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**Rewriting the Book of Nature:  
Kabbalah and the Metaphors of  
Contemporary Life Sciences\***

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**Abstract**

At the beginning of the twenty-first century, it seems as if biology, genetics, and the 'life sciences' are in normative control of cultural discourses regarding nature, the body, and the cosmos. This article addresses religious and esoteric semantics that underlie modern biology. The 'deciphering' of the human genetic 'code'—a metaphor introduced to the 'life sciences' by Erwin Schrödinger in 1944—rests on Pythagorean and kabbalistic notions about letters and numbers as the building blocks of the cosmos. The progress of 'genetic engineering' and related techniques puts the human being into the position of universal creator of life. The philosophical interest in *natura naturans* returns in modern science in an unambiguously religious and metaphysical way. Looking at the kabbalistic tradition and its 'ontologization' of language and letters reveals the genealogy of conceptual frameworks that are still operative today.

*De Creatione mundi factâ per conversiones and rotationes literarum.*

Christian Knorr von Rosenroth

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*Introduction*

Looking at the influence of the so-called 'life sciences' in contemporary Western societies, one cannot but wonder whether we are indeed opening a new chapter in the history of science: what used to be the deterministic paradigm of physics has been transformed into a dynamic paradigm of 'life', in which ecology, biology, and genetics play a decisive role. In fact, the influence of these disciplines is so strong that it exerts its impact on various other domains of modern societies. Metaphors of coding and decoding have captured the imagination of a wide public—from the *Bible Code* to the *Da Vinci Code*—and are also part and parcel of genetic language.

That the DNA chromosomes are to be described as a 'code' is not self-evident. Among the first scholars who used this metaphor for the smallest units of human life was the famous mathematician Erwin Schrödinger. In 1927 he said:

It is these chromosomes, or probably only an axial skeleton fibre of what we actually see under the microscope as the chromosome, that contain in some kind of code-script the entire pattern of the individual's future development and of its functioning in the mature state. Every complete set of chromosomes contains the full code... (Schrödinger 1944: 20).

When Marshall Nirenberg and Heinrich Matthaei at the *National Institutes of Health* in Bethesda (USA) succeeded in explaining the correlation between the bases of the nucleic acid and the amino acids in proteins—a problem known as the 'problem of molecular coding'—this scientific breakthrough very soon entered the fields of literature and public discourse. Biochemist and science-fiction author Isaac Asimov immediately understood what was going on; in 1962 he responded to the new development in molecular biology and biochemistry with his book *The Genetic Code*. Asimov opened his book with the following statement: 'All of us, whether or not we realize it, are living through the early stages of one of the most important scientific breakthroughs in history' (Asimov 1962: vii). In the final section of his book, Asimov made an attempt to 'peer into the future' and to speculate on how the life sciences would look in 2004 (cf. 1962: xiv). In enthusiastic words, he praised the ability to use fragments of cells to manufacture specific proteins. 'The ability to do so—an ability we possess *now*—is in essence a declaration of independence from life forms' (1962: 149; italics original). He ended his essay with the question: 'Will the day come, then, when we can reach the ultimate goal of directing our own evolution intelligently and purposefully towards the development of a better and more advanced form of human life?' (1962: 155).

The past five decades have shown that Asimov was right. At the turn of the twenty-first century, we are witnessing the blending of religious metaphors of creation with scientific projects, a blending that is even celebrated in the political sphere. US President Clinton announced the completion of the first phase of the Human Genome Project in 2000 with the statement: 'Today we are learning the language in which God created life'. Francis S. Collins, a pioneering medical geneticist who once headed the Human Genome Project, used Clinton's enthusiastic quote as the title of his book, *The Language of God*, with the subtitle announcing that *A Scientist Presents Evidence for Belief* (Collins 2006).

But why, we may ask, are these metaphors of coding, decipherment, and language so successful in modern science? What do they tell us about Western conceptualizations of nature and the cosmos? It is these questions I here engage. In order to provide some tentative answers, I will historicize those metaphors and discuss their philosophical and religious context. I will argue that on a structural and semantic level, these modern developments are the results of early modern esoteric and scientific discourse. With a special focus on the kabbalah, I will address the genealogy of the underlying concepts of nature and explore their various manifestations in early modern discourses of knowledge.

### *The Readability of the Cosmos: Europe's Obsession with Words*

In his celebrated book *Die Lesbarkeit der Welt*, Hans Blumenberg described the 'readability of the world' as a central characteristic of Western conceptualizations of cosmos and nature. The idea that the building blocks of reality are letters and numbers is by no means self-evident. In fact, as Blumenberg points out, the metaphors of reading and talking have not been there all the time: 'In Greek cosmogony there is no talking' (Blumenberg 1986: 22).<sup>1</sup> That later major philosophical and religious discourses determined the basic structure of reality by metaphors of reading and writing had a decisive impact on what can be called the *ontology of words* or the *texture of reality*. The linguistic structure of the cosmos is particularly important for Pythagorean traditions and for kabbalistic speculation, the impact of which is often underestimated. Even Blumenberg does not address (Jewish or Christian) kabbalah, which reveals the change of scholarly attention that has taken place during the past decades.

Before addressing the kabbalistic impact in more detail, a closely related and highly influential concept has to be mentioned. The notion of

1. In this article, all translations into English are mine, if not noted otherwise.

the 'Book of Nature' that is compared to the 'Book of God', or the bible, can be traced from antiquity through the modern period.<sup>2</sup> The conviction that tools of textual hermeneutics can be applied to the natural world as well—with the related conviction that divine revelation has a scriptural and a natural or material aspect—became an important ontological and methodological component not only of religious but also of philosophical and scientific discourses.

These discourses can take on very different forms, of course, and some of them will become clearer in the subsequent passages. But in order to explain the underlying idea, let me briefly refer to two relevant examples: Paracelsus (1493–1541) and Jacob Böhme (1575–1624), who both elaborated on the idea of the Book of Nature. While Paracelsus developed from this idea a complex and influential natural science,<sup>3</sup> Böhme applied the metaphor to the revelatory potential of nature and to a mystical illumination of the knowing human being. In his *Theological Letters* he writes:

Thus I have written, not about the doctrines of man or the science that we learn from books, but about my own book, which has been opened/ revealed (*eröffnet*) to me—as the noble allegory of God. I was granted to read the book of the noble image (to be understood as the image of God), and in that book I found my study, like a child in its mother's house that sees what the father has made, and that imitates him in its childish game. I don't need another book for that. My book has only three pages, which are the three principles of eternity; in these I can find everything that Moses and the prophets, but also Christ and the apostles have spoken. I can find the ground of the world and all secrets in them (*der Welt Grund und alle Heimlichkeit darinnen*)—but it's not me but the spirit of the Lord does this in the measure that he determines (*Epistolae theosophicae, oder Theosophische Send-Briefe*, from Peuckert and Faust 1955–61: XII, 14–15).

Böhme explicitly links the biblical notion of the human being as the *imago Dei* to the metaphor of the book as a source of knowledge. In so doing, he can introduce a third book, the 'Book of Man', as the inner source of human knowledge that reflects the absolute knowledge of the divine. Böhme was not alone in his conviction that this inner divine knowledge of nature and world is superior to a scientific knowledge of

2. There are innumerable publications on this topic. For an overview and introduction, see Vanderjagt and van Berkel 2005; van Berkel and Vanderjagt 2006. See also Bono 1995 and Howell 2002.

