11. GERSHOM BEN SOLOMON’S SHA’AR HÁ-SHAMAYIM: ITS SOURCES AND USE OF SOURCES*

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I gave my heart to seek and search out wisdom [see Eccles. 1:13]—the highest and most exalted. I said: I will be wise, but it is so far from me [see Eccles. 7:23], hidden and concealed from my eyes. Yet I had in my possession some books of the philosophers that were translated from their language to ours, and my eyes were partly opened by them. I saw, however, that their discourses were long and scattered throughout their books—one here and one there. So I collected their statements and combined them in one place, in generalized form and using concise language, and they became one in my hand [see Ezek. 37:17].

This description of goal and method begins Gershom ben Solomon’s Sha’ar ha-Shamayim, the latest of the thirteenth-century encyclopedias discussed in this volume. It is a popular work,

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1 See Samuel ibn Tibbon, translator's introduction to Moreh ha-Nevukhim, ed. Judah Even-Shmuel (Jerusalem, 1987), 118, for the probable source of Gershom's language.

2 Correcting הַנְּדוֹרֶה to הַנְּדוֹרֶה, on the basis of the manuscripts.

3 The language comes from Maimonides' description, in Treatise on Resurrection, of his own legal encyclopedia, the Mishneh Torah (see Isadore Twersky, Introduction to the Code of Maimonides [New Haven, 1980], 43-5). The Mishneh Torah was the model for other encyclopedias as well, such as David Kimhi’s encyclopedia of grammar, Sefer ha-Mikhlol (see Frank Talmage, David Kimhi: The Man and the Commentaries [Cambridge, 1975] 54-8) and Solomon ben Moses of Laguir’s encyclopedia of religious philosophy, Bet Elohim (see Vatican MS Ebr. 248 [= IMHM 300], fol. 8v).

4 Sha’ar ha-Shamayim (Roedelheim, 1801), 1a; (Warsaw, 1875), 2a. References to Sha’ar ha-Shamayim below will be to both editions as follows: SS, 1a/2a.

5 For brief comments about Gershom and his work, see Lothar Kopf's entry in the Encyclopaedia Judaica, s.v. "Gershom ben Solomon of Arles"; Colette Sirat, A History of Jewish Philosophy in the Middle Ages (Cambridge,
using easy-to-understand arguments and homely examples, and it was read widely in the Middle Ages and early modern period. This article is a fresh examination of Gershom’s sources and use of sources, prefaced by some remarks about biography, bibliography, and structure.

1. Biography and Bibliography

We know little about Gershom ben Solomon’s life. He was likely from Languedoc or Provence, which were centers of Hebrew translation, philosophy and controversy, and he may have resided in Arles. The Languedoc-Provence context can be inferred positively from the many Judeo-Provençal words in Sha’ar ha-Shamayim, and negatively from his observations about


6 Popular in a technical sense, using the tools of dialectics and rhetoric.

7 As attested by textual history and influence. Sha’ar ha-Shamayim survives in forty-three partial manuscripts (see Charles Manckin’s list in the present volume, 475-9, below), was printed four times (Venice, 1547; Roedelheim, 1801; Zolkiew, 1805; Warsaw, 1875), and was a major source of other popular encyclopedias, such as Meir Aldabi’s Shevet Emanah (ca. 1360). See Dov Schwartz, “Towards the Study of the Sources of R. Meir Aldabi’s Shevet Emanah” (Hebrew), Siwar 114 (1994): 72-7, and Mauro Zonta, “Mineralogy, Botany and Zoology in Medieval Hebrew Encyclopedias,” Arabic Sciences and Philosophy 6 (1996): 278-81.


9 Though sometimes foreign words are copied from his sources, e.g. קניון (SS, 9b/25c) = Samuel ibn Tibbon’s Commentary on Ecclesiastes, Parma MS 272, 124r, and סקר על הנס שמעון (SS, 6a/5b) = Otot ha-Shamayim: Samuel Ibn Tibbon’s Hebrew Version of Aristotle’s Meteorology, ed. and transl. Resianne Fontaine [Leiden, 1995], 100-1 and n. 36 (book 2, line 197). On
Zonta has identified citations from Shem-Tov Falaquera's *De'ot ha-Filosofim*, written in the 1270s, in *Sha'ar ha-Shamayim*. There is also a citation of Yedayah ha-Penini's *Ketav Da'at*, a translation of Alfarabi's *Risālah fi al-aql* (Treatise on Intellect), that was rendered around 1300. Yet *Ketav Da'at*, like large sections of Gershom's astronomy, appears almost exclusively in the Ashkenazi family of manuscripts. Until further study of the manuscripts and manuscript tradition, *De'ot ha-Filosofim* provides the most definite terminus a quo, and the book should be considered a product of the last quarter of the thirteenth century.

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17 *Sha'ar ha-Shamayim* would be an excellent case study of the "open" book (see Malachi Beit-Arie, "Transmission of Texts by Scribes and Copyists: Unconscious and Critical Interferences," in *Artefact and Text: The Re-Creation of Jewish Literature in Medieval Hebrew Manuscripts = Bulletin of the John Rylands University Library of Manchester 75* [1993], 33-52). It was widely read and survives in three traditions (Sephardi, Ashkenazi, and Italian), each distinguished by style and content. A study of the manuscripts and an edition of the text (perhaps synoptic) would help determine whether the differences are due to revision by the author or additions and emendations by scribes and students, and would add interesting information about the study of philosophy in three very different cultural centers. Here is a brief classification of the thirty-four manuscripts which I consulted:

1st. Manuscripts including all or most of physics, along with all or most of the long version of astronomy (all Ashkenazi): Cambridge 382 (16301); Bodleian-Neubauer 1325 (22139); British Museum-Margoliouth 10617 (7932); Munich 65 (1130); Vatican 388 (1130).

2nd. Including all or most of physics and a shorter astronomy: Kaufmann 292a (14566); JTS 2600 (28885).

3rd. All or most of physics with no astronomy (only the first is Ashkenazi): Paris 1063 (14647); Paris 1062 (35998); Bodleian-Neubauer 1324 (22138); Casanatense 155/3059 (111); Moscow-Lenin State Library 404 (47778); Odena Bert. 246 (30390); Bodleian-Neubauer 1326 (22140); JTS 2638 (28891); Bodleian-Neubauer 554 (19425); Paris 1040 (33994); British Museum-Margoliouth 914 (5455); Parma Paletina 148 (13239); Parma Palatina 1210 (15851); Bodleian-Neubauer 1327 (22141); Bodleian-Neubauer 1328 (22142); JTS 2507 (28560).

