *quare illa fiat à dextra ad sinistram*, & non contra, ut apud nos & alibi fieri solet?

M. Quemadmodum homo duas habet manus, dextram nempe & sinistram, illam nempe ad operandum, istam

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ad tenendum, ita multa alia, in ipso, membra bina sunt; quorum tamen sinistrum semper infirmius est, & foemininum quasi; dextrum verò robustius & quasi masculinum. Atque ita se res quoque in oculis habet, quorum dexer ille est quo operatur, sinister verò qui tenet objectum atque apprehendit. Unde in iconismo n. 36. linea B C. Ex oculo dextro B ad objectum C producta, tanquam quae ad opus egreditur, longior est, quam linea C A, ab objecto ad oculum sinistrum reducta; ex quo sequitur oculum rectum in legendo totum sensum eruere, sinistrum verò velut in quiete jacentem, eundem in sese recipere. Quia ergò natura non aliter legere potest quam isto modo, & contrarium naturae planè adversatur, ideoque lingua Naturae hoc etiam quod naturale est observat, ut nimirum à dextrâ ad sinistram scribatur atque legatur. Praetereà si oculi mei deberent respicere verba mea emanantia, aut ipsos motus linguae observare, id certè fieri non posset nisi oculo praecipuè dextro unde apparet, ipsam Naturam requirere, ut scripura Alphabeti naturalis non à sinistra sed à dextra incipiat.

Margin note 13: *Unde componatur Grammatica perfectissima.*

H. Unde autem didicerunt homines non saltem juxta natura ductum

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scribere, sed Grammaticam quoque hujus linguae, certis regulis positis, concinnare?

M. Non aliunde, quàm ex collatione Consonantium atque Vocalium omnivariâ; cognitâ enim naturâ singularum, eâdemque cum singulis aliis collatâ, difficilè non erit judicare, qua ratione aliae cum aliis conveniant, atque aliae ab aliis discordent, unde facillimum est formare regulas, permutationum praecipuè, sive Vocalium in vocales, sine consonantium in consonantes.

H. Now that I have been sufficiently instructed about the nature of the letters and vowels considered in and of themselves, I turn to the arrangements of the words. I want to know why they are written from right to left instead of the opposite way, as is customary for us.

M. Inasmuch as man has two hands, a right and a left, the first for working and the second

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for holding, so are many other limbs double. The left is always the weaker and, as it were, feminine, and the right is always stronger and masculine. This is also true of the eyes. The right one apprehends the object, and the left one retains the image in view. Thu, in diagram 36 the line BC from the right eye B to the object C is longer because it goes out toward the object, while the line CA from the object to the left eye is shorter. From this it follows that in reading the right eye gathers the whole meaning, while the left eye lies quietly and receives that meaning in itself. Therefore, because the nature of reading cannot be otherwise, the reverse is clearly contrary to nature. Consequently, this natural language follows nature and is written and read from right to left. Furthermore, if only eyes could perceive the words emanating from me or observe the very motions of my tongue, this would have to happen with the right eye. Thus, nature clearly requires the writing of the natural alphabet to begin not from the left but from the right.[95]

Margin note 13: *How the most perfect grammar is produced.*

H. Haven't men claimed that

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the writing of this language is not only natural but that its grammar also conforms to certain natural rules?

M. Yes, indeed, if one compares the consonants and vowels among themselves and with each other. When the nature of one letter is considered in respect to another, it is not difficult to judge how certain letters agree or disagree. From this, one can easily construct rules as to how and why this or that consonant or this or that vowel must change into the next.

Colloquium septimum

De Lingua Sancta in se considerata, ejusque perfectione.

H. Sicut, ut speramus, jam satisfactum erit, si non omnibus, tamen aliquibus, introductâ cognitione veri Alphabeti naturalis, quod hebraicum est, ita jam necessum erit ut etiam aliquid dicatur de *Lingua S.* in se consideratâ, & quam eleganti ordine illa coagmentata sit, sine quo nulla uspiam inveniri poterit perfectio.

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Margin note 1: *In quo illa potissimùm consistat.*

M. Hic necesse esset, ut post declaratum Alphabetum Naturae quoque proponeretur Grammatica Naturalis, (de qua tamen fortè alio tempore;) quia autem de rebus ipsis hîc agere extra propositum foret; ideò de linguâ S. quoque parum hîc proferri poterit. Si tamen conclusionis loco aliquid de his quaeritur; sciendum est (1.) istam esse linguae S. naturam, ut aliquis exercitatior, ex sola consonantium combinatione non adhibitis vocalibus, verum scripturae cujusdam sensum assequi queat: id quod à Judaeis quotidiè fieri videmus, quippe qui à pueris libros legunt Hebraicos punctis vocalibus plerumque destitutos.

Margin note 2: *Quomodo à reliquis linguis confusioribus differat.*

(2.) Quia ex praescriptus supra consonantibus atque vocalibus, omnes prodierunt linguae, quotquot unquam in toto terrarum orbe inveniuntur, sciendum est, linguas confusas à puriori non aliter posse discerni, quàm ex eo, quod in hâc literae radicales ubique cum summo ordine atque verè harmonicè concurrant ad compositionem dictionum; in illis verò omnia quasi caeco impetu ad suam confusionem ruant. Cum igitur hoc ipso lingua Hebraica a reliquis omnibus discernatur; sperandum est fore, ut quicunque puritatem atque veritatem amant hoc veluti stimulo alacriores facti ordinatissimam hanc linguam

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prae caeteris ardentius amplectantur atque excolant.

Margin note 3: *Quare Radices tantum è tribus componantur literis.*

(3.) Ut autem ordinatissimus ille radicalium ad constituendas voces concursus eò rectius intelligatur, notandum est, unam consonantem

The Seventh Dialogue about the Holy Language and its Perfection

H. I hope you are now satisfied, if not with everything, at least with some things about the truly natural alphabet, which is Hebrew. We must now say something about the holy language itself, and how it has been arranged in an elegant order with everything necessary for its perfection.

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Margin note 1: *In what its perfection chiefly consists.*

M. Having discussed the alphabet of nature, it may be necessary to set forth a natural grammar, but I will do this at a later time since so little can be said here about the holy tongue. If, however, instead of a conclusion you wish to know something about these matters, you should recognize that 1) the nature of the sacred language is such that any student can follow the true sense of Scripture from the consonants alone without the vowel points. We see this happen every day among the Jews. Indeed, children often read Hebrew books without vowel points.

Margin note 2: *How this language differs from other more confusing languages.*

2) Because all languages in the entire world are produced by the consonants and vowels described above, it should be recognized that it is only possible to distinguish these confused languages from this most pure language because its root letters are joined together with the greatest harmony and order for the production of speech. But in those confused languages everything flows together blindly in wild disarray. Since, therefore, the Hebrew language can be distinguished from all other languages, it is to be hoped that whoever loves purity and truth will eagerly and warmly embrace and cultivate this most orderly language

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above others;

Margin note 3: *How the roots are composed of only three letters.*

3) Moreover, so that one may better understand this orderly composition and arrangement of the root letters constituting speech, it should be noted that more than one consonant is required to produce a word.

non potuisse producere vocem; ideoque progressu opus fuisse. Si igitur assumtis duabus literis, ex quarum diversimoda combinatione duae voces exurgunt, omnes totius linguae radices constitui debuissent; factâ duarum illarum consonantium per omnes reliquas ductione (quarum numerum Hutterus in cubo suo connumeratis nempe He mappicato & Sin ad 24. extendit) 600. voces inventae essent: qui certè numerus ad constituendas radices perfectae alicujus linguae non sufficeret. Igitur ulterius progrediendum fuit, adque unam radicem constituendam tres literae assumendae fuerunt: Illae toties transpositae quoties possibile est, sex voces producunt, quibus per totum Alphabetum ductis (excluso He mappicato, unde numeribus omnium consonantium exurgit ad 23.) secundum Hutterum 13248. radices oriuntur possibliles, quarum tamen actu usitatarum idem Hutterus tantum 2117. numerat, (quae quidem plerumque aequivocae sunt; nunquam a casu tales, quia formalia plurium illarum significationum à diligentioribus facilè inveniri possunt. Quia ergò numeribus radicum possibilium usitatum earundem

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numerum in tantum transcendit, sequitur tres literas ad unam radicem omninò sufficere*:* unde patet, quomodo constitutio lingae Hebraicae cum ipsa vocum natura concordet; quippe in qua ad unam radicem tres quoque saltem literae requiruntur. Et sex quidem illae variationes primae uno intuitu ab homine facilè comprehendi possunt, praesertim si ille paululum in talibus fuerit exercitatus; unde apparet, quàm facilè sit, ut aliquis totius hujus linguae cognitionem sibi acquirat.

Margin note 4: *Et cur non plures ibi assumantur literae.*

H. Annon autem progressus fieri potuisset ulterius, ut ad unam radicem 4.5.6.7. aut plures literae assumerentur?

M. Neutiquam: Hinc enim immensa planè radicum summa exurgeret. Quatuor enim literae 24. transponi possunt, prima vice; *quinque* centies vices; 6, 720cies, septem denique millies quadragies, quae summae per totum Alphabeti ordinem variatae inexplicabiles radicum copias producerent. Quia autem nulla omninò lingua reperitur, quae non aliquor millibus radicum absolvi queat, quid quaeso tot millenae myriades reliquae prodessent? Aut quo jure has potius radices ad usum revocarent homines quam caeteras? Cum omnes ex una

Therefore, if one takes two letters, from the different combination of which arise two words, then all the roots of the entire language should be able to be constructed. By combining these two consonants with all the others, six hundred combinations would be produced (as Hutterus demonstrates in his chart even with the addition of the letter *He mappik*[96] and *Schin* to make 24), certainly an insufficient number to produce the roots of a perfect language. Therefore, the Hebrews had to go further and take three letters to make one root. When these are transposed as often as possible, they produce six possible combinations; and when these are carried through the whole alphabet (excluding the *He mappik* so that there are 23 consonants), then 13248 possible roots arise according to Hutterus, although in actual use Hutterus counts only 2117 roots.[97] These usually have more than one meaning, but not haphazardly because one can easily determine their meaning from diligent study. Therefore, because the number of possible roots

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transcends the number in use, it follows that three letters suffice for one root. Thus, the construction of the Hebrew language clearly agrees with the nature of the words themselves. Indeed, the first six variations can be easily understood at a glance, especially if someone has had a little practice. It is obvious, then, how easily anyone can acquire knowledge of this language.

