

Specific Property and Specific Form in Maimonides' Medical Literature and *Guide for the Perplexed*

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I. Introduction

In this presentation, I discuss how Maimonides (Mosheh ben Maimon, Mūsā ibn Maymūn d. 605/1204) explains the origin of specific properties (*khāṣṣa* in Arabic, *segulah* in Hebrew) in accordance with his philosophy. The specific property is one of the effects of a medicine and it is considered to act on a specific humor or organ. This property is problematic because of the specificity of its effect and efficacy over some distance from the afflicted organ.¹⁾ Therefore, it can not be explained by the four elements or a mixture (*mizāj*) of them, but can only be known through experience. In Arabic medical tradition, this specific property was received as an effect of “a whole substance” (*jumla jawhar*), which led to various interpretations, through the translation of Greek medical literature. This property appears in various kinds of literature. For example, in Hebrew literature, this term was also applied to astrology or astral magic and acquired great significance in medieval Jewish cosmology.²⁾ But in this paper, I would like to set the limits to medicine.

There are many studies about specific property. Some treatises deal with this property found in Maimonides' medical works, mainly from the perspective of his evaluation of empirical knowledge (*tajriba*) or epistemology of science.³⁾ But it is also necessary to consider that he locates the origin of this property in his philosophical context concerning matter and form. This study aims at relating medical science with philosophy. Depending on how this property is explained, the notion of nature (*tabī'a*) and the status of medicine in a scientific framework can diverge considerably. I examine this subject through the comparison of Avicennian medicine with Andalusian medicine and then determine the position of Maimonides.

Moreover, this study could indicate that Avicennian medical theories are present in Maimonides' works. To what extent medieval Jewish scholars received Avicenna is highly controversial because his major philosophical texts were not studied by them despite the fact that some of his distinctive ideas and medical texts were received. As for Maimonides, it is presumed that he did not read Avicenna's philosophical magnum opus, *The healing (al-shifā')* nor his medical encyclopedia, *The canon of medicine (al-Qānūn fī al-tibb*, hereinafter referred to as *al-Qānūn*), but received

Avicennian knowledge from his minor medical works and the *Intentions of philosophers (Maqāṣid al-falāsifa)* of al-Ghazālī.⁴⁾ I point out that his explanation of specific property is clearly influenced by the philosophy of Avicenna, furthermore I suggest the possibility that Maimonides might have read *al-Qānūn*.

Before examining Maimonides' works, I'd like to outline the context of medical thought before him. First, I will summarize the approach of Avicenna to specific property and next, contrast the methods of Andalusian physicians, who Maimonides highly esteemed and frequently quoted.

II. Avicenna (Ibn Sīnā d. 437/1037)

Avicenna explains "effects through the whole substance" in a section of *al-Qānūn*, in which he explains the general effects of food and drink.

The effect through its substance acts through its specific form which is obtained after mixture composed of the simple bodies. From this mixture, one unit originates and it prepares for reception of species or forms superadded to the simple body. This form is neither the primary qualities ascribed to elements nor the mixture composed of them. It is a certain perfection obtained by the elements according to the preparedness of attainment of mixture, for example, the attraction of magnetism or the nature of every kind of animal and plant, which is obtained after the mixture.⁵⁾

In this passage, Avicenna explains effects through the whole substance in general and does not mention specific property in particular. Here, I'd like to confirm two points. Firstly, he identifies the effect through the whole substance with that through the specific form. And secondly, species of forms are not derived directly from the mixture or the elements, but from something superadded to them.

The specific property is mentioned mainly in *Treatise on the cardiac medicine (Risāla fī al-adwīya al-qalbīya)*, and the following is the beginning of his explanation.

The specific property is in actual fact not nonnatural. The definition of nature (*ṭabī'a*) is a principle of movement, rest and other actions of the thing which this nature is in, and this is applicable to the specific property.⁶⁾

He starts the explanation with reconfirmation of the definition of nature. In this passage, he affirms that the specific property also comes from nature. Thus the cause of this property must be sought in

the nature of the medicine. According to the first passage which I cited, specific property does not exist in simple bodies. After the composition of a certain mixture contained in a compound body, a certain form is given to this body and its preparedness (*isti'dād*) which originates the specific property is completed.⁷⁾

But his approach encounters two limits. First, the efficient cause of what gives this form to the medicine is unknowable. Second, it is also beyond the range of human knowledge how the receiver, namely the mixture of this medicine is composed. The mixture of the medicine is only in order to prepare it for receiving the form, but humans can not grasp the proportions of this mixture. Moreover, this mixture itself is not the efficient cause of the form. The efficient cause is not a certain power which comes from the elements in the medicine, but from something outside of them, that is, emanation (*ḥayḍ ilāhī*). Therefore he insists that emanation is necessary to create the specific property in the phase of the mixture.⁸⁾

This theory leads to his famous philosophical notion of the giver of forms. Thus this argument is not confined to the specific property, but also applicable to the basic themes of physics such as the origin of nutrition in plants. Hence he says “the limit of answering questions of the specific property is the limit of answering question of the nature which is understood”.⁹⁾ Because in the introduction to *al-Qānūn*, he states that the principal matters of medical science are not discussed within its own discipline and must be received from physics,¹⁰⁾ research into the specific property of medicine must be done in the same manner as other well-known subjects in physics.