4th. All or part of physics and/or sleep only: Munich 125 (1619); Firenze 88.56 (17979); Kaufmann 285a (14714); Bodleian-Neubauer 1649 (17390); Basel 28 (2590); JTS 2497 (28750).

5th. Excerpt of Astronomy only: Paris 691 (11569).

6th. Physics fragments: Munich 295 (1120); Berlin 16 (1913).

7th. Nineteenth-century copies, same as printed editions: HUC 714 (35899); Hamburg 120 (1565).
2. Name, Structure and Content

Sha'ar ha-Shamayim (The Gate of Heaven) gets its name from Genesis 28:17, which is cited at the end of Gershom's introduction. After dreaming about a ladder with angels going up and down and God at the top, Jacob awoke and remarked about the holiness of the place: "This is no other than the house of God, it is the gate of heaven."

Jacob's dream provided a biblical source for medieval classifications of science and Neoplatonic discussions of the soul's ascent to God.\(^{18}\) Maimonides, in *The Guide of the Perplexed* I,15, combined these two motifs into an ascent through study of philosophy,\(^{19}\) and Samuel ibn Tibbon, in *Ma'amor Yiqqavu ha-Shamayim*, specified the curriculum: from physics to astronomy to metaphysics.\(^{20}\)

Ibn Tibbon's interpretation of Jacob's ladder, rather than Aristotelian encyclopedias and classification,\(^{21}\) organizes the content of Sha'ar ha-Shamayim, which moves from lower to higher and from first to last. It starts with physics, which Gershom says


\(^{19}\) See Sarah Klein-Braslavsky, "Maimonides' Interpretations of Jacob's Dream about the Ladder" (Hebrew), *Bar-Ilan Year Book* 22-3 (1988): 329-49.

\(^{20}\) Chap. 11, 54-5.


(citing *The Guide of the Perplexed* I,7\(^{22}\)) and following philosophical interpretations of Genesis, chapter one\(^{23}\) studies the elements, vapors, minerals, plants, animals and man. Physics is followed by astronomy, and astronomy by metaphysics, or "Divine Science and the Science of Unity."\(^{24}\) Technical subjects, such as logic, arithmetic, geometry, and music, are excluded; and although Jacob's ladder and the first chapter of Genesis provide a biblical framework, Gershom avoids direct conflict with traditional views by keeping exegesis and the use of religious language to a minimum.\(^{25}\)

\(^{22}\) SS, 1a/2a = *Moreh* I,72 (161). References to *Moreh* refer specifically to the Ibn Tibbon Hebrew translation of the Guide (above, n. 1), the translation used by Gershom.

\(^{23}\) Mauro Zonta, "The Place of Aristotelian Metaphysics in the Thirteenth-Century Encyclopedias," in the present volume, 425 (see further, *idem, La filosofia antica*, 214-5), notes the similarities between Sha'ar ha-Shamayim and the natural part of Vincent of Beauvais's *Speculum maius* (about which see the contributions of J.B. Voorbij and Eva Albrecht in the present volume). The simplest explanation for both similarities and differences is that each author was influenced by a different interpretation of the same biblical text: Genesis, chapter one. Gershom follows Maimonides (elaborated by Ibn Tibbon), who interpreted Creation as a story about sublunar creation, which begins with meteorological processes. See Sara Klein-Braslavsky, "Maimonides' Interpretation of the Story of the Creation of the World" (Hebrew) (Jerusalem, 1987); Aviezer Ravitzky, "Aristotle's Meteorology and the Maimonidean Exegesis of the Account of Creation" (Hebrew), in *Shlomo Pines Jubilee Volume*, Part 2, *Jerusalem Studies in Jewish Thought* 9 (1990): 225-50. Also, see Hanna Kashever, "The Introduction, in Manuscript, to David Kimhi's Allegorical Commentary on the Beginning of Genesis" (Hebrew), *Koresh* 62 (1988-9): 873-85.

\(^{24}\) This is Gershom's preferred section title, according to the manuscripts. The section itself, however, is not extant. See the present chapter, part III (on metaphysics), below. For details about the content of all sections of Sha'ar ha-Shamayim, see the discussion that follows and my outline included in the present volume. Also, F.S. Bodenheim, *Rabbi Gershon ben Shlomo, The Gate of Heaven* (Jerusalem, 1953), 45-85, is still useful, though should be read with caution.

\(^{25}\) Excluding the introduction, Gershom refers to Eccles. 5:7 (SS, 17a/10d), Eccles. 7:7 (SS, 78b/38a), and Gen. 30:37-41 (SS, 47a/25d); alludes to Gen. 3:16 (SS, 22b/13c) and Jer. 22:19 (SS, 25b/14d); quotes Genesis Rabbah 10 (SS, 17a/10d) and bPes 94b (Cambridge MS 392, 99v), both of which appear in his sources (on Genesis Rabbah, see *Moreh* II,10, and Ibn Tibbon, *Commentary on Ecclesiastes* 3:2; on bPes 94b, see *Moreh* II,8, and Ibn Tibbon, *Ma'amor Yiqqavu ha-Mayim* (Pressburg, 1837), chap. 4, 16; and see Isadore Twersky, "Joseph ibn Kaspi: Portrait of a Medieval Jewish Intellectual," in *Studies in Medieval Jewish History and Literature*, ed. Isadore Twersky (Cambridge, Mass., 1979), 256, n. 52). Gershom never mentions creation, and prophecy and providence appear only once. Finally, the single argument for the
3. Sources

The sources of Sha’ar ha-Shamayim are many and varied. Gershom draws from Aristotelian and Neoplatonic philosophy, combines philosophy and medicine, uses Latin-to-Hebrew and Arabic-to-Hebrew translations, and takes material directly from the translations as well as second-hand from Hebrew encyclopedias and works of religious philosophy. In treatises 1 and 4, on meteorology, animals, sleep, dreams, and psychology, and part 2 on astronomy—fields that had a clear tradition and available sources—Gershom works with a frame text or texts, which he abridges, rearranges, and supplements with illustrations or opposing views. In treatises 2 and 3, on minerals and plants, there was no clear tradition and few original texts were available. The result is a more fragmented text and the content is taken mostly second-hand.