Margin note 4: *Why there are not more letters.*

H. Couldn't you go further and take four, five, six, seven, or more letters for one root?

M. By no means. For from this an immense number of root words would emerge. In the first instance, four letters could be transposed twenty-four times; five letters one hundred times; six letters seven hundred and twenty times; and seven letters four thousand times, the sum of which would produce an inexplicable supply of root words throughout the whole alphabet. Since no language has ever been found that uses more than a few thousand root words, what, I ask, would be the point of so many other thousands? On what ground could you make use of one root rather than another since all

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tantum radicalium transpositione originem trahant? Ex his omnibus igitur firmum deduci potest argumentum, quod Lingua HEBRAICA sola & unica sit illa, quae caeteris confusis omnibus opponi queat, illisque & nobilitate & utilitate praeponderet.

Margin note 5: *Qua ratione quis ad verum ac genuinum illius linguae intellectum pervenire queat.*

Jam igitur nihil restat amplius, quam ut pauci ostendatur, quanam via quis ad verum vivumque totius hujus linguae intellectum pervenire queat. Ut itaque hoc debito ordine fieri possit, optimum omniò videtur, ut aliquis ad ipsam Scripturam Sacram confugiat: quia enim illa à Deo ter Optimo Maximo hominibus proposita est, ut sanctissima ejus voluntas in eadem inveniatur atque agnoscatur, fieri non potest, quin omne hoc quod quaeritur, simplicissimè atque ad vivum ibidem inveniatur.

H. Quam multi autem Scripturam S. non semel pervolverunt, nec unquam tamen convicti sunt tale quid in ea inveniri?

M. His respondere possem, me tempore caecitatis meae in eadem fuisse opinione: imò ne per somnium quidem unquam vidisse, quod in eâdem natura verarum literarum inveniri posset; quo in casu tamen jam meritò rideri ab omnibus possem, qui vident; quod singulae totius S. textus

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literae, nullâ exceptâ, suam vitam & habeant & demonstrent, nec aliter facere possint.

Margin note 6: *Et quomodo ille in S. Scriptura se praebeat conspiciendum.*

H. Quomodo autem vivus ille Scripture intellectus se praebet conspiciendum?

M. Hîc observari potest, quod ibidem primò naturales illae vivaeque literae extent, ex quarum figura ipsa pronunciatio facilè formari potest: ex illis deinde *voces* componuntur, quarum significatio eundem, qui juxta suprapositum Alphabetum naturam ipsius linguae paulò exactius cognovit, non diu latere potest. Illae voces praefixis atque suffixis suis adeò sunt limitatae, ut ex universali suo significata his ipsis accuratè satis specificentur: cum quibus si naturales ubique sententiarum incisiones atque distinctiones conferantur, atque singula aliquoties diligenti

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originate with the transposition of so many roots? From all these things a strong argument can be made that Hebrew is the sole and single language that is superior to all other confused languages in terms of its grandeur and practicality.

Margin note 5: *How anyone can arrive at a true and genuine understanding of this language.*

Nothing now remains except to show in a few words how anyone can arrive at a true and living understanding of this entire language. And to do this in an orderly fashion, it seems best to have recourse to sacred Scripture itself. For the thrice-best and greatest God has given Scripture to mankind so that his most holy will may be discovered and understood. This cannot be accomplished unless everything that is sought is found in Scripture in a most simple and living way.

H. How many people have often read through holy Scripture, yet were never convinced that such an understanding could be found in it?

M. I respond to these people that I, in the time of my blindness, was of the same opinion. In fact, I never even dreamed that the true nature of the letters could be discovered in Scripture. But on this account I now deserve to be laughed at by everyone since they can see that every letter of the sacred text

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without exception has and shows its own life. It cannot be otherwise.

Margin note 6: *How Scripture presents itself for our understanding.*

H. But how can that living understanding of Scripture present itself to our understanding?

M. The first thing to note is that these natural and living letters exist, the pronunciation of which can easily be formed from their shapes. Secondly, words are made from these letters, the significance of which cannot be long hidden from anyone who correctly understands the nature of this language according to the alphabet previously described.

ruminatione repetantur, tunc accidit, ut in homine sensim viva quaedam imago atque idea ipsarum rerum generetur, quae per viva illa verba eorumque congruam ubique syntaxin,

Margin note 7: *Quomodo Idea illius per vocem erumpat.*

tam concinnam atque vivam adipiscitur harmoniam, cum tanta activitate atque energia conjunctam, ut tandem in ipsam vocem erumpat, vitamque suam, quae antea in animo tantum ceu matrice conclusa erat, palam

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praebeat conspiciendam.

Margin note 8: *Et quid vox illa in auribus illius hominis loquentis operetur.*

Cum deinde haec idea iterum in aures autoris sui relabitur, non aliter fieri vidmus, quam si mater aliqua propriam sobolem in sinum suum recipiat, unde tanrum exoritur gaudium, ut majus semper majusque homini accedat robur & facultas largior progrediendi ulterius.

Margin note 9: *Exempla quomodo viva aliqua vox à ficta discerni queat.*

Nam prorumpens iste vivusque Scripturae intellectus non aliter se habet, quam cum idea Ira*e* in aliquo ita invalescit, ut vehementibus atque penetrantibus verbis in scenam quasi proruat: tum enim genuinus verborum horum sensus à quovis quam facillimè intelligi potest, nec facilè invenietur aliquis, qui voce fictâ simile quid praestare queat, quamvis omnes histriones, atque mimi omnes ad id contendant nervos. Atque ita Amor quoqu*e* viventem in se Idêam, naturalibus planè & quasi fascinantibus verbis depingere potest, quae suam imaginem tam exactè referunt, ut nuda illorum veritas tam facilè à simulatione quavis discerni queat, quam facilè privignus à filio patrissante discernitur. Hîc enim verum est, quod vulgò dicitur, quod ex corde provenit, cordae etiam repetit, cum quod ex capite saltem, immaturo partu, editur, contradicentes plerumque inveniat quam

These words are qualified by prefixes and suffixes so that from their general significance they are made specific.

Margin note 7: *How the idea of this bursts out through the voice.*

And if the natural divisions and distinctions of their meanings are compared with each other, and if these are sought out many times with careful study, then a living image and idea of things themselves is perceptibly generated in people. Through these living words and their suitable arrangement, the language acquires an agreeable, harmonious, and living quality, together with such great action and energy that it breaks forth in the voice itself and allows that life, which was previously shut up in the soul or womb,

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to be openly observed.

Margin note 8: *How the voice affects the ears of someone speaking.*

When this image is relayed to the ears of someone speaking, it is just as if a mother takes a child in her lap; so much joy arises that his body grows stronger and stronger and his mind develops further and further.

Margin note 9: *An example showing how the living voice can be differentiated from a false voice.*

This living understanding of Scripture bursts forth in the same way as the idea of anger grows so strong in someone that he displays it with violent and piercing words. For the genuine sense of these words can be easily understood by anyone, nor does anyone exist who can produce the same effect with a feigned voice, although all actors and mimics strain their nerves to do just this. Thus, love can paint its living image in natural and charming words, which exactly represent its idea so that the naked truth of these true words can be easily be distinguished from pretense, just as a natural child can be distinguished from a stepchild. Hence the common saying is true: what comes from the heart returns to the heart, whereas what is born prematurely from the head has many contradictory

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plurimos. Simile quiddam in verò afflictis atque moestis apparet, quibus dolor quasi ipse ex ore proloquitur, ideamque suam tam exactè repraesentare potest, ut multa non sit opus difficultate, si quis tales discernère velit à mendacibus.

Margin note 10: *Et qua ratione quis hoc modo ad veritatem perducatur.*

Ita, inquam, res etiam se habet cum semel conceptâ animo sensus sacri ideâ: unde homo illius beneficio gradatim quidem, sed propriè tamen ad perfectam veritatis cognitionem pervenire potest, ut ab articulo quasi ad digitum, à digito ad illius motus varios, ab his ad manum ipsam, & tandem, per hunc modum, gradatim ad totum integrum perveniat.

Margin note 11: *Qualis sit differentia inter vocem vivam & aliam imperfectam, deque iis, qui saltem aliorum verba imitantur*

Et in tali ordine vita quaedam atque vis inest; cum ex adverso, qui sine mente, aliorum tantum verba evomunt, illarum avium instar, quae humanam vocem imitari discunt, quia ab ipsa re nullam habent impressam sibi ideam, non nisi gelidos & mortuos pariant foetus. Atque eo ipso similes sunt illis mespilorum surculis, qui inverso ordine, qua parte tenuissimi sunt trunco suo insiti, cum progerminarunt è loco suo naturali abscinduntur, atque ita pedibus quasi in altum protensis, succoque per caput attracto fructus proferre dicuntur semine suo naturali atque nucleis carentes: non potest enim fieri, ut

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generatio tam perversa, vivum aliquod semen ostendere queat.

Margin note 12: *Tandem de Accentuatione Hebraeorum aliquantò prolixius agitur.*

Antequam ultimam rei manum adhibeam, dicendum quoque aliquid est de ipsis Hebraeorum accentibus; ut cum, illos apud Antiquos in usu non fuisse, perspectum fuerit, causa simul pateat, quare supra à nobis nihil de illis sit propositum. Primò enim Grammatici certant & adhuc sub judice lis est, quantus sit illorum numerus, quia alii viginti alii triginta alii plures alii pauciores numerant, quae copia meritò illos reddit suspectos, cum non tantum omnium linguarum natura quàm paucissimis possit esse contenta, sive tonici spectentur, sive distinctivi; sed etiam Antiqui Hebraei brevitatis & paucitatis ubique fuerint quam

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meanings. Something similar appears in a truly afflicted and grieving person, whose pain, as it were, speaks directly from the mouth. He can represent the idea of his pain so exactly that it is not difficult for someone to distinguish it from a false idea.

Margin note 10: *How in this way someone is led to the truth.*

I maintain that this is the case when the sense of a sacred idea is conceived in the soul. By this means a man may gradually, but correctly, arrive at a perfect understanding of the truth, just as he can attain the full use of his hand, starting from the joints and various motions of the fingers to the hand itself.