3. Reference should also be made of the *Gemma magica* of Ps.-Abraham von Franckenberg, completed in 1641 and published in Amsterdam in 1688. The *Gemma magica* is a presentation of Paracelsian speculation about the Book of Nature and as such one of the most interesting compilations of the seventeenth century. See Ohly 1995.

nature that would limit itself to the outward appearance. It was Johann Arndt (1555–1621), in particular, who influenced this understanding of an inner spiritual awakening that would lead to the ultimate unity of the Books of God, Nature, and Man (see Geyer 2001). Here, we come across the intimate relation between religious and philosophical understandings of *natura naturans* (the ‘naturing nature’), namely the creative power of nature that can illumine human knowledge. Reading the *liber naturae* (the ‘Book of Nature’) leads to perfect knowledge of and ultimate insight into the dynamics of the divine process.

### *The Texture of the Divine in Early Kabbalah*

Ideas relating to the Book of Nature and to the readability of the cosmos had been developed already in antiquity. However, with the rabbinic writings during Judaism’s formative period, the *ontologization of the text* gained new momentum, resulting in a mystification of the text that was more radical than it had been before. This laid the basis for what Moshe Idel aptly calls the ‘world-absorbing text’ and the ‘God-absorbing text’ in subsequent kabbalistic thought (Idel 2002: 26-79).<sup>4</sup>

The crucial notion here is *Torah*. According to rabbinic understanding, Torah is a continuous revelation of the divine into the world. Although the revelation of the written, canonical text to Moses is an historical datum and thus no changes are possible in the (unvocalized) biblical text—Scripture—this does not mean the end of Torah. Understanding the full meaning of the revealed text is itself Torah. This involves the rabbinic hermeneutical strategies, as well as what the rabbinic tradition calls the *torah she be al-pe*, or the ‘oral Torah’. The notion of the oral Torah is more than a smart device to fill the lacunae of the biblical text and to make the text translatable into normal life; it is a way to secure the process of revelation of Torah and to explore new dimensions in the already revealed text. Elliot R. Wolfson explains that this can be interpreted as a circular process of revelation in the rabbinic understanding of Torah. ‘While one must be on guard about making general claims with respect to the rabbinic sages, I feel confident that it is conceptually sound, and even methodologically valid, to speak of a rabbinic notion of time that is

4. On the determining function of *grammatica* for the development of the *artes*, see Irvine 1994. Interestingly, Irvine does not reflect on the importance of textual cultures for religious, particularly Jewish, discourses in medieval Europe. Aaron W. Hughes (2004) has convincingly argued that the idea of ‘reading the divine’ is a common topic of Jewish and Muslim authors in the Middle Ages; aesthetics and imagination are important aspects of this discourse.

intimately connected to understanding the revelation of Torah as a recurring phenomenon' (Wolfson 2006: 63-64).

In addition to the hermeneutic strategies of literal understanding, allegory, and symbolic reading, the interpretation of the *sōd*, or 'secret', of the biblical text had been an element of rabbinic argumentation from the beginning, often being linked to the term *ras/rasīm*, which also translates as 'secret/secrets'.<sup>5</sup> The communication of these secret dimensions of the text was restricted, with a particular warning against the disclosure of the works of creation and of the Merkabah (i.e. God's heavenly throne), as is explicitly stated in the highly influential passage of *m. Chagiga* 2.2: 'You do not lecture about cases of inbreeding to three, not about the work of creation to two, and not about the work of the Merkabah to one, be it not that he is a wise man [*chakham*] who understands from his knowledge [*da'at*]'.<sup>6</sup> It is not by chance that the Mishna regulates knowledge concerning the 'work of creation' in this way. Elaborating on the idea of Torah as a living and dynamic text, rabbinic thinking even went so far as comparing the act of reading to the act of creation. If Torah is a universal structure that predates creation, the very act of creation follows the pattern prescribed in Torah; hence, God himself is consulting and contemplating Torah (as in Midrash *Gen. R.* 1.1). Whether he pronounced the letters of the biblical text in the act of creation remains unclear. What is clear, however, is the link between the combination of letters and the act of creation. According to a well-known Talmudic passage, the knowledge of the letters as building-blocks of Torah safeguards the divine process of creation. *Berakhot* 55a reports that when Bezalel created the tabernacle he used his knowledge of the way in which heaven and earth were created by the combination of letters (see Urbach 1979: 197-213; Idel 2002: 32).

These passages demonstrate that the rabbinic hermeneutic was highly interested in mystical and magical dimensions of the biblical 'text'. The text was also a *texture*—a metaphor already mentioned by Origen (*Contra Celsum* 1.24) as an old Jewish tradition with regard to the divine name<sup>7</sup>—in which written letters are interwoven, but in which the text

5. A *chakham ha-rasīm* is a master of interpretation who is able to engage the divine knowledge, in contrast to human knowledge; see, for instance, the benediction of the *chakham ha-rasīm* in *b. Ber.* 58a (cf. *t. Ber.* 7.2; *y. Ber.* 13c, 10-13).

6. This text is quoted time and again both in rabbinic and in kabbalistic literature. On the textual transmission and the various parallel passages in rabbinic writings, see Wewers 1975: 4-13, 119-40.

7. See Morlok 2006: 162. Morlok notes that Gikatilla is the only Jewish author who later makes use of this metaphor (but cf. the zoharic notion of 'garment', on

also intersects with the basic structure of the cosmos. Both can be ontologized as 'Torah'.

This radical ontologization of the Torah in rabbinism is of paramount importance for understanding some later basic developments in Kabbalistic ontology in general and Kabbalistic textology in particular. The ontological approach to the sacred text, which sometimes may presuppose a unique status for Hebrew, serves as one of the most powerful nexuses between the rabbinic literature, interested mostly in the ritual and legendary aspects of the Bible, and the theosophical Kabbalah, which projected the primordial Torah into the bosom of the divine (Idel 2002: 29-30; see also Idel 1981).

The continuities between the rabbinic writings and the kabbalistic texts, sometimes overlooked by scholars, are highly important.<sup>8</sup> What the kabbalists did was to single out the hermeneutical tools of *sōd* and *rasīm* as the most important ways of unlocking the meaning of the biblical text and the ultimate key to perfect knowledge of Torah and thus of the cosmos.

The close link between the process of creation and the perfect understanding of the combination of letters and numbers is already attested in the *Sefer Yetzirah* ('Book of Creation/Formation'). Although an early dating of this text (or earlier versions of it) cannot be ruled out completely, Steven M. Wasserstrom's argument for an Islamic influence on *Sefer Yetzirah* is most convincing (Wasserstrom 1993; see also Hayman 2004: 1-41). Problems with dating notwithstanding, the *Sefer Yetzirah* is a clear example of the ontologization of letters and language, combined with the 'work of creation' of the world. In this text, it is not 'Torah' that is conceptualized as most relevant for the perfect understanding of the world, but the crucial ontological function of the letters themselves. 'It is by exploiting the creative power of language that the *perfecti* are able to imitate God... The letters were indeed created by God, but they entered the constitution of the world, and the mystic is able to use them' (Idel 2002: 36-37).<sup>9</sup> This magical use of the secrets of language became highly important for medieval kabbalistic authors.

which see below); in the Hekhalot literature, the metaphor did not refer to the weaving of a text but to the act of creation. On Gikatilla, see also Kilcher 1998: 74.