Sha’ar ha-Shamayim source-searching began in the middle of the nineteenth century and continues today. The present study of philosophy comes from the Christian Domingo Gundisalvo (SS, 48b/38a = Domingo’s De anima, Cambridge MS 1858, 184v):

"It is not proper, nor is it correct, that a man does not know that part of himself by which he can intelllect his God, a part which is itself similar to God. For this reason, he must investigate . . . "; and the single pious saying comes from the Muslim Averroes (SS, 383b/40d):

"We have heard the words of Him who said, "My grace is sufficient for you, for in weakness I am strong."" (2 Cor. 12:9)

In his introduction, Gershom says that oral communications is an additional source. In the body of the text he refers to farmers, fishermen, shepherds, and hunters; to Maister Michael and Dr. Solomon; and to unnamed contemporary Christians and Jews. Though these reports should be judged with caution, at least some of them should be authentic. In any event, these oral sources are harder to trace, and they are beyond the scope of this article. Also, only Hebrew sources are discussed in this article, though there is a slight chance that Gershom did have direct access to Arabic or Latin sources. See e.g. Zonta, “Mineralogy, Botany, and Zoology,” 247, n. 47. Freudenthal found Arabic glosses by “Gersonides’ father” (see above, n. 14) and Gershom himself refers to a difference between the Arabic and Latin (2) versions of his source for climatology (Cambridge MS 382, 104v):

This is Gershom’s view in “Mineralogy, Botany, and Zoology,” 299-302.


29 SS, 3a-b/4a; 4b/4b; 4b/4d = Ma’amar Yiqqavu ha-Mayim, chap. 20, 150, 152-3, Neubauer, “Zur Abfassungszeit,” 182, identified an Icelandic volcano in 1211 with the volcano that Ibn Tibbon says erupted “ten years ago” (Ma’amar Yiqqavu ha-Mayim, pp. 160-1). Thus the 1221 date for Ma’amar Yiqqavu ha-Mayim, Gershom cited Ibn Tibbon (see below, n. 38) but has “twenty years ago” instead of “ten,” and this led to an early dating of Sha’ar ha-Shamayim. Yet the difference of ten to twenty, especially in light of Zonta’s research (see above, n. 15), is probably due to unconscious error rather than intentional change; and since “twenty” appears consistently in all the manuscripts of Sha’ar ha-Shamayim that I checked and “ten” appears in all the manuscripts of Ma’amar Yiqqavu ha-Mayim that I checked, “ten” or “twenty” could be the error. Thus I make the date of probable composition less definite (1221-1231), and add an additional note of caution: “ten/twenty years ago” is likely conventional rather than exact.
Commentary on Ecclesiastes (completed between 1213-1221/31),\(^{31}\) which compares the “cracking of thorns under a pot” (Eccles. 7:6) to the cracking sound of thunder,\(^{32}\) and a reference to Aristotle’s explanation of the white color of snow.\(^{33}\) All references to Alexander of Aphrodisias, Avicenna, Averroes and Ibn Tibbon are cited from the latter’s notes included in his translation of the Meteorology.\(^{34}\)

Meteorology is preceded by a brief discussion of the elements, which is similar though not identical to Meteorology I, Maimonides’ Guide of the Perplexed I,72 (translated by Ibn Tibbon, 1204) and Ma’amir Yiqqavu ha-Mayim, chapter two.\(^{35}\) There is also one citation of the Meteorology\(^{36}\) and passages attributed to Aristotle which are taken from The Guide of the Perplexed II,19.\(^{37}\)

B. MINERALOGY: The first chapter of treatise 2 is taken entirely from Samuel ibn Tibbon’s Ma’amir Yiqqavu ha-Mayim.\(^{38}\) It explains Avicenna’s theory of mountain formation, which is found in al-Shifā‘, and then applies it to the recent report—heard by Ibn Tibbon, not Gershom—about the sudden appearance of a mountain in the English Islands.

Chapters 2 and 3 are mostly excerpts from the pseudo-Aristotelian De lapidibus—taken directly from a Hebrew translation and from passages cited in Shem-Tov Falaquera’s De'ot ha-Filosofim\(^{39}\) and from the Rasā‘īl Ikhwan al-Ṣafā‘ (also as cited in Falaquera’s De’ot ha-Filosofim), with additions from the Hebrew Meteorology, books 3-4.\(^{40}\)

C. BOTANY: Treatise 3 comes mainly from Nicholas of Damascus’ On Plants (via Shem-Tov Falaquera’s De’ot ha-Filosofim)\(^{41}\) and from Averroes’ medical summary, al-Kulliyāt fi al-tibb,\(^{42}\) with citations from Averroes’ Epitome of the Parva naturalia (translated by Moses ibn Tibbon, 1254) on the length of plant life,\(^{43}\) Aristotle’s Meteorology on trees that have earth as their primary element,\(^{44}\) and pseudo-Avicenna’s Sefer ha-Shenah ve-ha-Yeqmisah regarding plant intellect.\(^{45}\) There is an additional text from Ibn Tibbon’s Commentary on Ecclesiastes 3:2 regarding the correct time to plant,\(^{46}\) and from Ruah Hen (ca. 1240) about the four faculties of the plant soul’s nutritive part and about plant composition.\(^{47}\) Ruah Hen also refers to a view that plants have a

\(^{31}\) Commentary on Ecclesiastes refers to Peshl ha-Millot ha-Zarat, completed 1213, and is referred to in Ma'amir Yiqqavu ha-Mayim, completed 1221-1231.

\(^{32}\) SS, 3b/4a = Commentary on Ecclesiastes, fol. 118v-119r.

\(^{33}\) SS, 2a/2b, cited as Aristotle’s Animals. Also, note that this text, along with SS, 2a/3c-3b/3d and 5b/5b, on hail, salty tears, and salt water, corresponds nearly word for word with Joseph ben Meir Ibn Zabara, Sefer Sha’ashu’im, ed. Israel Davidson (New York, 1914), chap. 9, 109-102 II (I thank Dr. Reshiane Fontaine for this reference). Davidson argues in the introduction to his edition (bxiii-bxix; lxxviii-lxxx) that, rather than Gershom borrowing from Zabara, a later scribe or student interpolated passages from Shat ar ha-Shamayim into Sefer Sha’ashu’im.