Margin note 11: *Such is the difference between the living voice and the imperfect voice of those who imitate others.*

And such an arrangement has a life and force, where, on the contrary, those who spout the words of other people without understanding, like a bird who learns to imitate human speech, only produce and bare cold and dead offspring because they have received no real image of the thing itself. And in this they are like the branches of the medlar tree, which turn inward and with their thinnest tips engraft themselves into their trunk; and when they are cut off from their natural place, with their feet sticking up in the air, they draw sap down through the head of the fruit, which lacks its natural seed and kernel. Such a perverse

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generation can never produce living seed.

Margin note 12: *A final discussion of Hebrew accents.*

Before concluding, I should say something about the Hebrew accents since it is clear that the ancients did not use them. That is the reason why we have said nothing about them up to now. First, the grammarians argue, and the case is still under discussion, about how many accents there are, since some count twenty, others thirty, and still others more or less. This great number renders them suspect since the nature of all languages demands the fewest possible accents, whether in regard to pronunciation or punctuation. And the ancient Hebrews were also

studiosissimi; ad unam enim radicem paucissimas literas requirunt, omnia Pronomina fermè paucissimis suffixis, quam plurimas Conjunctiones atque Praepositiones praefixis paucissimis expresserunt, *paucissimas* Declinationes requirunt, & prolixum saepè sensum paucissimis verbis proponunt: quis ergò statuere vellet, illos in parte totius linguae ultimâ tam immoderatâ copiâ uti voluisse? Cum illi quoque qui horum Accentuum coordinationem quam exactissimè &

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elegantissimè indagarunt, paucissimis signis distinctionum arque conjunctionum contenti sint, nec supra 8. vel novem Characteres requirant, quorum beneficio non sine fructu textum sacrum sufficienter dispungere solent. Et quaenam illos coëgisset necessitas, ut tot ubique adhiberent ministros, qui nihil aliud agunt, quam ut connexioni inserviant, & pergere jubeant legentem ad majorem aliquam distinctionem usque; quasi non sit naturae consentaneum ut etiam non adhibitis talibus signis quis legendo pergat, donec vel sensu vel distinctio subsistere jubeat? 2. Si antiquis Hebraeis in more fuisset positum, talia undiquaque per scripturam suam accumulare signa, procul dubio signa interrogationis, admirationis, interjectionum, parenthesion, & similia non omisissent, quia nihil magis valet ad genuinam distinctionem inferendam: quia autem tam necessaria non adhibita sunt, probabile fit, nulla adhibita fuisse. 3. Si quid ejusmodi antiquis notum fuisset, procul dubio aliquod etiam horum vestigium in literatura Samaritanorum occurreret;

4. Etiam illae lingae, quae ab Hebraeis suas literas acceperunt, cum iisdem simul accentus accepissent, si illi in usu fuissent tum temporis; quod tamen

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non factum esse Graecorum atque Latinorum antiqua monumenta satis luculenter ostendunt, quippe in quibus nihil planè distinctionum ullibi occurrit, sicut alii id prolixè deduxerunt. Unde & N. T. Quod sine distinctionibus accentibusque ac spiritibus hodiè (cum Lingua Graeca non amplius adeò est vernacula) vix commodè usurpari posset, priscis temporibus iisdem notulis caruit. 5. Linguae illae, quae non tam filiae quam sorores hebraea dici passunt, aliquid vel olim habuissent vel adhuc haberent, his accentibus analogon; quale tamen nec olim apud Chaldaicam, nec in hodiernum usque diem apud Arabicam vel Syriacam invenitur. 6. In Talmude, ubi nihil fermè omissum est, quod

devoted to brevity and economy of speech. They used very few letters for one root, expressed all pronouns with a few suffixes, signified conjunctions and prepositions with a few prefixes, required very few declensions, and often conveyed a full meaning in very few words. Who would then suppose that they would go overboard in this final aspect of their language, especially since those who most closely and elegantly

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examine these accents are content with very few marks of separation and conjunction, using no more than eight or nine characters, by means of which they can profitably scrutinize the sacred text? What would have compelled them to employ so many servants for no other purpose than to supply connections and to make the reader arrive at ever greater distinctions, especially since someone naturally reads until the sense or meaning causes him to stop without superfluous signs? Secondly, if it had been customary for the ancient Hebrews to pile up so many marks in their writing, I hardly think they would have omitted the question mark, exclamation point, dash, parenthesis, and the like because nothing is more important for bringing out genuine meaning. Since these necessary marks were not used, it is likely that no marks were used. Thirdly, if something of this sort were well known to the ancients, it would undoubtedly have left traces in Samaritan literature. Fourthly, those languages that made use of Hebrew letters would also have received these accents if they had been in use at that time.

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The ancient monuments of the Greeks and Romans show quite clearly that this was not done; in fact, there is clearly no punctuation anywhere on these, as others have abundantly demonstrated. Although the New Testament can scarcely be read without punctuation, accents, and breathing marks (since Greek is no longer the vernacular), in earlier times these marks were absent. Fifthly, those languages that are not so much daughters as sisters of Hebrew should have had or should still have something analogous to these accents; but these did not exist in Chaldean, nor can they be found today in Arabic or Syriac. Sixthly, in the Talmud, where hardly anything is omitted that pertains to the ancient Jews, there would not be such profound silence about these

ad Judaeorum Antiquitatem spectare potest, non tam altum esset de istis nominibus figurisque omnibus silentium. 7. Quia in istis minutiis variare quam maximè solent lectiones, aliquod horum exemplum etiam in *Keri & Ketibh* occurreret; quod tamen non fit. 8. Doctissimi etiam Patres, quales fuerunt Origenes & Hieronymus, qui linguae Hebraicae quàm peritissimi fuerunt, aliquam eorum habbuissent cognitionem; quod tamen ita se non habet: cum enim Hieronymus de accentibus

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loquitur, ex verbis ejus manifestum satis est, ibidem tonum vocis adeoque syllabae elevationem intelligi; 9. Quia Judaei gloriam suae gentis ubique quam avidissimè quaerunt, fieri non posset, ut aliquis ex ipsorum Doctoribus opinionem de novitate Accentuum foveret, nisi à veritate compulsus: cujus rei exemplum tamen in Elia Levita habemus manifestissimum. 10. Judaei omnes non tam sanctum haberent exemplar Pentateuchi sui, in quo nullus ullibi accentus occurrit; & in eo tamen tantus est ipsorum Zelus, ut tale aliquod volumen, ubi pauca quaedam puncta exscripta mox tamen erasa fuerint pro profano habeant. Et talia volumina, teste Alvario Semedo, etiam apud Judaeos Sinenses in usu sunt, qui tamen, quia nec de Christo nec de Judaeorum nomine ipsis aliquid innotuit, (cum Israëlitas se dicant) adhuc ex reliquiis abductarum decem tribuum videntur esse. Si quis autem dicat, cantica sacra olim in templo sine notis Musicis cantari non potuisse; eamque cantandi artem etiam sine notis Musicis propagari non potuisse; cumque de signis musicis aliis nihil hactenus innotuerit, probabile esse hos accentûs fuisse notas illas Musicorum proscorum: Haec certè nullo omninò nituntur

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fundamento: quia enim, fatentibus omnibus, Musica Veterum inter res omninò deperditas numeranda est, quomodo probari poterit istas fuisse illius notas? Cum praecipuè non libri saltem Musici atque Poëtici, qui videntur publicè potuisse cantari; nec Mosaici tantùm, qui in Templo & Synagogis statis temporibus legebantur, sed omnes, etiam Hagiographi, & in illis quoque ista capita, quae nil nisi nomina propria continent, accentus habeant. Si porrò quis ad autoritatem Libri Zohar confugiat, citato ex eodem hoc loco: Motiones Accentuum per manum Mosis firmatas esse, ille evolvere poterit Bibliothecam Rabbinicam Joh. Buxtorffii P., (qui tamen pro antiquitate accentuum multa aliàs fecit)

names and their shapes. Seventhly, because the text varies greatly in very small matters, examples of these accents would also appear in the *keri* and *ketibh*, but this is not the case.[98] Eighthly, the most learned fathers, such as Origen and Jerome, who were skilled in the Hebrew language, would have had some knowledge of these marks, but this is not so. For when Jerome speaks about accents,

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his words make it very clear that he means the tone and elevation of the voice in the pronunciation of each syllable. Ninthly, because the Jews eagerly seek the glory of their race everywhere, would any of the rabbis admit the newness of the accents unless compelled by the truth? Yet we have a very clear example of this in Elias Levita.[99] Tenthly, all the Jews would not have thought so highly of their Pentateuch, in which no accents appear anywhere. They are so zealous about this that they consider profane any volume in which even a few punctuation marks have been written, even those that were soon erased. Such volumes, according to Alvarius Semedo,[100] are even used by Chinese Jews, who appear to be the remnants of the ten lost tribes because they know nothing about Christ or the name "Jew" and call themselves Israelites. However, if anyone maintains that the holy songs could not have been sung long ago in the temple without musical notation or that the art of singing could not have spread without such notation, then it is probable that those accents were the notations of the earliest musicians since nothing is known of such signs to this day. This has no foundation whatsoever

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because everyone acknowledges that ancient music is reckoned among the things that have been completely lost. How could anyone prove that these accents were those notes, especially since neither musical nor poetic books, which seem to have been sung publicly, nor even the music books that were read at established times in the Temple and synagogues, have accents? And the same is true of all Hebrew books, including hagiographies, whose chapters contain nothing but proper names. If, moreover, anyone has recourse to the authority of the *Zohar*, citing this passage, "the accents were invented by the hand of Moses," let him look through the rabbinical studies of the elder Johann Buxtorf (who worked hard to establish the antiquity of the accents), in which it

ubi praesertim in Abbreviaturis loco de R. Simeon Ben Jochai, clarè satis ostenditur, quod antiquitas illius libri tanta non sit, quantam vulgò putant. Ex istis omnibus manifestum est, Accentuationem esse recentius quid: quod procul dubio à Judaeis quibusdam pio Zelo actis in hunc finem excogitatum est (quanquam diu post illorum dispersionem, quia Karraitae quoque accentus non admittunt) ut libri sacri, qui in Synagogis praeleguntur, eò ornatius & quasi cantillando legi possent; quod enim

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vis Musicae in illis lateat omnium Judaeorum testimonio certum est: & exinde à Masorethis posterioribus ad totum Scripturae textum appositi videntur.