On the other hand, Avicenna rejects various opinions concerning magnetism, which are often applied to the explanation of the specific property in medicine by analogy, for example, the effects of heat¹¹⁾ or soul, emission of materials like a claw¹²⁾ and similarity of substance between two objects. These opinions could be deviations from the aforementioned definition of nature and distort the frame of physics.

As far as I know, there is no medical text which identifies the specific property with the specific form before Avicenna. For example, al-Majūsī does not even mention the term of specific property in *The complete medical art* (*Kāmil al-ṣinā'a al-ṭibbīya*, hereinafter referred to as *Kāmil*), which is the highly integrated medical encyclopedia before *al-Qānūn*. Instead, in the section of antidotes (*adwiya mukhalliṣīya* or *bāzahrīya*) and purgative medicine (*adwiya mushila*), he refers to the effect through the whole substance (*jamī' jawhar*) differentiating it from the effect through the qualities. According to al-Majūsī, some antidotes eliminate poison by opposing qualities or opposing substances to that of the poison, and other antidotes attract poison from the afflicted organ by the heat contained in them or their substance which is similar to the substance of poison.¹³⁾ Purgative

medicine, like magnetism, also attracts a certain humor because of its similarity,¹⁴⁾ which is denied by Avicenna.

III. Andalusian physicians

Next, I will review the arguments of Andalusian physicians. In Andalus, there were original medical traditions and a large number of medical books were produced especially in pharmacology. Maimonides received a medical education in Andalus and Maghreb, and introduced treatments from these places into his works. He placed great value on Andalusian pharmacology. For example, in *Explanation of names of medical herbs* (*Sharḥ asmā' al-'uqqār*) he made a list of herbal names in different languages mainly based on Andalusian physicians such as Ibn Samjūn, Ibn Wāfid and al-Ghāfiqī. Describing the active discussions between the physicians and/or philosophers and their anti-eastern tendency, Langermann proposes “Another Andalusian Revolt”.¹⁵⁾ He also suggested that Ibn Rushd and Ibn Zuhr might have tried to construct another medical *qānūn* which would have been an alternative to the eastern medical encyclopedias, such as *al-Qānūn* and *Kāmil*. His proposition is important from the perspective of the impact of eastern medical knowledge on the west and the western response to it. My impression is that there seems to have been a tendency to research medicine as a partial science, not as a subordinate art of physics, and to increase empirical knowledge, in comparison with Avicennian medicine.

Before the inflow of Avicenna in Andalus, al-Zahrāwī (d. 404/1013) listed a large number of medicines and referred to some specific properties, but as far as I know, he did not give an explanation of the origin of the specific property. Next, Ibn Wāfid (d. 467/1067), in the chapter on purgative medicine of the *Book of simple medicine* (*Kitāb al-adwiya al-mufrada*), stated that the specific property is an attraction of a humor by the effect of heat and that there is a certain similarity (*mushābaha*) of the substance between the medicine and the humor, like the attraction of magnetism. Therefore, the medicine attracts the specific humor.¹⁶⁾

In the first half of the 12th century, Avicenna's *al-Qānūn* became known among Andalusian physicians.¹⁷⁾ However, at the same time their anti-Avicennian tendency increased, and some physicians tried to construct a different medical science. Averroes (Ibn Rushd d. 595/1198) refined the theory of correspondence between the medicine and the humor. He declared in *al-Kulliyāt* that the action of attraction in general is caused by heat and attraction of a particular object is explained by the proportion of elements in the two objects and their correspondence. Therefore, the specific property is not an inherent nature in the medicine, but to be found infinitely in one medicine in

accordance with whatever corresponds.¹⁸⁾ According to his interpretation, “the whole substance” probably means the combination of two substances.