\(^{34}\) For Alexander, see SS, 2a/2b; 8a/6b; 9b/7b = Otot ha-Shamayim, book 1, II, 275, 435; book 1, II, 117, 122; book 2, I, 476. For Avicenna, see SS, 9b/7b = Otot, book 2, I, 490. For Averroes, see SS, 5a/4d; 8a/6b = Otot, book 1, II, 583-90; book 1, I, 583-90. The reference to Averroes’ On Generation and Corruption (SS, 4a/4b), which is not found in Averroes’ commentary, is missing from the manuscripts I consulted.

\(^{35}\) Averroes’ commentary on On the Heavens, which is mentioned in one manuscript, is also a likely source.

\(^{36}\) SS, 1b/3a = Otot, book 1, 228-37.

\(^{37}\)بلا ماد بعد الطا الحзвيض يخر ج و جديدة قاسى الكوليمط (based on manuscripts) makes identification of this source easier. SS, 1a/3a = Mereh I, 72 (164-5).

natural sense since they prefer sweet to salty water. Gershom finds this view in Isaac Israel’s *Book on the Elements*, translated to Hebrew by Abraham ibn Hasdai (before 1235), and cites it at length. There are citations of additional medical views and also of wisdom learned from the farmers.

D. ZOOLOGY: The section about animals—quadrupeds, birds, insects, fish, and man—is the longest of *Sha’ar ha-Shamayim*, and probably the most important to Gershom. It is here that we hear most frequently what sounds like Gershom’s own voice. He reports, for instance, what he learned from shepherds, hunters, and fishermen; he explains that humans tend to bear one child at a time, but that he heard about a woman who bore nine; and he calls the dispute between Galen and Aristotle on the source of animal movement (brain or heart) a lie since a coreligionist told him that a bird continued to fly after its head was removed and a reliable “seeker of wisdom” who witnessed a decapitation told him that the man continued to walk after losing his head.

This section has also been the least studied. Most of the text seems to come from Aristotle’s *History of Animals* and Averroes’ *Kulliyāt*, but this needs to be verified through comparison with the Hebrew translations, which remain in manuscript. There are also citations of other medical works—e.g. Hippocrates’ *Aphorisms*, Galen’s *Microteche* with ‘Ali ibn Ridwān’s commentary, and Avicenna’s *al-Urjūsah fi al-tibb* with Averroes’ commentary (these, too, are mostly unpublished).

Gershom


Though, like the Meteorology, it is completely rearranged. See Zonta, “Mineralogy, Botany, Zoology,” 305-6 (Zonta informs me this is a twelfth-century Latin-to-Hebrew translation, which he discusses in his forthcoming *The Zoological Writings in the Hebrew Tradition*). The references to Aristotle are probably mostly directly from *History of Animals*, though some come second-hand. See e.g. SS, 26b/17b, 38b/21a, 63b/33b, 64b/23d.

See Fontaine, *The Facts of Life*, 360. The *Kulliyāt* is never mentioned, but is likely what is meant by Ḥibb (“his book”) (SS, 54b/28d, 64a/33b, 64b/33d). Most unspecified references to Averroes—many of which have Averroes disputing a medical view of Galen, Avicenna, or another physician—are probably from the *Kulliyāt or Urjūsah*. See SS, 22b/13b, 25a/13c, 24a/14b, 25b/14d, 26b/15b, 27a/15c, 28b/16a, 38b/21a, 44b/24a, 44b/24b, 45a/24a, 50a/26c, 50b/26d, 50b/27a, 52a/27d, 52a/27d, 53b/28b, 54a/28c, 55a/29b, 57a/29d, 58b/30d, 58b/30d, 59a/31a, 59b/31b, 62a/32c, 63b/33b, 64a/23c, 65a/33c, 65b/33d, 66a/34c. There are also single citations of three of Averroes’ commentaries on Aristotle: (the commentary on) *On the Heavens* (SS, 43a/23b), the *Epistle of the Paroxysm* (SS, 27a/15c), and the *Epistle of the Metaphysics* (SS, 22a/13b).

There are two references (SS, 62a/32c, 66a/34c) to the *Aphorisms*. Other citations of Hippocrates (e.g. SS, 27a/15d, 45a/24a, 57a/29d, 60b/31d) probably come from the *Aphorisms*, from other works of Hippocrates (his book on embryos is cited at SS, 45b/24c), or second-hand from Averroes, Ibn Ridwān, or Galen (see next note).

Galen is cited twice (SS, 50b/26b, 54b/28d) and Ibn Ridwān’s commentary twice (SS, 47b/25b, 63b/35b), and at least one citation of Hippocrates is actually from Ibn Ridwān’s commentary (SS, 45a/24b = Paris 1114, 19a). The translation of the *Microteche* with commentary is attributed to Samuel ibn Tibbon in a colophon and dated Béziers, 1199 (see Steinschneider, *Die hebräischen Übersetzungen*, 754-5 and Paris MS 1114 (32614), 124). If true, this would be the first known Muslim work translated to Hebrew. Yet analysis of the translation language raises doubts about both attribution and date.

Translated by Moses ibn Tibbon, 1260. It is cited twice (SS, 64a/33b, 65b/34a).

Other medical views cited: Ibn Zuhir (SS, 34a/19a, 44b/24a, 54b/28d, 56b/29d, 59b/31a, 63b/33b, 65a/33d); Hunayn’s Introduction to Medicine (SS, 36a/19d); and Alfarabi on internal senses (SS, 66a/34c). There are also references to Isaac Israel, one from the *Book on the Elements* (SS, 63b/33a), and one that comes from Dunash ibn Tamim’s *Commentary on Sefer Yetzirah*. 
draws frequently from secondary sources as well. *De'ot ha-
Filosofim*, as Zonta pointed out, is a source. In addition, Gershom
cites Avicenna's view on spontaneous generation from Ibn Tibbon's
*Ma'amor Yiqqavu ha-Mayim,* Aristotle's views that sexual
intercourse and the sun are causes of human birth and that
internal sensation involves retention, memory and recollection
from Ibn Tibbon's *Commentary on Ecclesiastes* 3:19 and 7:19; the
view that the length of human life is fixed from the *Commentary*
on 3:2; and Aristotle's famous judgment that man is a political
animal—cited to help distinguish humans from other
animals—from *The Guide of the Perplexed II*, 40.

**On Sleep and Dreams:** This section, which is probably part of
treatise 4, is a severely abridged version of Solomon ben Moses
of Laguiri's *Sefer ha-Shenah ve-ha-Yeqqasah*, the translation of a
work attributed to Avicenna. Gershom focuses on the natural theory
of sleep and dreams and avoids extended treatment of dream
prophecy, a subject that preoccupied pseudo-Avicenna and other
medieval philosophers. A two-line citation from pseudo-

(SS, 59a/31b = Commentary on Sefer Yeqqasah, ed. M. Grosberg [London, 1992], 21; and see below, note 72, on Ibn Tamim).