Id tamen negari non potest, Autores hujus Accentuationis majores textûs S. distinctiones (quippe quae à Judaeis, quibus Deus oracula sua credidit, oblivioni penitus non potuerunt tradi, accedente nimirum insigni illo erga haec putamina Scripturae Zelo) ubique quam accuratissimè observasse; unde iidem accentus non parum ad ge nuinum verbi divini sensum conferunt. In isto quoque labore tam elegans observatus est ordo, ut ille non omninò pro vano sit habendus, quia praecipuè illud, quod apud peritos natura monet, pro imperitis eo ipso tam elegantes notulae ostendunt.

Conclusio

Atque hoc inter alia est illud, quod nuda & simplex mihi suggesit meditatio, saltem quoad maximam partem, cum in certo quodam loco omnibus privato adminiculis, quae ad accuratiorem rei alicujus invenae elaborationem sunt necessaria, praeter unicum illud meditandi subsidium nihil mihi esset reliquum. Tum enim occasio talia cognitandi mihi nascebatur è meditatione quadam, qua

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mecum disquirebam, quid faciendum esset, si vivere me oporteret in Insula quadam, in qua non nisi homines à nativitate sua sudi, habitarent, ut vitam tamen ducere possem cum optimâ conversatione jucundissimam. Jam igitur omnia liberrimo cujuscunque judicio exposita esse volo, eique DOMINO, qui os linguamque posuit in homine, gratias ago infinitas in omnia seculorum secula.

is clearly demonstrated, especially in the abbreviations of R. Simeon ben Yohai, that the book is not as old as commonly thought.[101] From all this, it is clear that accentuation is a recent development, which no doubt was devised by certain Jews motivated by pious zeal (although a long time after their dispersion since the Karaites do not accept accents) so that the sacred Scriptures, which are read aloud in synagogues, could be read more elegantly as if they were sung. For

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all Jews testify that the power of music lies hidden in Scriptures. From this it appears that the vowels were applied to the entire text of Scriptures by the later Masoretes.

Nevertheless, it cannot be denied that the authors of these accents observed most accurately the syntax of the holy texts, which could not have fallen into oblivion among the Jews, to whom God entrusted his words, given their remarkable zeal for even the discarded remnants of Scripture.[102] Thus, the accents contribute not a little toward a genuine understanding of the divine word. Such beautiful order is observed in the work of the Masoretes that it should not be considered useless, especially since these notations show to the unskilled what comes naturally to those with experience.

Conclusion

This, among other things, is what a plain and simple meditation suggested to me when I was in a certain place, where I was deprived of all the help necessary for an accurate elaboration of this matter, and the only relief left to me was thinking. For I had the opportunity to consider by meditating with myself.

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what I would do if I had to live on an island inhabited only by people born deaf in order to lead a most pleasant life with the best conversation. So now I wish to deliver all this to the freest judgment of everyone, and I give infinite and eternal thanks to God, who has placed the mouth and tongue in man.

Notes

[1] In the German translation there is a pun here since "helle Mund" (Helmont) means a "clear mouth."

[2] Hiram was King of Tyre. He built a temple for Solomon (1 Kings, 5).

[3] Guilio Caesare Vanini (1584–1619), the alleged atheist burned at the stake in Toulouse in 1619 and author of *Confutazione delle religioni* (Catania: De Martinis, 1993).

[4] Sir Kenelm Digby (1603–1665), an English Catholic, courtier, writer, and natural philosopher, whose father was executed as a member of the Gunpowder Plot. He was a member of the council of the Royal Society and wrote a treatise on the so-called "powder of sympathy," a curative that was believed to heal wounds at a distance by being applied to the weapon that had inflicted the wound. See, William Osler, *Sir Kenelm Digby's powder of sympathy.*

[5] Robert Boyle (1627–1691), natural philosopher and theological writer, who is often described as the "father" of modern chemistry. He was a member of the Royal Society and undertook investigations into many fields: hydrostatics, physics, medicine, earth sciences, alchemy, and natural history. He emphasized the compatibility between science and religion, writing a manifesto of a Christian scientist (*The Christian Virtuoso*, 1690). He wrote devotional and theological tracts, supported missionary activities, and established the Boyle lectures to defend Christianity and refute atheism. See Lawrence M. Principe, *The Aspiring Adept.*

[6] The Academia Naturae Curiosorum was founded by Johann Lorenz Bausch of Schweinfurt after an extended tour of Italy in 1652. Bausch modeled his academy on the Italian academies he had visited and on the academy described by Francis Bacon in the New Atlantis. See Rolf Winau, "Zur Frühgeschichte der Academia Naturae Curiosorum," *Der Akademiegedank im 17. und 18. Jahrhundert*, ed. Fritz Hartmann and Rudolf Vierhaus (Bremen & Wolfenbüttel, 1977).

[7] *Ampelography*, the scientific description of vines (O.E.D.).

[8] This may refer to the study of shellfish since *Gammarus* (*cammarus*, *camarus*) means a sea-crab or lobster.

[9] *Scorzonera*, black salsify, a root vegetable much like a parsnip, called viper's grass in English. A book on this subject was published by the Academy of the Curious: Joannes Michael Fehr, *Anchora sacra, vel scorzonera ad normam Academiae curiosorum elaborate. Accessit de unicornu fossili* (1666).

[10] On the French Academies, see Frances A. Yates, *The French Academies of the Sixteenth Century* and Martha Bronfenbrenner, *The Rôle of Scientific Societies in the Seventeenth Century*. For Italy, see David Freedberg, *The Eye of the Lynx: Galileo, his Friends, and the Beginnings of Modern Natural History* (Chicago: Chicago University Press, 2002), which discusses the Academy of Linceans.

[11] Martin Bircher, Hrsg., *Die Fruchtbringende Gesellschaft; Quellen und Dokumente in vier Bände* (München: Kösel, 1970–71). See also, Karl F. Otto, *Die Sprachgesellschaften des 17. Jahrhunderts; The Fairest Flower: The Emergence of Linguistic National Consciousness in Renaissance Europe*. International Conference of The Center for Medieval and Renaissance Studies University of California (Firenze: Presso l'Accademia, 1985); Martin Bircher & Ferdinand van Inge, Hrsg., *Sprachgesellschaften. Societäten, Dichtersgruppen*, (Hamburg: Hauswedell, 1978).

[12] Die Deutschgesinnte Genossenshaft (1642).

[13] These last three societies were German. R.J.W. Evans has persuasively argued that societies like these were founded to revive and foster the kind of ecumenical humanism characteristic of the Renaissance. See his article, "Learned Societies in Germany in the Seventeenth Century," *European Studies Review* 7 (1977): 129–51.

[14] "Quis enim uberior in dicendo Platone? Jovem sic aiunt philosophi, si Graece loquatur, loqui." Cicero, *Brutus*, ed. A.E. Douglas (Oxford: Oxford University Press, 1966), 31.

[15] Henry More, *Conjectura Cabbalistica: Or, A Conjectural Essay of Interpreting the Mind of Moses according to a threefold Cabbala, viz., literal, philosophical, mystical, or, divinely moral* (London, 1653).

[16] An allusion to Virgil, *Eclogue* 6 (lines 3–4): "cum canerem reges et proelia, Cynthius aurem / vellit et admonuit" ("when I was about to sing of kings and warfare, Apollo plucked my ear and cautioned me").

[17] In other words, he understood through innate ideas rather than sense perceptions.

[18] Ophir was the source of gold, almug wood, and precious stones delivered to Solomon (1 Kings 9:28; 10:11). Further biblical references, 1 Kings 22:48; 1 Chr. 29:4; 2 Chr. 8:18; Job 22:24; Ps. 45:9: Isa. 13:12)

[19] An allusion to Virgil, *Eclogue* 1 (lines 24–25): "verum haec tantum alias inter caput extulit urbes / quantum lenta solent inter virburna cupressi" ("indeed this city of Rome has lifted up its head among other cities just as cypress trees tower above the bending shrubs").

[20] Louis Cappel (1585–1658), a French Hebrew scholar, who taught at the Academy of Saumur and contributed to the polyglot bible edited by Brian Walton. See François Laplanche, *L'Écriture, Le Sacré et L'Historie: Érudits et Politiques Protestants devant la Bible en France au XVII*e *siècle*. Studies of the Institute of Intellectual Relations Between the West-European Countries in the Seventeenth Century, vol. 12 (Amsterdam: APA—Holland University Press, 1986).

[21] Gerhard Joannes Vossius (1577–1649), Dutch scholar, Humanist, and moderate Calvinist, who stressed Christian unity and the freedom of the human will. His numerous publications were influential in encouraging a more critical study of the textual sources of Christian history.

[22] Joseph Justus Scaliger (1540–1609), Italian Protestant scholar and son of the natural philosopher, doctor, and humanist Julius Caesar Scaliger. He converted to Calvinism as a young man. His most famous work, the highly technical *Opus novum de emendatione temporum* (1583, with later editions), attempted to establish a chronology of biblical and classical history, starting with the Creation and including the Food, the Exodus, the Babylonian Captivity, and the dates of the life of Christ. He rejected the idea that the Bible alone provided a sufficient basis for writing the history of the world, a position espoused by the Calvinist chronologer Matthieu Béroalde. He also argued that Eusebius's *Historia Ecclesiastica* was unreliable, and he used the Passover Haggada to interpret the account of the last supper in the Gospel of Mark. Both Protestants and Catholics attacked him for his unorthodox views. See Anthony Grafton, *Joseph Scaliger: A Study in the History of Classical Scholarship.* 2 vols. (Oxford: Clarendon Press, 1983).

[23] Paulus Crusius, German Lutheran, who followed Melanchthon in arguing that historians must use astronomical data and pagan texts to understand the bible. In his *De epochis seu aeris temporum et imperiorum* (Basle, 1578) he used dates provided by the ancient past to establish the central dates of Greek history, thus challenging the chronology accepted by Christians and based on the Hebrew bible. He was a major influence on Joseph Justus Scaliger.