8. Elliot Wolfson argues regarding the worldview of traditional kabbalists that 'the mystical sensibility is a deepening of an approach found in older rabbinic sources' (2006: 63). Something similar is true for the relationship between the rabbinic milieu and the authors of the Hekhalot literature. The quoted passage *m. Chagiga* 2.2 is a case in point.

9. Idel deals extensively with this topic in Chapters 11 and 12 of his book. On the concept of language in *Sefer Yetzirah*, see also Idel 1990: 9-26. The topic of the *Golem*, to which Idel refers, is an important aspect of the creation through letters in kabbalistic

Most generally, the rise of medieval kabbalah during the thirteenth century has to be explained against the background of Jewish rationalism and the philosophical, as well as religious, contacts with Islamic and Christian milieus in Southern France and Spain (see the overview provided by Tirosch-Samuels 2003). Esoteric and ecstatic literature, such as the *Hekhalot* and *Merkabah* texts, were criticized by Islamic rationalists and also by Karaite groups. Following the influence of Saadya Gaon, during the eleventh century rabbinic thought was further intellectualized, a process that reached its peak with the writings of Maimonides, whose Aristotelian interpretation—absorbed mainly through Islamic sources—was a major critique of rabbinic hermeneutics. The alleged rationalism and reductionism of Maimonist philosophy sparked a controversy that soon involved the Jewish community worldwide. The emerging kabbalistic movement joined the anti-Maimonist position and claimed the basic knowability of the divine, ecstatic approaches to the biblical text, as well as the superiority of Platonic interpretations when it comes to the unlocking of the hidden, deeper meaning of Torah. Early kabbalah absorbed the *Hekhalot* and *Merkabah* traditions, the speculations of *Sefer Yetzirah* and related writings, and the teachings of the *Chassidei Ashkenaz*. All these influences were woven together into a complex philosophical and religious theory and practice in the thirteenth century. In addition to many commentaries on these works, the first major compilation of the new kabbalistic doctrines were the *Sefer ha-Bahir* and the *Sefer ha-Zohar*, the latter representing a vast spectrum of texts with various different layers and doctrines.

When it comes to mystical dimensions of language and texts—which is the topic of this article—the bahiric and zoharic literature provides a cornucopia of examples of ontologization of letters and words. It is a common denominator of all early kabbalistic literature that the function of letters by far exceeds their mere linguistic or semantic function within sentences (Giller 2001: 4-5). Letters and combinations of letters are the major tool for understanding the ontological structure of the cosmos. Names in general and the divine names in particular are carriers of essences, general principles, and creative processes. The *Sefer ha-Bahir* expresses this idea as follows:

It is said that with regard to everything that the holy One, blessed be he, created in his world, he placed its name according to its matter, as it is written, 'and whatever Adam called each living creature, that would be its

thought. I cannot follow this line of argument here; suffice it to say that it links up with alchemical traditions of 'perfecting nature', on which see particularly Newman 2004.



name' (Gen. 2:19), that is, its essence [*gufo*] was in this manner (*Sefer ha-Bahir*, sec. 53, p. 149 [ed. Abrams 1994; trans. Wolfson 2005: 197]).

It is the *naming* of things that gives *essence* and meaning to it. Such an understanding of Gen. 2.19 had been common to rabbinic interpretation, but it gained a particular importance in kabbalistic thought. The ontologization of the text moves from names to letters as the basic components of the cosmos. This is worked out in detail in *Sefer ha-Zohar*. The Genesis phrase, 'God said, "Let there be light!" And there was light' (Gen. 1.3), is interpreted as follows:

Here begins the discovery of hidden treasures: how the world was created in detail. For until here was general, and afterward general returns, constituting general-particular-general.<sup>10</sup> Till here, all was suspended in space, from the mystery of *Ein Sof*. Once the force spread through the supernal palace, mystery of *Elohim*, saying is ascribed: *Va-yomer Elohim, God said*. Above, saying is not specified. Although *Be-reshit, In the beginning*, is a saying, *said* is not ascribed. This *said* is susceptible to questioning and knowing. *Va-yomer, Said*—a power raised, *armuta*, rising, silently from the mystery of *Ein Sof*, in the origin of thought. *God said*—now that palace, impregnated by the seed of holiness, gave birth, giving birth silently, while outside the newborn was heard. The one giving birth silently, was not heard at all. As the emergent one emerged, a voice was generated, heard outside: *Yehi or, Let there be light!* All that emerged, emerged through this mystery. *Yehi, Let there be*, alluding to the mystery of Father and Mother, namely, *yod he*,<sup>11</sup> afterward turning back to the primordial point,<sup>12</sup> to begin expanding into something else: *light* (*Sefer ha-Zohar* 1.16b, trans. Matt 2004–2007: I, 122–23).

The creational process happens through the system of the sefirot (i.e. the divine powers or emanations); it is compared with a movement from silence to speaking. It is through speaking that space and time are created. A little later, the text explains the creation, or emanation, of the letters and links this process to the emanation of the sefirot.

That point of light is *light*.<sup>13</sup> It expanded, and seven letters of the alphabet shone within, not congealing, still fluid. Then *darkness* emerged, and seven other letters of the alphabet emerged within, not congealing, remaining

10. This refers to the thirteen hermeneutical rules of Rabbi Yishma'el.

11. This refers to the first two letters of the divine name, YHWH, *Yod* (Father) and *He* (Mother), also representing the sefirot *Chokhmah* and *Binah*. See also *Sefer ha-Zohar* 2.22a.

12. From *Yod* and *He*, the creational movement turns back to *Yod*, resulting in the word YHY, which means 'let there be'. The primordial point is *Chokhmah*, from which emerges the first of the lower seven sefirot, *Chesed*, also known as *light*.

13. As noted above, this point of light is *Chesed*, the sefirah that was revealed when most of the light had withdrawn to its hidden source in *Keter*.

fluid.<sup>14</sup> An *expanse* emerged, dissipating the discord of two sides, and eight other letters emerged within, making twenty-two.<sup>15</sup> Seven letters jumped from this side and seven from that, and all were engraved in that *expanse*, remaining fluid. The *expanse* congealed, and the letters congealed, folding into shape, forming forms. Torah was engraved there,<sup>16</sup> to shine forth (*Sefer ha-Zohar* 1.16b, trans. Matt 2004–2007: I, 124).

From these passages we can gather some more characteristics of kabbalistic discourse with regard to the mystical dimensions of language and texts. First of all, kabbalistic philosophy is not only critical of rationalist reductionism, which is regarded as a limitation of understanding Torah; it is also radically opposed to the influential philosophical movement of the Middle Ages known as *nominalism*. In its long history in Western philosophy, nominalism has known two independent, though sometimes connected claims: one is the rejection of abstract objects; the other is the rejection of universals. While the rejection of abstract objects argues that abstract concepts do not constitute *objects* with an ontological status of their own, and thus independently of human construction, the rejection of universals (such as ‘whiteness’) refutes the opinion that we can from the existence of particulars derive the existence of universals (see the overview in Armstrong 1978). Both realism and Platonism are opposing philosophical approaches; the Platonic tradition has always insisted on the independent existence of ideas as abstract objects and also as universal entities.