63 SS, 45a/24b = Ma'amor Yiqqavu ha-Mayim, chap. 3, 9.
64 SS, 21b/13a; 44a-b/23c; 49b/50a-26c = Commentary on Ecclesiastes, fols. 64v, 87r-v, 129v-124r. Ibn Tibbon refers to *Physics* 8 and *Parva naturalia*, but Averroes is probably his source in both cases. If true, these are especially good examples of second-hand philosophy. Gershom cites in the name of Aristotle what is probably Ibn Tibbon's summary of Averroes' commentary.

65 SS, 23b/13a = Moreh II, 40 (337). Also, note that Gershom's discussion of the neck and teeth (SS, 55b/29b-56b/29c; 57b/30b) corresponds with Ibn Zabarah's *Sefer Sha'a-shu'im*, chap. 9, 107-9. On the relationship between *Sha'ar ha-Shamayim* and *Sefer Sha'a-shu'im*, see above, n. 33.

66 In the manuscript version, there are two chapters without number

1: a chapter to explain sleep" and a chapter to explain dreams.

67 I consulted MS Vatican Ebr. 39 (IMHM 678) of Solomon ben Moses' text. The translation was probably completed in the 1250's and based on a Latin original. For dating, authority, and the name Laguiri, see Ruth Glasner, "The Hebrew Version of *De cedo et mundo* attributed to Ibn Sinâ", *Arabic Sciences and Philosophy* 6 (1996): 94-6. The exact relation of Solomon ben Moses's version to Avicenna and Aristotle needs further research. It is not a translation of Aristotle's *On Sleep and Divination in Sleep*, and the views expressed are not consistent with Avicenna's *Shifâh*.

68 See e.g. Averroes, *Epitome of Parva naturalia*, 45-50, Shlomo Pines, "The Arabic Recension of *Parva naturalia* and the Philosophical Doctrine concerning Veridical Dreams according to *al-Risâla al-Manâmiyya* and Other

Avicenna quickly dispenses with the subject: we know dogs
dream because they bark in their sleep; since dogs have no
intelligent mind, and intellect is required to receive divine knowledge,
dreams do not have a divine origin.69

Pseudo-Avicenna is supplemented by Averroes' *Epitome of the
Parva naturalia*, 70 *Ruah Hen* on the process of storing images, 71
Isaac Israeli's (really Dunash ibn Tamim's) *Commentary on Sefer
Ye'qirah* regarding true dreams in the morning, 72 along with
medical views 73 and personal anecdotes. 74

**On the Soul and its Faculties:** Psychology, too, seems to be
part of treatise 4; in any event, it is not part of metaphysics, as it
appears to be in two of the printed editions (see below). The first
chapter of Maimonides' *Eight Chapters* (translated by Samuel ibn
Tibbon, 1202), 75 *Ruah Hen*, a Hebrew translation of Domingo
Gundisalvo's *De anima*, 76 and Averroes' two treatises on the

this preoccupation. See also Aviezer Ravitzky, "A Hebrew Quotation from the Lost Arabic Recension of Parva naturalia," *Jerusalem Studies in Arabic and

Note that Gershom cites this view earlier in his text (SS, 68b/35d) in the
name of Aristotle to prove by analogy that infants dream.

See 70 SS, 67b/35a.

71 SS, 68b/35c = Ruah Hen 6b-7a.


73 Commentary on Hippocrates' Aphorisms (SS, 68a/35c); Averroes’ "Book" (probably Kullisyâl; SS, 67b/35b); and Averroes’ commentary on Avicenna's *Urjâzah* (SS, 69a/36a).

74 E.g. SS, 68a/35c.


76 On Domingo Gundisalvo (= Dominicus Gundissalvus, died after 1190), Archdeacon in Toledo and Segovia, translator and compiler, see Jean Jolivet, "The Arabic Inheritance," in *A History of Twelfth-Century
intellect (translated by Ibn Tibbon and included with his Commentary on Ecclesiastes), provide the framework for this subject, supplemented by passages from The Guide of the Perplexed I,73 II, 4,29 and Isaac Israeli’s Book on the Elements.Gershom abridged, rearranged, and supplemented Averroes’ treatises.81

Philosophy, ed. Peter Dronke (Cambridge, 1988), 134-48. The Latin text of his De anima was edited by J.T. Mucke, Medieval Studies 2 (1940): 31-103. Teicher, “The Latin-Hebrew School of Translators” (above, n. 28), 403-14, identified the Hebrew translation of Gundisalvo’s De anima, and showed that it was Gershom’s source. Comparison of Sha’ar ha-Shamayim to the manuscript of this translation (above, n. 25) supports Teicher contra Sermo-Netta, who argues (see Hillel ben Samuel of Verona, 215 ff.) that the manuscript is a corrupt version of a late translation rendered by Gershom himself. In fact, Gershom used Gundisalvo’s book in the same way he used other sources (see below, section 4, on his use of sources): he preserved the original language except for some changes of terminology, severely abridged the text, rearranged it and supplemented it with other sources (including Guide II,4). Abraham Loewenthal, “Excerpta from the De anima Attributed to Aristotle” (Hebrew), Magazin für Wissenschaft des Judentums 17 (1890): 1-2, re-edited the section of Sha’ar ha-Shamayim that corresponds with Gundisalvo’s De anima.77

Three treatises—two attributed to Averroes and one to his son, Abdullah—appear in manuscripts of Ibn Tibbon’s Commentary on Ecclesiastes: in three manuscripts they appear after Ibn Tibbon’s introduction, in four manuscripts they appear at the end of the Commentary, and in ten manuscripts they appear separate from the Commentary. The treatises were published with German translation by J. Herz, Drei Abhandlungen über die Conjunctio des separaten Intellects mit dem Menschen von Averroes (Vater und Sohn), aus dem Arabischen übersetzt von Samuel ibn Tibbon (Berlin, 1869). Sermonetta, Hillel ben Samuel of Verona, 248 ff. (and Asaier Razitsky, “The Thought of R. Zeraiah ben Isaac ben Shemtul Hen and Maimonidean-Tibbonian Philosophy in the Thirteenth Century” (Hebrew) (Ph. D. diss., The Hebrew University of Jerusalem, 1978), 15, n. 3) were right to reject Teicher’s claim that the Hebrew version is a late adaptation of a Latin translation of the Arabic original, but wrong to say that Gershom makes a literal transcription (see below, n. 81). For the latest word on the subject, and with references to possible Arabic versions, see Herbert Davidson, “Averroes’ Tractatus de Anima Beatiutudine,” in A Straight Path, ed. Ruth Link-Salinger (Washington, 1988): 57-73.