[24] Daniel Heinsius (1580–1655), a student of Scaliger, who followed his teacher in appreciating the importance of understanding the special Hellenistic Greek in which the New Testament was written. Hensius engaged in pioneering research on the Jewish sects existing at the time of Jesus. His study of the Talmud and Jewish sources enabled him to show the many Jewish influences incorporated into Christianity. See Barbara Becker-Cantarino, *Daniel Heinsius*.

[25] John Lightfoot (1602–1675), English Hebraist concerned with understanding the social milieu of late Judaism and early Christianity. He contributed an article on biblical chronology to Walton's polyglot bible (see note 56).

[26] Iamblichus (245–326 CE), Neoplatonist and author of *Theurgia or the Egyptian Mysteries*.

[27] Numenius of Apamea (fl. late second century CE), the Greek philosopher chiefly

responsible for the transition from platonic idealism to the neoplatonic synthesis of Hellenistic, Persian, and Jewish thought. He called Plato "an Atticizing Moses" and was interested in discovering primitive forms of theology. He appealed to Renaissance humanists and ecumenical thinkers like van Helmont and von Rosenroth.

[28] Johannes Reuchlin (1455–1522), German humanist, jurist, and scholar of Hebrew, Greek, and Latin. He was introduced to the Jewish Kabbalah by Pico della Mirandola and subsequently wrote two books on the subject, *De verbo mirifico* (1494), in which he argued that the Hebrew language had divine powers, *and De arte cabalistica* (1517), in which he explained the teachings of the *Zohar* with a Christian twist. While no friend of the Jews, Reuchlin engaged in a controversy with the Jewish convert Johannes Pfefferkorn and a second controversy with the Dominicans of Cologne, arguing against them that Jewish literature was important and should not be destroyed. Erika Rummel, *The Case Against Johann Reuchlin: Religious and Social Controversy in Sixteenth-Century Germany* (Toronto: University of Toronto Press, 2002).

[29] Titan, referring to Prometheus, who formed man.

[30] Thomas Bang, *Exercitatio de nephilimis; gigantibus vulgo dictis, pro vindicandis Hebraei sermonis, fontibus, opposite Jacobo Boulduco… quam disquisitioni* (Hauniæ, 1652).

[31] The Christian Hebraists Johannes Buxtorff, the elder, and his son Johannes Buxtorff. The elder Buxttorf published treatises dealing with semitic languages, the bible, the Talmud, and rabbinic thought as well as a polemical attack on the Jewish religion and customs: *Synagoga Judaica: Das ist Juden Schul: Darinnen der gantz Jüdische Glaub und Glaubens Ubung, mit allen Ceremonien, Satzungen, Sitten und Begräuchen, wie sie bey ihnen offentlich und heimlich im Brauche* (1603). See Stephen Burnett, *From Christian Hebraism to Jewish Studies: Johananes Buxtorf, 1564–1629, and Hebrew Learning in the Seventeenth Century*.

[32] Abraham Calov (1610–1685), Lutheran theologian and professor at Rostock, Königberg, Danzig, and Wittenberg, who wrote a twelve-volume work summarizing the fundamentals of Lutheranism (*Systema locorum theologicorum*, 1655–1677).

[33] Louis Cappel (see note 20).

[34] Johann Benedikt Carpzov (1639–1699), the younger, professor of moral, oriental languages, and theology at Leipzig.

[35] Johannes Cocceius (d. 1669), Calvinist theologian and one of the first Dutch Hebraists who was truly a rabbinical scholar. He produced editions and commentaries on the Mishnaic tractates *Sandedrin* and *Makkot* (1629). He was appointed "Professor of Jewish controversies." Coccejus rejected the rigid dogma of predestination of Calvinist orthodoxy for the Zwinglian convenantal tradition. See Aaron L. Katchen, *Christian Hebraists and Dutch Rabbis: Seventeenth Century Apologetics and the Study of Maimonides' Mishneh Torah* (Cambridge: Harvard University Press, 1984), 65ff.

[36] Constantine l'Empereur van Oppijck (1591–1648), Professor of Hebrew and "Jewish controversies" and Chair of Theology at Leiden, who wrote commentaries on the Mishnah, *Grammatica Chaldaea ac Syria* (1628), and חליכות עולם עם מבוא הנמרא *sive Clavis Talmudica*… Latine reditta per Constantinus L'Empereur. See Katchen, *Christian Hebraists and Dutch Rabbis*, 75ff.

[37] Petrus Galatinus (1460–1540), Christian Hebraist and Catholic apologist who wrote a polemic against the Jews, *Petri Galatini opus de Arcanis Catholicæ Veritatis. Hoc est, In omnia difficilia loca Veteris Testamenti, ex Talmud alijs Hebraicis libris… contra Iudæorum perfidiam… Commentarius. Ad hæc Ioannis Reuchlini… de arte cabalistica libri tres* (Basileae, 1550).

[38] Gilbert Gaulmyn (1585–1668) translated works of Eustathius and Michael Psellus and contributed to *De Vita et Morte Mosis libri tres, cum observationibus G. Gaulmini…* (Hamburgi, 1714).

[39] Gulielmus Gentius (d. 1687) published *Historia Judaica, res Judæorum ab eversa æde Hierosolymitana, ad hæc fere tempora usque, complexa. De Hebræo in Latinum versa a G. Gentio* (Amstelodami, 1651).

[40] Johann Heinrich Hottinger (1620–1667), Calvinist theologian and professor of Church history, oriental languages, and rhetoric at universities in Germany, Holland,

and Switzerland, published a grammar of Chaldean and Syriac and a number of books on the bible and Jewish and Christian history, among which was *Thesaurus Philologicus, seu Clavis Scripturæ. . . . Editio secunda auctior . . . & charactere novo orientali nunc primum vestiti* (Tiguri, 1659).

[41] Athansius Kircher (1601–1680), a Jesuit distinguished for his encyclopedia knowledge in the natural sciences. Kircher lectured at the Roman College on mathematics, physics, and oriental languages. He studied volcanoes and personally measured the dimensions of the crater on Mount Vesuvius, publishing a two volume work on subterranean forces (*Mundus subterraneus*, 1678). He collected antiquities and ethnological specimens, which are housed in the Museum Kircherianum in the Roman College. He was interested in the relationship between languages and attempted to devise a universal language. He was present at the excavation of the Pamphylian obelisk and worked throughout his life, unsuccessfully, to decipher Egyptian hieroglyphs. His most famous invention was the magic lantern. His works fill forty-four folio volumes.

[42] Jan Leusden (1624–1699), professor of Middle Eastern languages at the University of Utrecht, among whose many philological works was *Onomasticum sacrum, in quo omnia nomina propria Hebraica, Chaldaica, Graeca & origine Latina, tam in V. & N. T. quam in libris apocryphis occurrentia dilucide explicantur. . . . Additur in fine additamentum de vasis, pecunia et ponderibus sacris* (Ultrajecti, 1665) and *Clavis hebraica & philologia Veteris Testamenti* (Utrecht, 1683).

[43] Andreas Masius (1517–1573) published an edition of the Book of Joshua, a translation of *De Paradiso Commentarius* of Moses Bar Kēphā as well as a Syriac grammar and annotations on Jeremiah. He was a contributor to the Antwerp Polyglot Bible.

[44] This may be Johann Eck (1486–1543), whose name at birth was Maier, the most influential anti-Protestant theologian of his generation.

[45] Henry More (1614–1687), a Cambridge Platonist, close friend of van Helmont, and correspondent of von Rosenroth. All his writings were dedicated to defending religion by proving the existence of the providential nature of God and the reality of incorporeal substance.

[46] Simeon Marotte de Muis (1587–1644), Simeonis de Muis . . . *Opera omnia in duos tomos distributa. Quorum primus continet Commentarium . . . in omnes Psalmos Davidis & selecta Veteris Testamenti Cantica.* [With the Vulgate version of the text, and another by S. M.] *Alter vero, Varia Sacra, variis e Rabbinis contexta complectitur. Quibus accedit Triplex assertio veritatis Hebraicæ (adversus exercitationes J. Morini) C. D'Auwergne* . . . omnia tam impressa quam nondum typis mandata, collegit atque in lucem edidit (2 tom. Parisiis, 1650).

[47] Edward Pocock (1604–1691), the elder, who is best known for his translations from Arabic. Von Rosenroth may have had in mind his commentary on the Mishah: באב מוסי *Porta Mosis, sive Dissertationes aliquot a R. Mose Maimonide, suis in varias Mishnaioth, sive textus Talmudici partes, commentariis præmissæ* . . . Arabici . . . conscriptæ, et Latine editæ: . . . cum appendice notarum miscellanea; opera . . . (1654–55). See *Dictionary of National Biography* 46: 7–12.

[48] Raymond Martini (c. 1210–c. 1285), Jewish convert and Christian apologist, whose most famous work was a polemic against Moslems and Jews: *Pugio Fideii . . . Mauros, et Judaeos*, which was republished in the seventeenth century with "observations" by Joseph de Voisin and an introduction by J.B. Carpzov. See Robert Chazan, *Daggers of Faith: Thirteenth Century Christian Missionizing and Jewish Response* (Berkeley: University of California Press, 1989) and Jeremy Cohen, *The Friars and the Jews: The Evolution of Medieval Anti-Judaism* (Ithaca: Cornell University Press, 1982).

[49] Johan Stephen Rittangel (1606–1652), סדר הגדה של פסח *Liber rituum Paschalium, mit was fur Ceremonien und Gebräuchen die Juden das Osterlamb gegessen haben.* Translatus a J.S. Rittangelio (Regiomonti , 1644).

[50] Johann Saubert, the elder (1592–1646), a Lutheran theologian and prolific author, among whose works was *Biblia . . . von D.M. Luthero S. Verteutschet, und mit Erklärungen etlicher tunckelen Oeter* . . . [Edited by J.M. Dilherr] (1651). Johann Saubert, the younger (1638–

1688), wrote a number of biblical commentaries and histories, among which was *de Sacrificiis veterum conlectanea historico-philologica et miscella critica* (Jenæ, 1659). He also translated a description of the famous model of the reconstructed Jerusalem Temple: *J. Leonis de Templo Hierosolymitano* . . . Libri IV. ex Ebræo, Latine recensiti a J. Sauberto (Helmæstadi, 1665).