Historically, the emergence of nominalism in the Middle Ages can only be understood against the background of theological considerations. The question whether the *nomina*, the names, of things, have an ontological status of their own and thus are carriers of *essentia* or *universalia*, is fraught with theological problems. For instance, when humans study the Book of Nature and ultimately decipher the secret structure of the cosmos, they arrive at a knowledge that was reserved for God only. The medieval nominalists thus suggested that by studying the *nomina*, humans were not intermingling with the divine, because the names were not linked to any sort of transcendent or divine knowledge (such as in

14. ‘Darkness’ is related to the sefirah of *Gevurah*, which emanates and thus generates the next group of letters.

15. As Matt *ad loc.* explains, the sefirah *Tiferet* is known as ‘expanse’ (*raqi’a*, ‘firmament, expanse, sky’; cf. Gen. 1.6), but also as *Rachamim*, ‘Compassion’. This sefirah balances the contending forces of *Chesed* and *Gevurah*, Love and Judgment. Its accompanying eight letters bring the total to twenty-two, the number of letters in the Hebrew alphabet.

16. The twenty-two letters of creation are now fully formed, spelled out by God’s word within *Tiferet*, the sefirah that is also known as the written Torah.

Platonism). This strategy led to what I call the *tragedy of nominalism*: Although the maneuver enabled the emergence of free and rational science—because everything in nature can be studied without intermingling with divine realms—at the same time it was no longer possible to establish a rational and reliable knowledge of the ‘deep structure’ of the revealed world, ranging from concepts of the divine to concepts of *natura naturans*. The idea that ‘science’ is restricted to the revealed world or *natura naturata* (the ‘natured nature’), and that knowledge of nature is arbitrary and imperfect, while true knowledge of the divine world is impossible or derived from ‘belief’, is part and parcel of Western concepts of scientific knowledge that fully emerged during the sixteenth and seventeenth centuries. The basis for this disjunctive process was laid in the Middle Ages with the nominalist attempt to secure the independence of the divine. As I argue later, the emergence of the life sciences in the twentieth century is a return to a metaphysical interest in *natura naturans*; it is a late attempt to overcome the tragedy of nominalism.

The kabbalists, as well as their Islamic fellow-Platonists, did not follow the nominalist argument. Thus, Elliot R. Wolfson is right when he notes with regard to the *Bahir* passage quoted above:

The assertion that the name (*shem*) of an entity is its essence (*guf*)—when cast in the terminology of Western philosophy, the realist as opposed to nominalist orientation—presupposes an intrinsic connection between language and being that rests in turn on the assumed correlation of letter and matter, a correlation likely springing from the mythopoeic sensibility expressed in detail in the second part of *Sefer Yesirah*, where the line between religion, magic, and mysticism is not so easily drawn (Wolfson 2005: 197; similarly Idel 2002: 42).

Kabbalistic thought represents a line within Western cultural history that combines a Platonic metaphysics with a realist philosophy of language. While the nominalist distinction helped in establishing paradigms of independent natural science, the philosophical and religious claim that knowledge is concealed in language itself has remained an alternative interpretation of the cosmos.

If the creational process is conceived as an emanation and subsequent permutation of letters and words, and if the letters have an ontological status as independent ‘units’ and abstract objects, the text develops into a *texture*, with innumerable threads of meaning woven into one structure; Torah becomes a ‘garment’ of truth.<sup>17</sup> Consequently—and making use of

17. This is a well-known topic in kabbalistic texts. See, for instance, *Sefer ha-Zohar* 3.152a, where the ‘garment of Torah’ is explained with reference to Ps. 119.18 (‘Open my eyes that I may perceive the wonders of your Torah’).

modern philosophical terms—the interpretation of kabbalistic spirituality has to take into account that these texts are characterized by many layers of *intertextuality*—the continuous presence, even if concealed, of biblical, rabbinical, philosophical, and other kabbalistic literature—by *multivalence*—sentences and words have multiple meanings and are consciously used in more than one possible reading—and by strategies of *concealment* that tend to reveal meaning only to those who can read between the lines and are able to grasp the hidden dimensions of the text. Put otherwise, reading these texts is a creative process in itself, as the reader becomes part of the *texture* that constitutes kabbalistic literature; and the text becomes *present* in the very process of reading.

This is the reason why it is fruitful to use twentieth-century philosophy in order to understand kabbalistic literature. As Elliot R. Wolfson has repeatedly demonstrated, phenomenological continental philosophy and what sometimes is vaguely referred to as ‘postmodern’ philosophy, are particularly worthwhile for exploring the many dimensions of kabbalistic texts, for the simple reason that this philosophy is also characterized by intertextuality, multivalence, a dialectic of concealment and revelation of truth, and the approach of texts as textures in which the reader plays a decisive role and the time gap between texts and reader is invalidated.

The reference to twentieth-century continental philosophy is telling for another reason, too. It demonstrates the importance of an intellectual tradition in Europe that locates knowledge in language and that argues for the ‘revelation’ of truth by means of linguistic analysis. According to this intellectual tradition, there is an ontological link between letters and words on the one hand, and the basic components of reality on the other. The influence of kabbalistic spirituality on the emergence and continuity of such an interpretation cannot be overemphasized.

### *Linguistic Ontologies in Christian Kabbalah*

All representatives of early modern esotericism were influenced by the Jewish kabbalah to a greater or lesser degree (see the overview in von Stuckrad 2005). This influence became increasingly evident as more Hebrew texts became available in Latin translation. In the sixteenth and seventeenth centuries, partial translations of the Zohar, the works of Gikatilla, and other ‘classical’ texts were produced, so that Christian authors could make full use of them. Many Christian authors regarded Hebrew as a sacred language that had been spoken in the Garden of Eden, even if this interest in Jewish sources was by no means a neutral process of exchange or dialogue. More often it was marked by a polemic

tone with attempts to prove the 'truth' of Christianity with the aid of Jewish sources.

This polemic notwithstanding, what we witness here is a 'shared passion' of Jewish and Christian authors for the Platonic alternative to nominalist positions. That is why the kabbalistic tradition attracted so many Christians who were interested in the ultimate ontological structures of the cosmos. The rediscovery of the Platonic tradition in the fifteenth century went hand in hand with the emergence of kabbalistic approaches to language in Christian milieus. Even the formation of an academic discipline called 'philology' was informed by the search for absolute sources of wisdom. But before I deal with humanistic philology in more detail, let us have a look at Giovanni Pico della Mirandola (1463–1494) and Johannes Reuchlin (1455–1522), two of the most influential Christian kabbalists.

Despite a nominalist tendency in a number of his '900 Theses', or *conclusiones*, Giovanni Pico della Mirandola participated in the ontologization of language in his reception and interpretation of kabbalah. For instance, the nominalist thesis, 'No definition is adequate to the thing defined', is preceded by an ultimately Platonic thesis, saying that 'Quiddities [*quiditates*, i.e. 'whatnesses'] possess their formal existence from eternity from themselves, not from something outside themselves'.<sup>18</sup> Stephen A. Farmer notes that the 'views expressed here illustrate the inadequacy of traditional labels such as "realist" or "nominalist" when applied to premodern philosophers and their hierarchical systems. Both elements can commonly be found at different levels of those systems' (Farmer 1998: 400, note). Although we should indeed look very closely at the differences between realist and nominalist approaches in those authors and should not generalize our conclusions, the basic challenge and dilemma of nominalist argumentation remain. What we see in Pico is a creative though not really consistent attempt to bridge the gap between those conflicting positions. Pico is wrestling with the dilemmas and paradoxes of perfect knowledge and does not arrive at a less paradoxical argument. Thesis 3>6 (ed./trans. Farmer), for instance, alludes to a 'perfect wisdom that is beyond demonstration', stating: 'Just as knowledge through demonstration [*cognitio per demonstrationem*], due to the general state that we experience here, is the most perfect knowledge [*perfectissima cognitio*] had by man, so simply speaking among all knowledge it is the most imperfect'. That human understanding must transgress syllogistic demonstration in order to know something in the

18. Theses 3.6 and 3.5 in Farmer's edition (Farmer 1998). For nominalist tendencies, see also theses 7.41, 13.1, 2>2–3, 2>46, 3>2–7 (ed. Farmer).

realm of metaphysics and the divine is expressed in thesis 3>9 (ed./trans Farmer): 'True metaphysics, treated metaphysically, deals with whatever is a true form as its first subject, and with whatever exists formally as its secondary object, in its methods disregarding demonstration [*in modo procedendi demonstrationem negligens*]'.