78 SS, 81a-b/59b-c = Moreh II, 4 (224).

79 See Sermonetta, Hillel ben Samuel of Verona, 221, regarding the appearance of the same text in Tagmulet ha-Nefesh. He suspects that Gershom and Hillel had a shared version that differed from the text preserved in the Muckle edition.

80 See Asaier, Sha’ar ha-Shamayim, 168b-72b.

81 The printed editions of Sha’ar ha-Shamayim have only the second and prefaced them with a short survey of philosophical views on immortality which comes from Ibn Tibbon’s Commentary on Ecclesiastes 1:1.82 References to Pythagoras and Plato are from Gundisalvo; citations of Aristotle’s Physics (book 8) and On the Soul, Theophrastus, Alexander of Aphrodisias, Themistius, and Alfarabi are from Averroes’ treatises and Ibn Tibbon’s Commentary.

Part II: Astronomy

Gershom says in his introduction that Ptolemy (his Almagest was translated by Jacob Anatoli, 1231-5) and al-Farghani (The Book of the Heavenly Movements was translated by Anatoli, 1231) are his primary sources, with supplements from Solomon ben Moses of Laguri’s Hebrew translation/adaptation of Pseudo-Avicenna’s De celo et mundo and from Averroes’ On the Heavens.84 I have not yet compared Sha’ar ha-Shamayim with the originals, but can note that Gershom’s chapter 3, on the soul and intellect of the spheres, is entirely from The Guide of the Perplexed II,4. This section also includes a summary statement about al-Bitriji’s astronomy taken word-for-word from Ma’amor Yiqqavu ha-Mayim, a citation of Geminus’ Introduction to Celestial Phenomena (translated by Moses ibn Tibbon, 1246), and a reference to treatise. Note also that Gershom does not make a straight transcription, as is commonly believed (see above, n. 77). He adds, rearranges, and refers to Guide II,4. I will discuss the differences fully in a separate study.

82 This preface is missing in the printed editions, but a version appears in the appendix of Herz, Drei Abhandlungen, 24. Ravitzky identified the Commentary on Ecclesiastes as Gershom’s source (see his “The Thought of Zeraiah,” 15, n. 3). The text cited by Gershom includes a disparaging reference to Averroes, “who confused things in his Book on the Soul.”


84 See SS, 70b/40d. The three references to Averroes at Cambridge MS 382, fols. 99r-100v, are probably from the short or middle commentary on On the Heavens as well, both of which should have been available to Gershom. The Epitome was translated by Moses ibn Tibbon around 1250, and the Middle Commentary by Solomon ben Joseph ibn Ayyub in 1259. The reference to Averroes at 101r comes from Ma’amor Yiqqavu ha-Mayim, chap. 5.


86 SS, Cambridge MS 382, fol. 97v-98v.
leaves us an encyclopedia with no metaphysics, it solves problems of overall coherence and internal consistency.

4. Use of Sources

Gershom collected and organized related statements from his varied sources, presenting the reader, as stated in his introduction, with a concise and cohesive introduction to philosophy. He generally preserves the original language of these source-texts—with occasional changes of terminology to provide more consistency—but strips away evidence pointing to their original context. He rarely cites the author of his frame-text, and though supplementary texts and illustrations are often referenced, the secondary sources usually are not.

Aristotle’s Meteorology, for instance, is the major source of treatise 1, yet it is not mentioned by name. Nor is Eight Chapters or Ruah Hen. And though Gershom refers to al-Farghani in his introduction, his name or the name of his book never appear in the body of the text. Pseudo-Avicenna’s Sefer ha-Shenah ve-ha-Yeqisah is more complex. Gershom begins with a definition of

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89 See above, n. 17, on the manuscripts.

90 Both editions, according to the title pages, are “corrected” reprints of Venice, 1547.

91 See Wolfson, “Classification of the Sciences” (above, n. 21), 524, although note that some philosophers (including Falaquera) did include psychology in metaphysics, especially that part that studies the material and active intellect.

92 Correcting סונָהָ to סונָהָ נָהָ רָנָדָ. See Sachs, “Letter 20,” 152-9, to see how a corrupt text can cause confusion.

93 Probably coined by Samuel ibn Tibbon.
sleep, which appears to be his own. "Sleep is the suspension of the senses," he says, "starting with touch and spreading to the other senses." A statement attributed to Avicenna, which actually comes from pseudo-Avicenna, follows. In fact, the initial definition of sleep, which was presented anonymously, is also a direct quote from pseudo-Avicenna.98

With secondary sources, Gershom accepts the authority of the compiler, critic or exegete, and attributes his text to the ultimate—or what he thinks is the ultimate—source. Thus Gundisalvo’s *De anima* is cited as Aristotle’s *On the Soul*;99 Samuel ibn Tibbon’s summary of Avicenna’s *Shifā* is cited as al-Shifā’; Ibn Tibbon’s summary of Aristotle’s (probably Averroes’) views on the internal senses and embryology are cited as Aristotle’s *Parsa naturalia* and *Physics*; Maimonides’ imaginary answer to an imaginary question posed to Aristotle in *The Guide of the Perplexed* 2.19, is cited as authentic Aristotle; the citation of Alfarabi’s “Additions to the Physics,” also from *Guide* 2.19, mentions only Alfarabi; and ‘Ali ibn Rıdıvan’s reference to Hippocrates is cited simply as Hippocrates.100

Gershom cut and emended biblical and rabbinic language as well. Biblical verses cited in the *Commentary on Ecclesiastes* and *Ma’amar Yiqqavu ha-Mayim*, for instance, are removed; the Rabbinic-Aramaic ḥokha’ de-shaviit (= comet) is replaced by the scientific-Hebrew ba’alei ha-zemavot;101 and Gundisalvo’s “angels” become Gershom’s “separate intellects.”102 And while there is the occasional mention of God (e.g. “the Holy One did nothing in vain”), His name appears as a substitute for nature.103