[51] Robert Sheringham (1602–1678), *Joma, Codex Talmudicus in quo agitur de sacrificiis caeterisque ministeriis diei expiationis . . . ex Hebraeo sermone Latinum versus et commentariis . . .* (London, 1648).

[52] Johann Adam Scherze (1628–1683), a conservative Lutheran professor of theology and Hebrew at Leipzig.

[53] Wilhelm Schickard, the elder (1592–1635), astronomer, geographer, and orientalist, who also devised a calculating machine. Among his published works is one describing how to learn Hebrew in twenty-four hours: *W. Schickardi Horologium Hebraeum, sive consilium, quomodo sancta lingua spacio XXIV. horarum a totidem collegis, seu eorundem semisse sufficienter apprehendi queat, septies comprobatum et impressum . . . quum prius . . . emendatum, . . . annotationculis elucidatum, et lexici compendium . . . exauctum fuisset a N. H.* (Oxoniensi) S[acræ] T[heologiæ] D[octore, i.e. N. Homes?]. (Rota Hebraea pro facilitate conjugandi pridem inventa . . . a W. Schickardo . . . Nunc recusa denuo.) (Londini, 1639). See Friedrich Seck, ed., *Wilhelm Schickard, 1592–1635: Astronom, Geograph, Orientalist, Erfinder der Rechenmachine.* Contubernium, Bd 25 (Tübingen: J.C.B. Mohr, 1978).

[54] Sebastian Schmid (1617–1696), professor of theology at Strasburg, who published a number of books on the Old and New Testaments.

[55] Joseph de Voisin (c. 1610–1685), a French Christian Hebraist and Christian apologist, among whose works are: *Liber de Jubilæo secundum Hebræorum et Christianorum doctrinam* (Paris, 1655); and *Theologia Judæorum, sive opus in quo rem ipsam quæ nunc Christiana religio nuncupatur, etiam apud antiquos fuisse, priusquam Christus veniret in carne, ex Hebræorum libris ostenditur* (Paris, 1647).

[56] Brian Walton, Bishop of Chester and editor of *Biblia Sacra Polyglotta, complectentia Textus originales, Hebraicum, cum Pentateucho Samaritano, Chaldaicum, Græcum; Versionumque antiquarum, Samaritanæ, Græcæ LXXII Interp., Chaldaicæ, Syriacæ, Arabicæ, Æthipicæ, Persicæ, Vulg. Lat., quicquid comparari poterat. Cum textuum, & versionum Orientalium translationibus Latinis* [by S. Pagninus, B. Arias Montanus, Gabriel Sionita, F. Nobili, T. Hyde, E. Castell, S. Clarke, D. Loftus, and others.] . . . Cum apparatu, appendicibus, tabulis, variis lectionibus, annotationibus, indicibus, &c. [by L. Cappel, E. Brerewood, J. Bonfrerius, J. Lightfoot, B. Walton, F. Nobili, A. Masius, P. Young, H. de Groot, F. Lucas, M. Trostius, T. Greaves, and others.] Edidit Brianus Waltonus [assisted by E. Castell, A. Huish, S. Clarke, T. Hyde, H. Thorndike, H. Hammond, E. Pocock, T. Pierce, and others.] (Triplex Targum, sive versio Pentateuchi: I. Chaldaica Jonathani Ben-Uziel ascripta. II. Chaldaica Hierosolymitana. III. Persica Jacobi Tawusi.) , 6 vols (1657).

[57] Sixtinus Amana wrote *Antibarbarus Biblicus* (1628), which derided the revised Vulgate produced by Pope Sixtus V in 1590.

[58] Johannes Haberman (1516–1590), Lutheran theologian and author of devotional literature, who wrote a Hebrew grammar and Hebrew dictionary.

[59] Roberto Bellarmino (English, Bellarmine, 1542–1621), Jesuit theologian, Cardinal, Archbishop of Capua, and Catholic saint, who assumed the chair in controversial theology at the Roman College in 1576) His greatest work was a three-volume refutation of Protestant theology, *Disputations de controversiis Christianae fidei adversus huius temporis haereticos* (1686, 1588, 1593). Bellarmino's revised version of the Vulgate, known as the Sixto-Clementine Vulgate, became the official Catholic Latin Bible until the twentieth century.

[60] This may be a reference to Samuel Bohle, *Sam. Bohlii Dissertationes XIII pro formali significationis in S. Scripturæ explicatione eruendo.-Sam. Bohlii Dissertatio de regula rustica in S. Scr: explicatione re-introducenda. Samuelis Bohl . . . Commentarius Biblico-Rabbinicus super orationem*

tertiam Esaianam capite 7, 8, 9, 10, 11, 12 absolutam, in Godefried Menthen, *Thesaurus theologico-philologicus, sive Sylloge dissertationum elegantiorum ad selectiora et illustriora Veteris et Novi Testamenti loca; a theologis protestantibus in Germania separation diversis temporibus conscriptarum. Secundum ordinem utriusque Testamenti librorum digesta* (Amstelædami, 1701).

[61] Johann Michael Dilherr (1604–1669), a prolific author, among whose works is *Eclogæ sacræ Novi Testamenti, syriacæ, græcæ, latinæ. Cum notis et observationibus, ita explicatæ, ut, præter rerum non inutilem cognitionem, adhibitis grammaticæ syriacæ rudimentis antehac excusis attentus lector linguam syriacam proprio Marte possit addiscere. Adduntur indices . . . et manuale lexici syriaci* (Halle, 1638).

[62] Michael Neander, *Theologica Christiana S. Scripturæ Patrum Græcorum Græcis, et Latinorum Latinis, e fontibus ipsorum, et tandem Theandri Lutheri dictis et testimoniis illustrata et exposita pio studio Michaelis Neandri. Cum indice locorum, rerum et verborum* (Lipsiæ, 1595).

[63] Santes Paginus (1470–1541), a Luccan Dominican, who was the first modern scholar to translate the whole Bible from the original languages in 1518.

[64] Valentin Schindler (d. 1604), *Lexicon Pentaglotton, Hebraicum, Chaldaicum, Syriacum, Talmudica-Rabbinicum, et Arabicum* . . . (Hanoviae, 1612); Joannes Mercurus, האמרא וא האדשכ אקודקד יחול *Tabulæ in grammaticen linguae Chaldaeae, quae & syriaca dicitur . . . Accessit . . . libellus de abbreviaturis Hebreorum . . . Adjecta sunt . . . paradigmata verborum & nominum Hebraica & Syriaca . . . opera & studio . . . V. Shindeleri* (Witebergai, 1579). Cf. Stephen Kay Jones, *The History of a Hebrew Lexicon* [by V. Shindler] (London: A. Moring, 1914).

[65] Martinus Trostius, a Christian Hebraist who contributed to Walton's polyglot bible and published a Hebrew grammar, a Syriac dictionary, a treatise on the Epistles of John, and a Syriac version of the New Testament.

[66] The Spanish polyglot bible, or *Complutensis*, was begun in 1502 under the sponsorship of the Archbishop of Toledo, Cardinal Francisco Jiménez de Cisneros, printed at the University of Aclala de Henares, and finally published in 1522. It contained the revised Masoretic Hebrew text of the Hebrew bible, an Aramaic translation (The Targum of Onkelos), the Vulgate, and the Greek Septuagint. The New Testament was printed in Greek with a Latin translation. On the French polygot bible see Peter N. Miller, "Making the Paris Polyglot Bible: Humanism and Orientalism in the Early Seventeenth Century."

[67] Walton, Bishop of Chester and editor of *Biblia Sacra Polyglotta, complectentia Textus originales, Hebraicum, cum Pentateucho Samaritano, Chaldaicum, Græcum; Versionumque antiquarum, Samaritanæ, Græcæ LXXII Interp., Chaldaicæ, Syriacæ, Arabicæ, Æthipicæ, Persicæ, Vulg. Lat., quicquid comparari poterat. Cum textuum, & versionum Orientalium translationibus Latinis* [by S. Pagninus, B. Arias Montanus, Gabriel Sionita, F. Nobili, T. Hyde, E. Castell, S. Clarke, D. Loftus, and others.] . . . Cum apparatu, appendicibus, tabulis, variis lectionibus, annotationibus, indicibus, &c. [by L. Cappel, E. Brerewood, J. Bonfrerius, J. Lightfoot, B. Walton, F. Nobili, A. Masius, P. Young, H. de Groot, F. Lucas, M. Trostius, T. Greaves, and others.] Edidit Brianus Waltonus [assisted by E. Castell, A. Huish, S. Clarke, T. Hyde, H. Thorndike, H. Hammond, E. Pocock, T. Pierce, and others.] (Triplex Targum, sive versio Pentateuchi: I. Chaldaica Jonathani Ben-Uziel ascripta. II. Chaldaica Hierosolymitana. III. Persica Jacobi Tawusi.), 6 vols (1657). On the English polyglot, see Peter N. Miller, "The 'Antiquarianization' of Biblical Scholarship and the London Polyglot Bible (1653–57), *The Journal of the History of Ideas* 62 (2001): 463–482).

[68] Benedictus Arias Montanus, editor of, מקרא *Biblia Universa et Hebraica quidem cum Latina interpretatione X. Pagnini Lucensis, B. Ariæ Montani Hispal. et quorundam aliorum collato studio ad Hebraicam dictionem diligentissime expensa* [Edited by M. Geier and J.P. Oheim.] (Novum Testamentum Græcum cum vulgata interpretatione Latina Græci contextus lineis insertis: quæ quidem interpretatio, cum a Græcarum dictionum proprietati discedit . . . in margine libri est collocata: atque alia B. Ariæ Montani opera e verbo reddita . . . in ejus est substituta locum . . . Accesserunt et huic editioni libri Græce scripti, qui vocantur Apocryphi; cum interlineari interpretatione Latina ex Bibliis Complutensibus

deprompta.-Romanæ correctionis in Latinis Bibliis editionis vulgatæ . . . loca insigniora; observata et denuo aucta a F. Luca. Accessit libellus alter, continens alias lectionum varietates, etc. Chronologia Sacræ Scripturæ (Lipsiae, 1657).

[69] Daniel Bomberg, a Flemish Catholic living in Venice, published a rabbinical bible in four volumes accompanied by the Targums and commentaries. A second edition was published in 1524–1525, which relied on the Masoretic text. Bomberg employed the Masoretic scholar Elijah Levita to correct this text.