For Pico, kabbalah provides a means to link rational demonstration with a perfect knowledge of the divine. Language and the combination of letters and numbers are the most important tools in his approach. In a dialectic of concealment and disclosure, the sefirotic world serves as the major metaphor for understanding the process of creation and revelation. Thesis 11>35 (ed./trans. Farmer) states:

If God is known in himself as infinite, as one, and as existing through himself, we recognize that nothing proceeds from him, but know his separation from things, and his total closure of himself in himself, and his extreme, profound, and solitary retraction in the remotest recess of his divinity; and we recognize him as he conceals himself inwardly in the abyss of his darkness, in no way revealing himself in the dilation and profusion of his goodness and fontal splendor.

Falling back on the kabbalistic concept of *Ein-Sof* as God's transcendent nature enables Pico to study the revelatory form of the divine without intermingling with the divinity itself. Although the ultimate truth of the divine remains unknown, it is through the sefirot that the human being can experience and grasp the perfect source of all knowledge. Consequently, Pico makes use of the traditional metaphor of 'garments' to explain this paradox: 'From the preceding conclusion we can know why the Cabalists say that God dressed himself in ten garments [*decem uestimentis*] when he created the world' (11>36, ed./trans. Farmer). The 'garments' are the necessary form of transmitting ultimate metaphysical truth into the revealed world. 'Nothing spiritual, descending below, operates without a garment' (thesis 38.35, ed./trans. Farmer). Like Jewish kabbalists, Pico, too, describes the sefirot as garments of divine speech. The written Torah is the direct result of such a process, as Pico explains in thesis 11>70 (ed./trans. Farmer). 'Through the method of reading without points [vowel signs] in the Law, we are shown both the method of writing divine things and the unial containment of divine things through an unlimited compass'. Consequently, the process of creation is an act of naming and writing, which leads Pico—again in congruence with the *Sefer Yetzirah* and Jewish kabbalistic thought—to make the link between language, magic, and creation. 'Voices and words have efficacy in a magical work, because in that work in which nature first exercises magic, the voice is God's'; 'Every voice has power in magic insofar as it is shaped by the voice of God' (theses 9>19–20, ed./trans.

Farmer). And finally: 'Out of the principles of the more secret philosophy it is necessary to acknowledge that characters and figures are more powerful in a magical work than any material quality' (9>24, ed./trans. Farmer).

This brings us to Johannes Reuchlin, indisputably the most important representative of Christian kabbalah at the beginning of the sixteenth century. Scholars such as Joseph Blau und Gershom Scholem celebrated him as the first researcher of kabbalah in history, who did more for Jewish literature than many a rabbi (see Grözinger 1993; Schmidt-Biggemann 2003; Herzig and Schoeps 2003). Both his major works, 'The Wonder-Working Word' (*De verbo mirifico*, 1494) and especially 'The Art of the Kabbalah' (*De arte cabalistica*, 1517), have been held in high regard by Christian kabbalists. With his Hebrew grammar, published in 1506, he laid the basis for research into the Hebrew language and biblical studies. Writing also under the pseudonym Capnion, Reuchlin was an ardent follower of Pico della Mirandola and took up several of the Italian's kabbalistic theses in order to elaborate them into a general theory. In *De verbo mirifico* it was primarily the kabbalistic derivation of the name of Jesus, which Reuchlin used and which provided the book with its title. By inserting a *Shin* into the middle of the Tetragrammaton YHWH, one obtains YHShWH, which is none else but 'YeHoShUH', that is, 'Jesus'.<sup>19</sup> Reuchlin further explained that the letter *Shin* occurred in such significant words as *shemen* ('oil') and *mashiach* ('anointed', 'Messiah'), and every individual could experience the supreme knowledge of the sciences and ultimately the deification of human nature once he had been anointed by Jesus Christ. Both this interpretation and his emphasis of the wonder-working word demonstrate how strongly Reuchlin wished to integrate magical traditions into Christianity (see Zika 2003: 21-67; Roling 2002).

*De arte cabalistica*, then, was also the first complete account of a kabbalistic system written by a non-Jew. Like *De verbo mirifico*, Reuchlin's second major work was composed in the form of a discussion between three persons: Marranus, a circumcised and baptized Muslim, Simon,<sup>20</sup> a Jewish kabbalist, and Philolaus, a Christian and Pythagorean. In the idiom of his age, Reuchlin described the kabbalah as a precursor of

19. Pico had not taken this step. However, Nicholas of Cusa (1401–1464) offered a precedent for Reuchlin in his sermon *Dies sanctificatus* (1445); see Schmidt-Biggemann 2003: 19. The unutterable Jewish Tetragrammaton became pronounceable for Reuchlin as a Pentagram (i.e. a word with five letters); this utterability was interpreted as a symbol of the incarnation of the divine in Jesus.

20. The name of the Jewish authority on kabbalah refers to Simon bar-Yochai, the alleged second-century author of the *Sefer ha-Zohar*.

Pythagoreanism, but he mentioned only Plato and Aristotle among the other *prisci theologii*. According to him, the kabbalah is an original form of philosophical wisdom-teaching, which must now be made accessible once again.

Reuchlin engaged the various forms of knowledge and the wisdom that is hidden in language. The supreme knowledge cannot be attained by intellectual reasoning only.

This goes beyond the intellectual faculties of all of us: we are unable by rational methods to entertain things that are by definition contradictory. We are used to things that are by their very nature obvious. Rationality falls far short of the infinite power we have been talking about, it cannot simultaneously connect these contradictories that are separated by infinity. (A German philosopher-archbishop handed down this dictum some fifty-two years ago.)<sup>21</sup>

Perfect knowledge is achieved by non-rational experience and ultimately by receiving revelations from the angelic sphere. 'Thus arises the Kabbalist's intimate friendship with the angels, through which he comes to know, in the proper manner, something of the divine names and does wonderful things (commonly known as miracles)' (Goodman and Goodman 1983: 123). It is an intuitive, experiential approach to language and names that characterizes kabbalah in Reuchlin's presentation. The ultimate goal of the process of achieving knowledge is *deificatio*.

This is what used to be called 'deification,' when exterior sense passes from the immediate object to the inner sense, and that passes to the imagination, imagination to thought, thought to reason, reason to understanding, understanding to reflection, and reflection to the light which enlightens man and clasps to itself that enlightenment (Goodman and Goodman 1983: 47).