After cutting from the original source and stripping away source-identification and religious language, Gershom combines related texts using cross-references and editorial remarks as glue. Cross-references, in fact, are sometimes made necessary by the source-text itself, as when Ibn Tibbon’s reference to the *Meteorology* is replaced by Gershom’s reference to his own treatise.104 Yet, for the most part, these references are his own, and help guide the reader through the encyclopedic work.105 Editorial remarks smooth out inconsistencies, decide disputes, and make value judgments.106 For example, after writing (following the text of the *Eight Chapters*) that the senses work through the brain, Gershom adds that “even Aristotle, who relates them to the heart, would admit that the brain works as an intermediary”;107 and after citing a physician’s or philosopher’s view, he sometimes remarks that “this view is false” or “disproved by experience,” or “it is amazing how Averroes failed to cite this example.”108

5. Concluding Remarks

*Sha’ar ha-Shamayim* is popular, eclectic, and almost entirely derivative, but the presence of Gershom ben Solomon is still discernible. His emendations, cross-references and editorial remarks show intelligence and understanding, and his source-selection reveals unstated preferences and commitments. Gershom generally avoids Averroes’ commentaries on Aristotle, which were controversial and, in any event, already summarized by Shem-Tov Falakeura.109 He does, however, cite Averroes’ medical works frequently, and together with the reports of his own experience, this shows a definite preference for the empirical.110 The use of Latin-to-Hebrew translations suggests a

98 *SS*, 66b/34c = *Ha-Shenah ve-ha-Yiqqav* (above, n. 45), fol. 149r.
99 Cf. *SS*, 78a/38a to Gundisalvo, *De anima*, fol. 183v-184r.
100 See above, n. 60.
102 *SS*, 81a/39b = Gundisalvo, *De anima*, fol. 197v.
103 *SS*, 29b/16d, also 48b/26a; 54b/28d; and 57b/30b, referring to Plato.
closeness to the universities—perhaps mediated by someone like Solomon ben Moses——and evinces a gradual shift of European Jewish philosophy from an Arabic to a Latin cultural base. By using a biblical framework filled in with popular but almost purely scientific-philosophical content, he created a book that could serve as a general introduction for a lay audience, be acceptable to more conservative scholars, and also provide building material for the committed naturalist. This, at a time when philosophical exegesis of Bible and Aggadah was under attack, shows both prudence and discretion.

The excerpts from Hebrew religious philosophy, moreover, which are really the primary building blocks of his encyclopedia, reveal the cautious and conservative rationalism of Gershon and his target reader and the increasingly layered response of Judaism to sources of philosophy and science. For while Gershon learned philosophy second-hand from books cited from Samuel ibn Tibbon’s Commentary on Ecclesiastes (nn. 34, 82). There are three additional references to Averroes which likely come from one of his commentaries on On the Heavens (see n. 84), but the remaining fifty-one or more are either citations of Averroes’ medical views (nn. 40, 42, 58, 61, 73) or citations from secondary sources (nn. 34, 63). This emphasis on Averroes’ medical works over his philosophical works is striking; and, moreover, one should note that even when he cites from the commentaries on Parts naturalia and on On the Heavens, they are subordinate to pseudo-Avicean’s Sefer ha-Shenah ve-ha-Yefishah and De colo et mundo. For contemporary criticism of Averroes that may have influenced Gershon, see Solomon ben Moses’ Bet Elohim (above, n. 3), which begins with a critique of “modern” abridgements of Aristotle; and note Samuel ibn Tibbon’s disparaging remarks about Averroes’ Book on the Soul (n. 82).

Gershon refers to the philosopher Rabbi Dr. Solomon (SS, 35b/19d), which may be Solomon ben Moses; he gives extensive use of Solomon’s Latin-to-Hebrew translations; and there are many similarities between Solomon’s Bet Elohim and Sha’ar ha-Shamayim, starting with the titles. Their relationship, perhaps personal, deserves further research.


For example, he gives the reader scientific information (the balance of water in the seas; mountain formation to counteract erosion; dogs barking in their sleep; see above, nn. 38, 69) that help support the view of eternity of the world over creation, and natural over divine dreams.

See above note 8, for research on the controversy.

Cf. the fate of Levi ben Abraham of Villefranche (see the article by Warren Zev Harvey in the present volume).

111 Menahem ha-Meiri of Perpignan (1249-1315) singled out The Guide of the Perplexed, Ma’amor Yiqqawnu ha-Mayim, Commentary on Ecclesiastes and Jacob Anatoli’s Malma ha-Talmidim in his letter protesting Rabbi Solomon ibn Adret’s ban of 1305. He said that people learn philosophy unsystematically from these books, not from the writings of Aristotle (or Averroes). See Stern, “Menahem ha-Meiri” (see above, n. 8), 198.

APPENDIX

Gershom ben Solomon’s Sha’ar ha-Shamayim
ספר שר השמים לה גרשום בן שלחם

Outline

PART I: Natural science/physics (הכמת והברא):
A. The First Things Generated (7 she’arim, 1a/3a-9b/7b):

1) On the Four Elements (1a/3a-2b/3d): the existence of underlying matter, natural place and relative position, rectilinear movement and relative weight, qualities of the elements, changing one into another, no space (vacuum) between them, differentiation of the spheres of fire and air.

2) On the Vapors (2b/3d-3a/4a): the heat of the sun as the cause of wet and dry vapors; sweet and salty rain, dew, frost, hail, snow.

3) On Thunder and Lightning (3a/4a-4a/4b): causes of thunder, why lightning goes down despite the nature of fire to rise, white and red/dark lightning.

4) On comets, meteors and other light phenomena (4a/4b-4b/4c): caused by the wet vapor entering the sphere of fire.

5) On rivers, the sea, and the winds (4b/4c-7b/6a): a) vapors as source of rain as well as rivers, rivers come from mountains and from snow, rivers can come into existence and they can dry up and this affects patterns of human settlement; b) running water and standing water, rivers flow to the seas but the level stays constant due to evaporation, water evaporates but sea stays level due to river source, why the sea is salty; c) winds caused by dry vapors, relation of wind and rain, movement of wind, direction of winds, seasonal winds, relation between planets and the winds.

6) On cloud colors and the circle around the stars called halo in Arabic (7b/6a-7b/6b): four cloud colors, when does the halo appear, varieties of halo appearance.