It seems that there were widespread discussions about the attraction of specific property among Andalusian physicians. For example, Ibn Wāfid quoted from a treatise on purgative medicine ascribed to Abū Yūsuf Ibn al-Katānī.¹⁹⁾ Abū al-'Alā' Ibn Zuhr (d. 525/1130) also mentioned many specific properties in *The reminder (al-Tadhkira)* and Averroes discussed a case which was reported to him regarding why scammony, which attracts the yellow bile, attracts all other humors when the dose is increased.²⁰⁾ In any case, the Andalusians increased practical knowledge of specific properties and elaborated specific treatments under various conditions.²¹⁾ On the other hand, most of them did not intend to relate pharmacological theory with physics systematically. It is true that the nature of physics is also different from Avicenna.²²⁾ As far as I know, there was no physician or philosopher who mentioned the identification of the specific property with the effect through the specific form after the diffusion of Avicenna and before Maimonides.

IV. Maimonides

Checking the accounts of specific properties in Maimonides' medical literature I found some phrases such as “effective through their specific form”, but there was no passage explaining the effect of heat or the similarity of two objects. Although he highly esteemed the usefulness of the empirical knowledge of Andalusian physicians, he remained silent concerning their rationale without an explicit attack. The following are passages from Maimonides about the specific property.

These are cardiac medicines which act through specific properties, by which I mean their specific form which is their whole substance, and not through their qualities alone.²³⁾

Because the action of remedies that save from fatal poisons is not dependent upon their quality but upon their whole substance, as the physicians declare, or upon their specific property, as they say. This means, as the philosophers have explained, that [these remedies] are effective through their specific form.²⁴⁾

This statement is correct because laughter is a specific characteristic of human beings. It is well known that each specific property belongs to the specific form, regardless of whether it belongs to the species of animals or plants or minerals. There is no way to give a reason for this. Therefore, one should not look for it in any way, neither regarding laughter nor any other

specific property.²⁵⁾

From the second passage, it is understood that the effect which is not through the quality is called the effect through the whole substance or the specific property by physicians, and it is also called the effect through the specific form by philosophers. This passage "as the philosophers have explained" indicates that some subjects shared by medical science must be entrusted to philosophers, and physicians can only accept the conclusions drawn by them.²⁶⁾ Thus there must have been philosophical research into the specific property and its application to medicine before Maimonides. I reviewed the medical literature which Maimonides could have read and as far as I know, the aforementioned *al-Qānūn* is the only book which explicitly refers to the identification of the whole substance with the specific form. Maimonides could have derived these terms from Avicenna, but it is still unclear whether Maimonides had read *al-Qānūn* itself.²⁷⁾

Next I would like to point out that he interpreted the specific property in his general philosophical context. Maimonides did not give a detailed account in his medical literature, thus I looked for descriptions of the specific form in *Guide for the perplexed* (*Dalālat al-ḥā'irīn*, hereinafter referred to as *Guide*).

In *Guide* I, 1, Maimonides says that the Hebrew word *tselem* i.e. form, signifies both an incorporeal specific form and shape of a body. The specific form means the notion in virtue of which a thing is constituted as a substance and becomes what it is.²⁸⁾ In *Guide* II, 12, he makes clear the difference between the change by corporeal causes and the change by incorporeal causes, namely, the form. The former is caused by direct or indirect contact of elements such as heat of a fire, which goes through the air to an object at a distance, or the attraction of magnetism. This kind of change undergoes a temporal and gradual transition, furthermore, strength of the power varies in accordance with the distance.

Maimonides does not explain all changes solely by the aforementioned causes. He distinguished the change by the incorporeal cause from that by the corporeal cause, and this is a substantial conversion in an instant.

It is obvious for you that all the mixture receives some increase or decrease and originates gradually. However, this case is not applicable to the form. Because it doesn't originate gradually, there is no movement in it, and it generates and corrupts only in an instant. Therefore, it is not ascribed to the effect of the mixture, but the mixture is only to prepare the matter to receive the form.²⁹⁾

I'd like to confirm two points in this statement. Firstly, the change caused by the form is

distinguished from the mixture of elements as regards the instantaneity.³⁰⁾ Secondly, because the mixture is not the efficient cause of the form, but only to prepare for reception of it, it is impossible to derive the latter from the former. Therefore, there must be another cause. Here Maimonides introduces an Avicennian concept, that is, giver of the form (*mu'ī al-ṣūra*).

As to changes which are not ascribed to the mixture, but to the form, they also require an efficient cause, namely, the giver of the form.³¹⁾

Maimonides already stated that God functions like the formal cause, the efficient cause and the final cause in *Guide* I, 69.³²⁾ He gives further explanations of the giver of forms and the emanation and complements the incorporeal causation in II, 12.

Although these passages are extracted from *Guide*, Maimonides seems to apply this incorporeal causation to the specific property in medicine. The following passage is an extract from *Commentary on the aphorisms of Hippocrates (Perush le-pirqei Abuqrat)*.³³⁾ He puts the somewhat stronger implication on the role of the specific form.