In this process of illumination, the human being has to climb intellectually along ten stages to reach the ultimate goal. For Reuchlin, the kabbalistic sefirot represented those ten stages of perfecting knowledge, which is apparent when we consider the terms he used to describe the sefirot:

So, my friends, there you have ten sephiroth by which man apprehends things: the object, the *diaphane*, outer sense, inner sense, *phantasia*, lower judgment, higher judgment, reason, and intellect. These are not the 'what' so much as the 'how' of acting. The highest thing in man—mind—is something else again. Just as God wears the Crown in the kingdom of the world, so is the mind of man chief among the ten Sephiroth, and so it is rightly called 'The Crown'... (Goodman and Goodman 1983: 51).

21. From Goodman and Goodman 1983: 123. The 'German philosopher-archbishop' is Nicholas of Cusa.



The important constellation for the contemplative knowledge of the divine is the highest triad of *ratio*, *intellectus*, and *mens*. While *ratio* and *intellectus* still belong to the higher human faculties, *mens* attaches itself already to divine knowledge. According to Reuchlin, the *intellectus* functions as a connecting faculty between *ratio* and *mens*; *intellectus* moves beyond rationality, even though it is not equivalent to perfect divine knowledge.

This description is reminiscent of the conception of kabbalah found in Abulafia and (early) Gikatilla, according to which, with the aid of the intellect, the human being scales the ladder of knowledge. The path to the messiah leads through the understanding of the letters in the name of the messiah, which contains the hidden name of God: 'According to the Kabbalists, the Messiah has only one name, the unpronounceable YHWH. This will fulfill and perfect his ordinary name' (Goodman and Goodman 1983: 113; on the letter *Shin* as an important addition to the Tetragrammaton, see also p. 115). With such a conclusion, Reuchlin presented a messianic—or, rather, Christological—version of the ontologization of language in kabbalah.

The mystification of language by Christian kabbalists on the basis of Jewish kabbalistic spirituality exerted an enormous influence on religious and philosophical discourses in the seventeenth century. Scholars such as Franciscus Mercurius van Helmont (1614–1698) and Christian Knorr von Rosenroth (1631–1689) adopted and elaborated kabbalistic speculations in a climate of high political and religious tension. For the subsequent reception of kabbalistic thought, it is particularly Knorr von Rosenroth's partial Latin translation of key sources of Jewish kabbalah, printed under the title *Kabbala Denudata* ('Kabbalah Unveiled') at Sulzbach in 1677, that has to be mentioned here (see Kilcher 2006). This encyclopedic work contained portions of the *Sefer ha-Zohar*, extracts from Gikatilla's work, and the treatise *De anima* ('On the Soul') by Moses Cordovero, along with other kabbalistic texts. One can justifiably say that not until *Kabbala Denudata* was published did Christian Europe gain access to the Jewish kabbalah, if only in a selection indebted to the Christian interests of the age. Right up to the twentieth century, esotericists unversed in Hebrew would essentially draw their knowledge of kabbalah from this work.

In his conception of the ontological status of letters and words, Knorr made use of Gikatilla's kabbalistic speculation in particular. It was this influential Jewish kabbalist who had developed an idea of the Torah as a texture of names that organically group around the Tetragrammaton like 'twigs around a tree-trunk'. Andreas B. Kilcher notes:

The Torah can be read as a symbolic texture of metonymically arranged names; in a hierarchical structure all names come together in the one name of the four letters. Thus, the Torah is an encrypted theosophical text about the hidden divine nature and its presence and impact in the world. But not only Torah as building plan of the world, but ultimately all forms of revelation—hence also the world and language—are woven from the divine name (Kilcher 1998: 74; see also Morlok 2006: 163-65).

It is this speculation of Gikatilla's that Knorr von Rosenroth picked up in his own writings. What is more, he combined this ontology of words with speculations regarding the creation process that we have come across in Jewish spirituality since the *Sefer Yetzirah*. Programmatically he states: 'The creation of the world was done by conversions and rotations of the letters' (Knorr von Rosenroth 1677: I, 208). In his search for the *prisca theologia* ('first theology'), Knorr 'defines a new code for the kabbalistic deciphering of the biblical text, which offers the possibility to interpret the sefirotic world as a parallel structure of our immanent structure of being' (Morlok 2006: 179).

*Humanistic Philology: Universal Languages  
and the Quest for the Ursprache*

The movement that today is called 'humanism' was a highly polemical project. Between the twelfth and the fifteenth centuries, a critical response to scholasticism was formed that claimed the authority of philological scrutiny (see Rummel 1995; Black 2001). With their battle cry '*ad fontes*' ('back to the sources'), the humanists applied the hermeneutical and text-critical interpretational tools for pagan literature to the biblical texts, thus contextualizing and historicizing the biblical revelation to a degree that had been impossible in earlier periods. In addition to the theological challenge related to this maneuver of contextualizing and relativizing, the humanists polemicized against the authority of theologians and clerics, ultimately leading to the Reformation endeavor of making the biblical text available to everyone. To be sure, while some saw in Luther's translation of the bible a democratization of theology, others regarded it as a sacrilege and profanation. Be this as it may, the result was the emergence of philology as a distinct academic discipline, and of philological experts who critically reflected on basic tenets of theology—both Christian and non-Christian—in a 'Republic of Letters' (Grafton 1991 and 2001).

At first glance, academic philology of the fifteenth and sixteenth centuries may look like a sober reevaluation of religious texts. However, when

we take a closer look at the field of philology, we encounter many actors who are well known from the history of esoteric discourses. This is because many humanist philologists were not simply interested in the objective description of the development of human languages or the exact contextualization and translation of ancient texts; many humanists applied the instruments of philological scrutiny to their overall search for the ultimate language, or *Ursprache*. The quest for the 'Adamic language' that was spoken in Paradise and that therefore represented the closest affinity to the divine or sacred language is particularly relevant for experts of the Hebrew language. Within the humanist movement, the Christian Hebraists played a crucial role, both for esoteric interpretations of the cosmos and for the emergence of modern societies.

From antiquity to the present Jewish–Christian encounters have played a key role in defining attitudes toward personal, national, and religious identity in Western culture. These definitions, in turn, involved debates about history, religion, morality, and truth in general. The work of the Christian Hebraists...impinged on all these highly sensitive areas; they were linguists and textual critics, and their work highlighted the ambiguous role played by language and texts in transmitting natural and divine truth. The subject of Christian Hebraism is therefore not peripheral to European history but one that has direct relevance to understanding the intellectual changes and challenges characterizing the transition from the ancient to the modern world (from the editors' introduction to Coudert and Shoulson 2004: 12).

This is not the place to engage the Christian quest for the ultimate divine language in detail (Coudert 1999b and Eco 1995 provide a good introduction to the topic). Suffice it to say that this search was a common denominator of many scholars of the time, including Guillaume Postel, Johannes Reuchlin, Athanasius Kircher, John Dee, Francis Mercury van Helmont, and Christian Knorr von Rosenroth. Van Helmont and Knorr collaborated at the court of Sulzbach; it was with the newly established press there that van Helmont published his *Kurtzer Entwurff des eigentlichen Naturalphabets der Heiligen Sprache* (1667), with a preface by Knorr (van Helmont 2007 [1667]; see Coudert 1999a: 58-99). In English usually known simply as the *Alphabet of Nature*, van Helmont argued in this philosophical work that Hebrew was the divine language of creation and that the Hebrew words exactly expressed the essential nature of things, which fits with the kabbalistic ontologization of letters that I explained above. Van Helmont was convinced that while time and ignorance had led to the corruption of Hebrew, he had actually rediscovered its original form. In a climate of religious and political tension, van Helmont

expected consolation and unity from the study of the primordial language that he had found. He shared this messianic expectation with his friend, Knorr von Rosenroth.