7) On the Rainbow and Earthquakes (7b/6b-9b/7b): a) three colors of the rainbow, the double rainbow, the cause of color variation, when does the rainbow appear, why semi-circle rather than full circle, why not a straight line; b) earthquakes caused by movement of dry vapors caught in the earth, length of earthquake, pre-earthquake signs.

B. Minerals (3 she’arim, 9b/7b-13a/9a):

1) On the Formation of Mountains (9b/7b-10a/7c): a) Avicenna’s theory: water does not cover all of the earth because the changing of elements one into another causes discontinuity in the earthly sphere, and water then separates into lakes and seas; one cause of this is eternal celestial movement, another is the creation of mountains through the drying and collecting of (dense) water and earth; b) the appearance of a new mountain in the English islands is explained by the Meteorology and Avicenna’s theory: dense water combined with earth collects in one place and is forced upward by dry hot (volcanic) vapors.

2) On mineral stones generated by the earth, and on the origin of metals (10a/7c-12a/8b): contribution of vapors to the creation of minerals and metals, relation of mineral colors to celestial bodies, relative weight, on the art of alchemy.

3) Precious stones (12a/8b-13a/9a): stones, their place of origin, composition, special practical qualities.

C. Plants (3 she’arim, 13b/9a-21b/12d):

1) To explain that plants have a vegetative soul (13b/9a-15a/9d): the existence of the plant soul; three faculties of the plant soul, four faculties of the plant soul’s nutritive faculty, reproduction, no sense perception, details of nutrition, growth, reproduction.

2) To explain the cause of plant variation, which is due to location and season (15a/10a-17a/10d): there is a time to plant; importance of the sun; influence of quality of soil, geographical region and climate on health of plant and plant growth; three types of plant: heavy, light and in-between; complete (root, flower, leaf, fruit) and deficient plants, the ripening of fruit.
3) To explain the different nature of fruits, their outer and inner covering, their appearance, and the falling of their leaves (17a/10d-21b/13a): plants mainly from the element air and secondly from earth, though sometimes earth prevails; fruits and their edibility; why the leaves fall; leaf size; broken branches or stems grow back; plant color, smell, reproduction and taste.

D. Animals (7 she'arim + 3 peraqim, 21b/13a-83b/40c):

1) To explain the nature of quadrupeds (21b/13a-31a/17b): fixed time to reproduce and fixed length of life; relation of wet humor and length of life; animals divided and classified according to characteristics; the difference between man and animals; difference between species of animals; difference between fish and birds and other animals; difference between bird species.

2) To explain each and every species [of quadruped] (31a/17c-36a/19d): includes discussion of mating, reproduction, composition, feeding, habitat, etc. for the following: sheep, goat, ox/cow, horse, donkey, mule, camel, elephant, dog, bear, wolf, pig/hog, cat, lion, deer, marmot, hedgehog.

3) To explain the nature of birds (36a/19d-40a/22a): eggs and reproduction, general characteristics and description of specific species.

4) To explain the nature of bees, spiders and ants (40a/22a-40b/22b).

5) To explain the nature of fish species (41b/22c-44a/23c).

6) To explain the nature of the human species, its form and origin (44a/23c-48b/25d): source of form, contribution of mother and father, contribution of elements and celestial movements, possibility of spontaneous generation, freaks and monsters and other oddities, menstruation, menopause, the development of the fetus, similarity between child and parent.

7) To explain the limbs and organs of man, his bones, flesh, vessels and nerves (48b/25d-66b/34c): head, eyes, ears, nostrils, lips, teeth, sense of touch, beard, neck; trachea, chest, lung, heart, esophagus, stomach, intestines, liver, spleen, gall-

bladder, kidneys, urinary bladder, testes, penis, breasts, uterus, loins, hands, feet; he starts with the brain and the internal senses, moves to the five external senses and their limbs, and then works from top to bottom.

A chapter to explain sleep and being awake (66b/34c-68b/35c): sleep caused by the shutting down of the senses; digestive vapor that rises from the stomach is the material cause of sleep; heat of the heart, which leads the vapor to the head, is the agent cause; the final cause is health and rest; cold and wet as cause of sleep; dawn the best time for sleep; on sleep walking.

A chapter to explain dreams (68b/35c-59b/36b): dreaming is the work of the imagination in sleep reflecting on day-time sense perception; sometimes sense-perception is distorted by psychic sickness, like the distorted image of a stick under moving water; do infants dream? causes of dreaming? true dreams? either by nature or accident; there is no divine cause.

A chapter on the soul and its faculties (74b/36b-83b/40c): a) nutrition, imagination, appetite, practical and theoretical intellect; b) ten questions in the study of the soul: does the soul exist? what is it? is it created? one or many? were the many created together at the beginning or day by day? created from nothing? created from father and mother? does the soul die? do all faculties survive? if not all, which ones? c) Averroes' treatises, surveying the views on the possibility of immortality.

PART II: Astronomy ( hmacmat hadamot) (16 peraqim):

Note: only seven chapters (peraqim) appear in the Venice, Reidelberg, Zolkiew and Warsaw editions. The additional nine chapters that survive in some manuscripts are marked in bold.

1) That the spheres are made of a fifth element (70a/41c-71b/41c).

2) That the spheres are neither light nor heavy (71b/41c).

3) That the spheres have soul and intellect (71b/41c-72b/42a).

4) That the celestial sphere is spherical and moves, with all its planets, in circular motion (204v-207f).
5) That the earth and all its parts, from earth and sea, is spherical (207r-209r).
6) That the earthy sphere is in the middle of the heavenly sphere, and its size in relation to the heavens is like the point to the circle (72b/42a-73a/42a).
7) That the earth does not move (73a/42a-73b/42c).
8) The reason the earth remains in the middle without moving down, despite its weight (73b/42c-74a/42d).
9) That the planets are spherical (74b/42d).
10) That the light of the moon comes from the light of the sun (97v-99r).
11) That the planets have no self-movement; movement comes from the sphere (99r-100r).
12) To explain the first two movements, the first makes day and the second the four seasons (100r-101v).
13) To explain the inhabited quarter of the earth and what happens to it due to the movement of the sphere and the changing of day and night (101v-102v).
14) To explain the special qualities of the inhabited quarter including mention of the places where some months the sun rises without setting, and some months the sun sets without rising (102v-103r).
15) To explain what befalls the uninhabited parts which do not move (103r-103v).
16) To explain the size of earth and how it is split up into seven climes, along with their dimensions (103v-104v).

Part III: Divine science/metaphysics (תורת ה Providence)
This section is not extant.