[70] Elias Hutterus (see note 94).

[71] Sebastien Münster (1480–1553), German Hebraist, theologian, and exegete, who published dictionaries and grammars of Hebrew, Jewish biblical commentaries, and editions of Josephus, Abraham Ibn Ezra, Maimonides, Rabbi Solomon, and Moses ben Jacob of Coucy. Accusations of "judaizing" by Luther and others demoralized him to the point that he devoted the end of his life to the study of geography.

[72] Rambam, the acronym for Abraham ben Moses ben Maimon (1186–1237), commonly known as Maimonides, the most eminent codifier of Jewish religious law. Maimonides tried to reconcile religious law and philosophy in his *Guide of the Perplexed*.

[73] Rabbi ʿOvadyah mi-Bartenora.

[74] According the *Letter of Aristeas,* the Greek King of Egypt Ptolemy II Philadelphus (285–246 BCE) arranged for the Hebrew bible to be translated by 70 or 72 translators sent to Alexandria by Eleazar, the Chief Priest of Jerusalem. According to the letter, each translator produced exactly the same Greek text. The Letter was not written by an official at the court of the King as purported but by an Alexandrian Jew (c. 100 BCE) to show the superiority of Judaism as both a religion and a philosophy.

[75] Abraham ben Meir de Balmes, a fifteenth-century Italian philosopher, grammarian, and translator of Hebrew into Latin. His grammar was published with the title *Mikneh avram*. This was published in Venice in 1523 together with a Latin translation, *Peculium abramae*. We thank Elliot R. Wolfson for providing this reference.

[76] Van Helmont is urging a mode of conduct expressed by the popular Renaissance maxim, *festina lente* ("make haste slowly"). According to Erasmus, people should "follow this proverb and rightly combine promptness at the opportune moment with cautious deliberation." See Margaret Mann Phillips, *The Adages of Erasmus: A Study with Translations* (Cambridge: Cambridge University Press, 1964), 171.

[77] On Kircher, see note 38.

[78] On Walton, see note 53.

[79] Callisthenes of Olynthus (ca. 370–327), was the nephew of Aristotle of Stagira and an early biographer of Alexander the Great. In addition to his book *Deeds of Alexander*, he published ten book of Greek history (covering the years 387–356) and three books on the Third Sacred War. He lost favor with Alexander and either died in prison or was crucified. His works were all lost, but Deeds of Alexander underlies much of what was written by later historians.

[80] Melchisidek, King of Salem, who blesses Abraham (Gen. 14:18). On his priesthood, see Ps. 110:4; Heb. 5, 6, 10; 6:20; 7:1.

[81] There is no number 3 in the diagram.

[82] Greek for ventriloquist, referring mostly to women who delivered oracles by this means.

[83] There is no number 5 in the diagram.

[84] For a vivid and dramatic account of seventeenth-century vivisection, see Iain Pears' novel, *The Instance of the Finger Post* (New York: Riverhead Books, 1990).

[85] Gospel of Matthew 10:30.

[86] Van Helmont subscribed to the common view of horns as phallic symbols associated with fertility both in a figurative sense, as in cornucopias or horns of plenty, and a literal sense. Powdered horn was, and still is in parts of the world, the medically prescribed predecessor of Viagra.

[87] The controversy over the "magnetic cure of wounds" by means of a "weapon salve" or "sympathetic powder" provides another illustration of van Helmont's con-

viction that spiritual forces are the only active agents in nature. As its name suggests, the "weapon salve" was applied to either the weapon that inflicted the wound or the discarded bandage, rather than to the wound itself. The rationale for this procedure lay in the phenomenon of magnetism. A magnetic attraction was thought to exist between the blood on the weapon or bandage and the blood still coursing through the veins of the wounded person. The magnetic attraction ensured that an efflux of spiritual matter communicated between the two bloods, carrying the healing power of the salve with it. The cure was described in the first book of a work wrongly attributed to Paracelsus, *Archidoxis magica*. Oswald Croll and Rudolph Goclenius, followers of Paracelsus, wrote positively about the weapon salve, but because it acted at a distance, the question soon arose as to whether the cure was natural or diabolical. Jean Robert, a Belgian Jesuit, wrote a book in which he accused the Protestant Goclenius of demonic magic. Van Helmont's father entered into the fray, arguing that the weapon salve was natural as a result of which he was put under house arrest for two years and interrogated by the Inquisition. On this incident, see Walter Pagel, *Joan Baptista van Helmont: Reformer of Science and Medicine*. The cure was not painless. Sir Kenelm Digby, who used it, was said to have made his patients wince in pain simply by powdering the knives that cut them. It is disquieting to know that this theory lay behind the practice of taking wounded dogs to sea in the hope that communication between the wounded animal and the blood on the weapon or dressing left on land would help in determining longitude! See David Sobel, *Longitude: The True Story of a Lone Genius who Solved the Greatest Scientific Problem of his Time*, 41–2: "…countless cranks and opportunists published pamphlets to promulgate their own hare-brained schemes for finding longitude at sea.

Surely the most colorful of the offbeat approaches was the wounded dog theory, put forth in 1687. It was predicated on a quack cure called powder of sympathy.… Send aboard a wounded dog as a ship sets sail. Leave ashore a trusted individual to dip the dog's bandage into the sympathy solution every day at noon. The dog would perforce yelp in reaction, and thereby provide the captain a time cue. The dog's cry would mean, 'the Sun is upon the Meridian in London.' The captain could then compare that hour to the local time on ship and figure the longitude accordingly."

[88] We have asked experts in the field of Kabbalah and Christian Mysticism if they could provide sources for these claims, but to no avail.

[89] See note 61.

[90] See note 72.

[91] Possibly the Euphrates and referring to Babylonia.

[92] A circle was the ancient symbol of perfection, which was why some people found it difficult to accept Kepler's discovery of the elliptical orbits of the planets.

[93] There are twelve double letters in Hebrew, which can be pronounced with either a soft or a hard sound. *Beth* can be pronounced as either a soft V or a hard B.

[94] The Ashkenazi Jews pronounce the *Tav* without a *Dagesh* as S, for instance, in the word Shabbos, whereas the Sefardic Jews use the hard *Tav*, whether or not there is a *Dagesh*, hence Shabbat.

[95] The superiority of the right over the left is encapsulated in the Latin word for left *sinister*.

[96] A dot in a *He* at the end of a word is not a *Dagesh*. It is known as a *Mappik* and indicates that the *He* is to be sounded as a consonant.

[97] Elias Hutter, *Cubus Hebraeo-Latinus: ubi non tantum Radicum Hebraicarum, secundum puncta diversa explicatur signification: verum etiam illas colligendi monstratur ratio* (1605).

[98] *Keri* and *ketibh* (or *kethibh*): words used by the Massoretes to distinguish the pointed, or voweled, text of the Hebrew Bible from the unpointed, or unvoweled, text. *Kethibh* means "written" or "what is written" and designates the original form of the text which was written with consonants alone. *Keri* signifies "read" or "what is to be read" and refers to the completely vocalized text. The *keri* makes the exact reading or pronunciation of the words clear by inserting the vowels. It was also used to correct possible errors in the *kethibh* or traditional text.

[99] Elias Levita (1469–1549), Hebrew scholar, grammarian, and author of the controversial text *Masoreth Ha-Masoreth* (1538) which argued that the Hebrew vowel points were devised by rabbis, known as Masoretes, from the School of Tiberius in the ninth century CE.

[100] Álvaro Semedo, *Histoire universelle du grand Royaume de la Chine compose en Italien par le P. A. Semedo et traduite… par L. Coulon* (Paris, 1645).

[101] From the moment sections of the *Zohar* first began to appear at the end of the thirteenth century Simeon b. Yohai's authorship was questioned on both historical and linguistic grounds, and several authors declared the work a forgery written by a contemporary Spanish Kabbalist Moses de Leon. The debate over the authorship of the *Zohar* was only resolved in the twentieth century by Gershom Scholem, who conclusively proved that Moses de Leon was indeed the author of all sections of the *Zohar* except *Raya Mehemna* and *Tikkunei ha-Zohar*, which he attributed to an unknown rabbi from the school of Isaac Luria. But unlike those who dismissed and belittled the *Zohar* as "book of lies" because it was a forgery, Scholem considered it a remarkable work representative of the spirit of mystical Judaism. G. Scholem, "*Zohar*," *Encyclopedia Judaica* (Jerusalem: Keter, nd).

[102] It was customary for Jews to store, rather than destroy, sacred texts in a repository known as a *Genizah*, which was usually placed in Jewish cemeteries. This insured that what was sacred would not be profaned.