Van Helmont and Knorr were no exception in the seventeenth century. Quite the contrary: beginning with the sixteenth century, we can see a line of thought that conceptualized language as a mirror and source of universal knowledge. The quest for universal languages was part and parcel of an apocalyptic mindset and the experience of religious wars. As Robert E. Stillman notes with regard to Comenius's *Via lucis* (1641):

Out of linguistic divisions come war, religious strife, and cultural chaos; from linguistic renewal are promised not just peace but also the utopian benefits of a Christianopolis. Such ideas are startling, but in a seventeenth-century context they were far from extraordinary. In no other period of Western culture was so much power attributed to words or such great expectations attached to their reform. At the same time, in no other period was so much suspicion voiced about their abuse. The important point here is control. For beneath the veneration of linguistic power and the fear of its abuse, in Comenius, as in Bacon, Hobbes, Wilkins, and the other writers of the English tradition, lies a strong desire to master language, which is also a desire to master history (Stillman 1995: 30; on universal languages in early modern Europe, see also Slaughter 1982).

Comenius is an important link between mystical-esoteric concepts—Böhme's *Natursprache*—and the universal languages of the later natural philosophers. In Comenius, we can see 'that linguistic perfection—a renewal of the bonds between language and nature—is the means to Edenic perfection, a salvation from history' (Stillman 1995: 31). Thus, Stillman concludes:

A perfect language is the fulfillment of desire: it is the marriage of words to things. When midway through the seventeenth century John Webster envisions the creation of a universal language, he makes the revealing argument that its discovery would serve 'to marry the world, that is, fitly and duly to join and connex agents to their patients, masculines to faeminines, superious [sic] to inferiours, Caelestials to terrestrials, that thereby nature may act out her hidden and latent power' (Stillman 1995: 33; the reference is to John Webster's *Academiarum examen; or, The Examination of Academies*).

The tragedy of nominalism has gone full circle. While nominalists had tried to divorce words and things, the quest for the universal language tied them together again. Philologists and philosophers of the seventeenth century ontologized language in such a way that the kabbalistic understanding of the ultimate qualities of letters and words could easily be adopted.

*Conclusion: Modern Science in Esoteric Perspective*

The long journey through the esoteric quest for perfect knowledge, the ontologization of letters in kabbalah, and the tragedy of nominalism that I have undertaken in this article was necessary to reveal the enormous influence that these philosophical and religious traditions have had on the development of an interpretational framework which is operative even today. Conceptualizing letters as building blocks of the cosmos is a *longue durée* in Western thought, which has also informed the metaphors that are used in science. Therefore, let me now drive my argument home and return to Schrödinger, the Human Genome Project, and contemporary life sciences.

As I said in the beginning of this article, the natural sciences today are in a process of transition from a more deterministic model of interpretation to a more open, non-deterministic model. In a parallel process, biology, genetics, or the life sciences in general are taking the place of physics as the leading discipline; they are in a position of discursive control, determining the metaphors and interpretational frameworks of contemporary Western societies. This change has not gone unnoticed by historians of science who are open to cultural analysis. A representative of such an approach is Christina Brandt. In a remarkable analysis, she demonstrates how the 'genetic code' became a central element of a wide discursive reorientation of the life sciences.

With the idea that the 'genetic information' of an organism is 'stored' in the deoxyribonucleic acid (DNA), during the 1950s and the 1960s a turn took place that radically led the discourse of the life sciences of the twentieth century away from concepts of earlier epochs. In addition to concepts taken from the information technologies it was the talk of 'genetic script' and 'textuality' that found its way into the mental world of biologists. The secret of life was derived from a universal 'code' that was based on an 'alphabet' of 'four letters' (the four bases of the DNA). Within just one decade these illustrations of molecular processes of information storage and transfer, of procedures of copying, writing, and translation, became the key concepts in the discourse of molecular biology. They provided the rhetoric repertoire that today, at the beginning of the twenty-first century, apparently has freed itself from its metaphorical origins. 'Genetic code', 'information', and even the rhetoric of a 'genetic script' today are highly conventional parts of biological terminology... At the end of the twentieth century the life sciences articulated themselves through their practices as a new form of 'textual science'. The metaphor of 'genetic script' finds its technological equivalent in the molecular 'writing' practices of genetic engineering. What is more, with the possibilities of an active changing of genetic material the function of the scientist as author-like authority is newly defined (Brandt 2004: 8-9).

Such an observation is certainly correct. But in my opinion these developments are even more important than Brandt has it. To begin with, they are not really new but engrained in Western cultural history, which I hope to have shown in this article. The transformation of the natural sciences is a late response to the tragedy of nominalism through an ontologization of language; it is a return to metaphysical and magical concepts of *natura naturans*. Furthermore, these developments are more than a metaphor; in fact, the metaphors are representative of an *episteme* in the Foucaultian sense. In this episteme, the human being is the agent of the divine, the creator. Ultimately, what we are witnessing is the deification of the human through a combination of letters.

### References

- Abrams, Daniel (ed.). 1994. *The Book Bahir: An Edition Based on the Earliest Manuscripts* (Introduction by Moshe Idel; Los Angeles: Cherub Press [Hebrew]).
- Armstrong, David M. 1978. *Nominalism and Realism* (Cambridge: Cambridge University Press).
- Asimov, Isaac. 1962. *The Genetic Code: The Story of DNA—The Chain of Life* (London: John Murray).
- Black, Robert. 2001. *Humanism and Education in Medieval and Renaissance Italy: Tradition and Innovation in Latin Schools from the Twelfth to the Fifteenth Century* (Cambridge: Cambridge University Press).
- Blumenberg, Hans. 1986. *Die Lesbarkeit der Welt* (Frankfurt/M.: Suhrkamp).
- Bono, James. 1995. *The Word of God and the Languages of Man* (Madison: University of Wisconsin Press).
- Brandt, Christina. 2004. *Metapher und Experiment: Von der Virusforschung zum genetischen Code* (Göttingen: Wallstein).
- Collins, Francis S. 2006. *The Language of God: A Scientist Presents Evidence for Belief* (New York: Free Press).
- Coudert, Allison P. 1999a. *The Impact of the Kabbalah in the Seventeenth Century: The Life and Thought of Francis Mercury van Helmont (1614–1698)* (Leiden and Boston: Brill).
- Coudert, Allison P. (ed.). 1999b. *The Language of Adam / Die Sprache Adams* (Wiesbaden: Harrassowitz).
- Coudert, Allison P., and Jeffrey S. Shoulson (eds.). 2004. *Hebraica Veritas? Christian Hebraists and the Study of Judaism in Early Modern Europe* (Philadelphia: University of Pennsylvania Press).
- Eco, Umberto. 1995. *The Search for the Perfect Language* (Oxford: Blackwell).
- Farmer, Stephen A. 1998. *Syncretism in the West: Pico's 900 Theses (1486). The Evolution of Traditional Religious and Philosophical Systems* (Tempe: Medieval and Renaissance Texts and Studies).
- Geyer, Hermann. 2001. *Verborgene Weisheit: Johann Anrds 'Vier Bücher vom Wahren Christentum' als Programm einer spiritualistisch-hermetischen Theologie* (2 vols.; Berlin and New York: W. de Gruyter).

- Giller, Pinchas. 2001. *Reading the Zohar: The Sacred Text of the Kabbalah* (Oxford and New York: Oxford University Press).
- Goodman, Martin, and Sarah Goodman (ed. and trans.). 1983. *Johann Reuchlin: De Arte Cabalistica—On the Art of the Kabbalah* (Introduction by G. Lloyd Jones; Norwalk: Abaris Books).
- Grafton, Anthony. 1991. *Defenders of the Text: The Traditions of Scholarship in an Age of Science, 1450–1800* (Cambridge, MA and London: Harvard University Press).
- . 2001. *Bring Out Your Dead: The Past as Revelation* (Cambridge, MA and London: Harvard University Press).
- Grözinger, Karl E. 1993. 'Reuchlin und die Kabbala', in Herzig and Schoeps 1993: 175–87.
- Hayman, A. Peter (ed. and trans.). 2004. *Sefer Yesira* (Tübingen: Mohr Siebeck).
- Herzig, Arno, and Julius H. Schoeps, in collaboration with Saskia Rohde (eds.). 1993. *Reuchlin und die Juden* (Sigmaringen: Thorbecke).
- Howell, Kenneth J. 2002. *God's Two Books: Copernican Cosmology and Biblical Interpretation in Early Modern Science* (Notre Dame: University of Notre Dame Press).
- Hughes, Aaron W. 2004. *The Texture of the Divine: Imagination in Medieval Islamic and Jewish Thought* (Bloomington: Indiana University Press).
- Idel, Moshe. 1981. 'The Concept of the Torah in Heikhalot Literature and Its Metamorphoses in Kabbalah', *Jerusalem Studies in Jewish Thought* 1: 23–84 (Hebrew).
- . 1990. *Golem: Jewish Magical and Mystical Tradition on the Artificial Anthropoid* (Albany: State University of New York Press).
- . 2002. *Absorbing Perfections: Kabbalah and Interpretation* (New Haven and London: Yale University Press).
- Irvine, Martin. 1994. *The Making of Textual Culture: 'Grammatica' and Literary Theory, 350–1100* (Cambridge: Cambridge University Press).
- Kilcher, Andreas B. 1998. *Die Sprachtheorie der Kabbala als ästhetisches Paradigma: die Konstruktion einer ästhetischen Kabbala seit der Frühen Neuzeit* (Stuttgart and Weimar: J.B. Metzler).
- Kilcher, Andreas B. (ed. with the collaboration of Philipp Theisohn). 2006. *Die Kabbala Denudata: Text und Kontext. Akten der 15. Tagung der Christian Knorr von Rosenroth-Gesellschaft* (Bern: Peter Lang).
- Knorr von Rosenroth, Christian Freiherr. 1677. *Kabbala Denudata* (2 vols.; Sulzbach: Abraham Lichtentaler; repr. Hildesheim: Georg Olms 1999).
- Matt, Daniel C. (ed.). 2004–2007. *The Zohar Pritzker Edition* (4 vols.; trans. and commentary Daniel C. Matt; Stanford: Stanford University Press).
- Morlok, Elke. 2006. 'Text und Textur bei Rabbi Joseph Gikatilla und in der Kabbala Denudata. Die Rekonstruktion der Struktur der Gottesnamen aus Sha'are Ora in der Lexikographie der Kabbala Denudata', *Morgen-Glantz: Zeitschrift der Christian Knorr von Rosenroth-Gesellschaft* 16: 161–79.
- Newman, William R. 2004. *Promethean Ambitions: Alchemy and the Quest to Perfect Nature* (Chicago and London: The University of Chicago Press).
- Ohly, Friedrich. 1995. 'Die Welt als Text in der "Gemma Magica" des Ps.-Abraham von Franckenberg', in *idem, Ausgewählte und neue Schriften zur Literaturgeschichte und zur Bedeutungsforschung* (ed. Uwe Ruberg and Dietmar Peil; Stuttgart and Leipzig: S. Hirzel): 713–25.
- Peuckert, Will-Erich, and August Faust (eds.). 1955–61. *Jacob Böhme: Sämtliche Schriften* (11 vols.; Stuttgart: Frommanns Verlag).

- Roling, Bernd. 2002. 'The Complete Nature of Christ: Sources and Structures of a Christological Theurgy in the Works of Johannes Reuchlin', in Jan N. Bremmer and Jan R. Veenstra (eds.), *The Metamorphosis of Magic from Late Antiquity to the Early Modern Period* (Leuven: Peeters 2002): 231-66.
- Rummel, Erika. 1995. *The Humanist-Scholastic Debate in the Renaissance and Reformation* (Cambridge, MA: Harvard University Press).
- Schmidt-Biggemann, Wilhelm. 2003. 'Johannes Reuchlin und die Anfänge der Christlichen Kabbala', in *idem* (ed.), *Christliche Kabbalah* (Ostfildern: Jan Thorbecke): 9-48.
- Schrödinger, Erwin. 1944. *What is Life? The Physical Aspect of the Living Cell*. Based on Lectures delivered under the auspices of the Institute at Trinity College, Dublin, in February 1943 (Cambridge: Cambridge University Press).
- Slaughter, Mary M. 1982. *Universal Languages and Scientific Taxonomy in the Seventeenth Century* (Cambridge and New York: Cambridge University Press).
- Stillman, Robert E. 1995. *The New Philosophy and Universal Languages in Seventeenth-Century England: Bacon, Hobbes, and Wilkins* (Lewisburg: Bucknell University Press; London: Associated University Presses).
- Tirosh-Samuelson, Hava. 2003. 'Philosophy and Kabbalah: 1200–1600', in Daniel H. Frank and Oliver Leaman (eds.), *The Cambridge Companion to Medieval Jewish Philosophy* (Cambridge, UK and New York: Cambridge University Press): 218-57.
- Urbach, Ephraim E. 1979. *The Sages: Their Concepts and Beliefs* (2 vols.; Jerusalem: Magnes Press).
- van Berkel, Klaas, and Arjo Vanderjagt (eds.). 2006. *The Book of Nature in Early Modern and Modern History* (Leuven: Peeters).
- Vanderjagt, Arjo, and Klaas van Berkel (eds.). 2005. *The Book of Nature in Antiquity and the Middle Ages* (Leuven: Peeters).
- van Helmont, Francis Mercury. 2007 [1667]. *The Alphabet of Nature* (trans. Allison P. Coudert and Taylor Corse; Leiden and Boston: Brill).
- von Stuckrad, Kocku. 2005. *Western Esotericism: A Brief History of Secret Knowledge* (London: Equinox).
- Wasserstrom, Steven M. 1993. 'Sefer Yesira and Early Islam: A Reappraisal', *Journal of Jewish Thought and Philosophy* 3: 1-30.
- Wewers, Gerd A. 1975. *Geheimnis und Geheimhaltung im rabbinischen Judentum* (Berlin and New York: W. de Gruyter).
- Wolfson, Elliot R. 2005. *Language, Eros, Being: Kabbalistic Hermeneutics and Poetic Imagination* (New York: Fordham University Press).
- . 2006. *Alef, Mem, Tau: Kabbalistic Musings on Time, Truth, and Death* (Berkeley: University of California Press).
- Zika, Charles. 2003. *Exorcising Our Demons: Magic, Witchcraft, and Visual Culture in Early Modern Europe* (Leiden and Boston: Brill).