IMAGES



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5

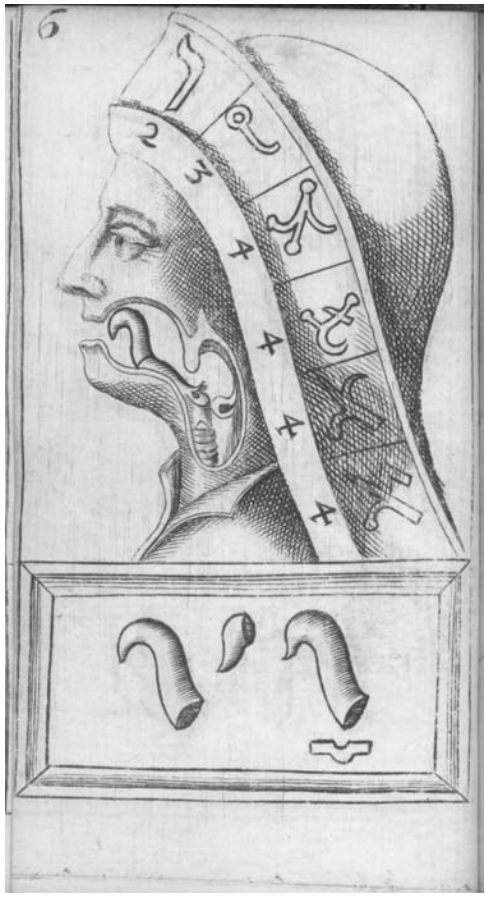


Fig. 6



Fig. 7



Fig. 8



Fig. 9



Fig. 10

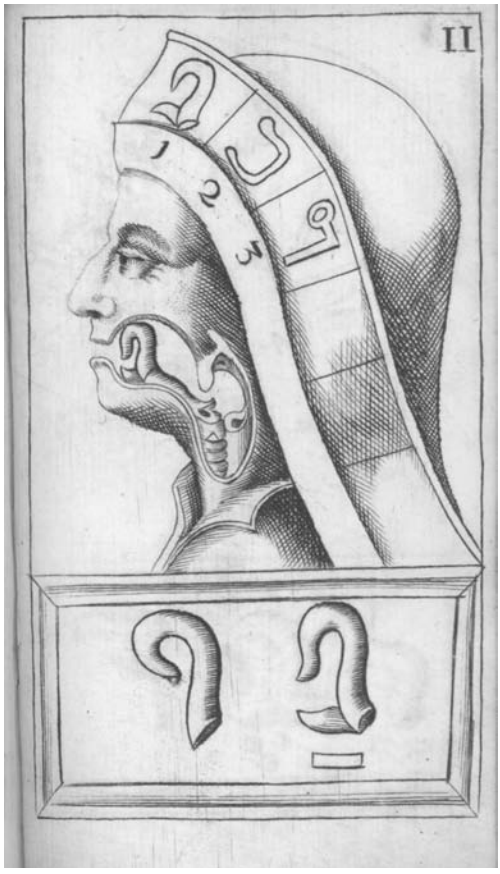


Fig. 11



Fig. 12



Fig. 13



Fig. 14



Fig. 15



Fig. 16



Fig. 17

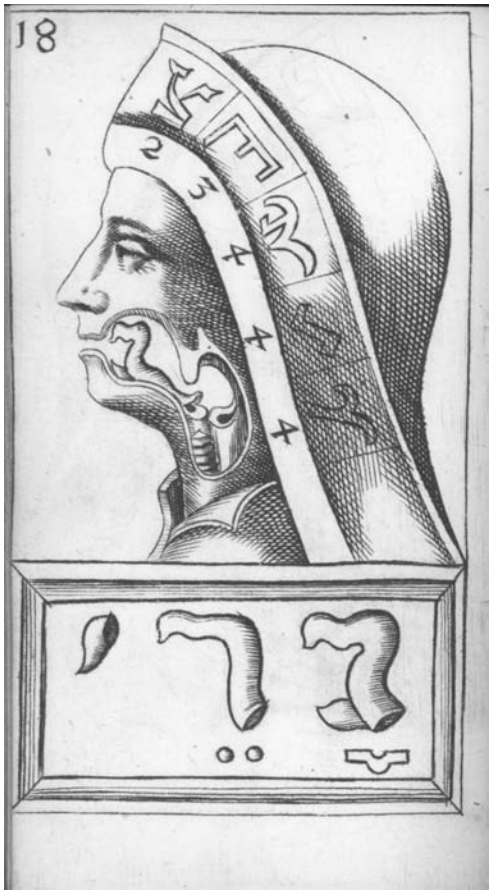


Fig. 18



Fig. 19

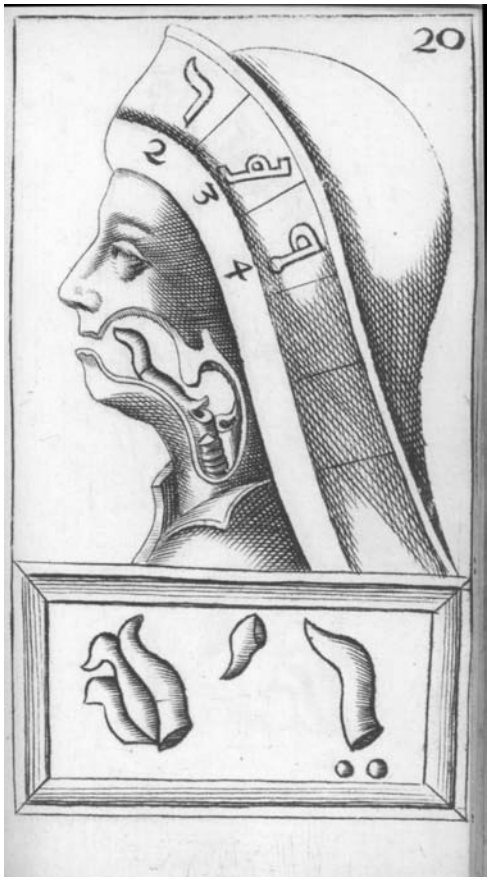


Fig. 20



Fig. 21



Fig. 22



Fig. 23



Fig. 24



Fig. 25



Fig. 26



Fig. 27



Fig. 28



Fig. 29



Fig. 30

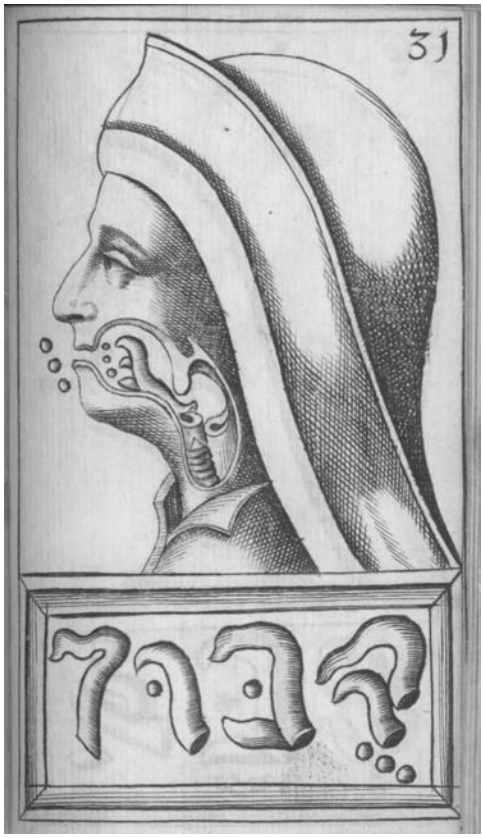


Fig. 31



Fig. 32



Fig. 33

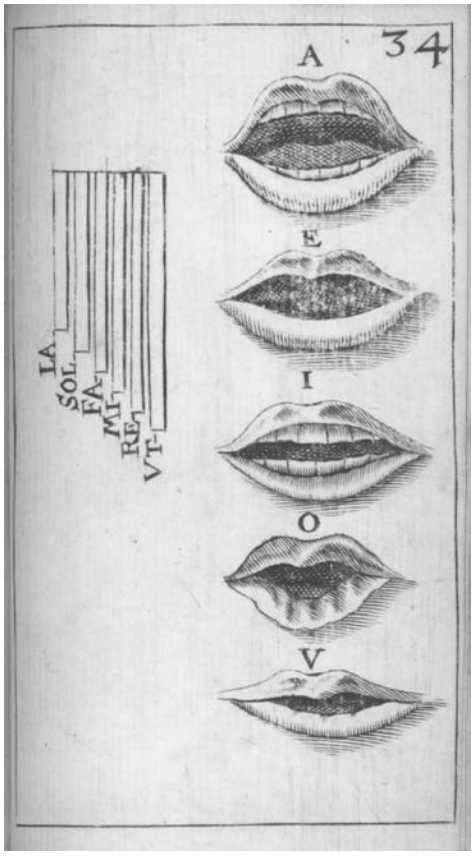


Fig. 34

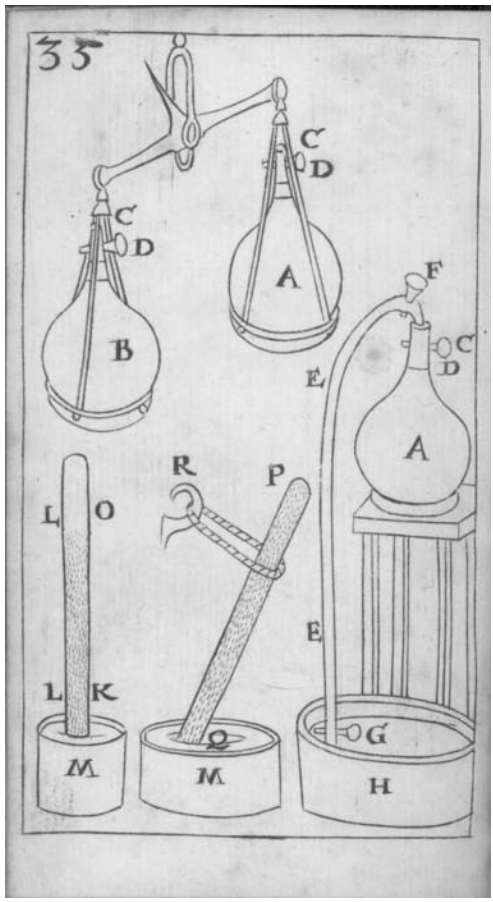


Fig. 35

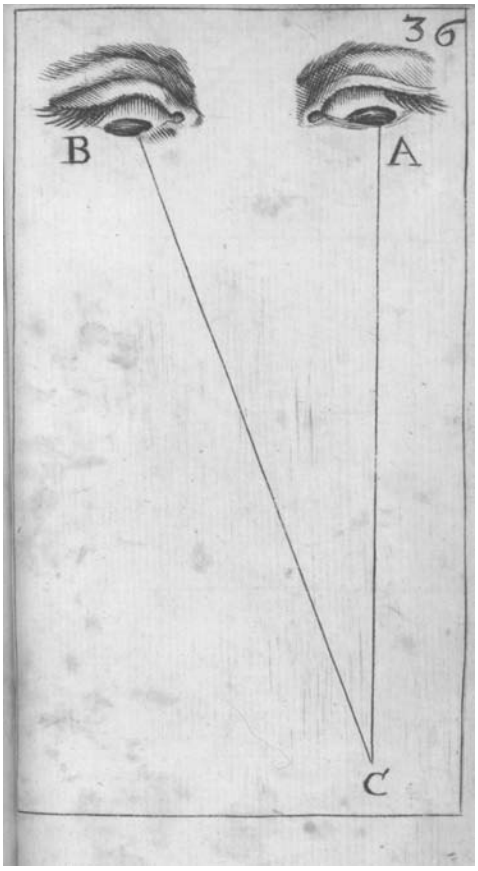


Fig. 36

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