Because of specific forms, effects of medicines are diverse, even if their nature is the same.³⁴⁾

Furthermore, he also applies this theory to the explanation of how a certain medicine acts on a certain organ without recourse to correspondence or proportion of two objects.

Because of the actions which result from the form, there are medicines which are specific for the stomach, medicines which are specific for the liver, medicines which are specific for the spleen, medicines which are specific for the heart and medicines which are specific for the brain.³⁵⁾

From these passages, it is understood that Maimonides had received a series of ideas such as the giver of forms, the substantial conversion and the specific form, furthermore, corollary of these ideas can be seen in his medical text. On the other hand, as to the effects originating from the elements or its mixture, Maimonides did not receive Avicenna's classification. Maimonides' modifications of pharmacological theories focused on the specific property, which endangered the physics of philosophers.³⁶⁾

V. Conclusion

I reviewed the arguments concerning the question of how specific property originates. Maimonides identified the specific property in medical science with the specific form in the same way as Avicenna. From this perspective, although Maimonides highly esteemed the empirical knowledge of Andalusian physicians, he received the philosophical concepts of Avicenna. Hence, he obtained the unique position against Andalusian physicians who had anti-Avicennian tendencies.

Maimonides' explanation of the specific property is derived from the series of his concepts around the specific form. When he elucidated this property, he received these concepts as a conclusion drawn by philosophers and applied to medicine. Therefore, we can infer that he was also aware of the status of medical science and its procedures which Avicenna showed in his medical works, whereas Andalusian physicians tended to study medicine apart from philosopher's physics.

Of course, it is not certain that Maimonides received this term directly from *al-Qānūn* and therefore this knowledge must be *Avicennian knowledge without Avicenna*.³⁷⁾ In the realm of the history of science, the role of common sense shared by intellectuals is important. Some Avicennian ideas would become common sense as *Avicennian knowledge without Avicenna* among medieval Jewish thinkers and made their appearance in scientific studies. But the extent to which this knowledge was shared at that time is obscure. There is a need for further research into how Maimonides' works transmitted this knowledge to the Jewish physician and how it was integrated into medical and physical thought.³⁸⁾

Notes

- 1) In this sense, the specific property in medicine is often analogized with magnetism. About the solutions of magnetism proposed by medieval thinkers, see Harry Austryn Wolfson, *Crescas' critique of Aristotle : problems of Aristotle's Physics in Jewish and Arabic philosophy* (Cambridge, Harvard University Press, 1929).
- 2) For example, Tzvi Langermann, "Gersonides on the magnet and the heat of the sun," in: Gad Freudenthal (ed.), *Studies on Gersonides: a fourteenth-century Jewish philosopher-scientist* (Leiden, E.J. Brill, 1992), and Dov Schwartz, "Astral magic and specific properties (*segullot*) in medieval Jewish thought : non-Aristotelian science and theology," in: Gad Freudenthal (ed.), *Science in medieval Jewish cultures* (Cambridge, Cambridge University Press, 2011).
- 3) Gad Freudenthal, "Maimonides' philosophy of science," in: Kenneth Seeskin (ed.), *The Cambridge Companion to Maimonides* (Cambridge University Press, New York, 2005).

- 4) Many medieval Jewish scholars received Avicennian knowledge through the second source of al-Ghazālī, which summarizes Avicenna’s philosophical work, *Dānish’nāmah*. About the reception of Avicenna in Jewish thought, see Gad Freudenthal and Mauro Zonta, “Avicenna among medieval Jews : The reception of Avicenna’s philosophical, scientific and medical writings in Jewish cultures, east and west,” *Arabic Sciences and Philosophy* 22 (2012), 217–287.
- 5) *al-Qānūn fī al-ṭibb* (Dār al-ṣādir, Beirut) I, 95.
- 6) “Risāla fī al-adwiya al-qalbīya” in: Muḥammad Zuhayr Bābā (ed.), *Min mu’allafāt Ibn Sīnā al-ṭibbīyah : Kitāb daf’ al-maḍār al-kullīyah ‘an al-abdān al-insānīyah, al-Arjūzah fī al-ṭibb, Kitāb al-adwiyah al-qalbīyah* (Jāmi‘at Ḥalab, Ma’had al-Turāth al-‘Ilmī al-‘Arabī, Ḥalab, 1984), 245.
- 7) Ibid.
- 8) Ibid 246.
- 9) Ibid.
- 10) About the status of medicine in a scientific framework and its method in Avicennian tradition, see Dimitri Gutas, “Medical theory and scientific method in the age of Avicenna,” in: David C. Reisman and Ahmed H. al-Rahim (eds.), *Before and after Avicenna : proceedings of the first conference of the Avicenna Study Group* (Brill, Leiden, 2003).
- 11) In medieval physics, heat is considered to be one of the causes of attracting distant objects. When amber is rubbed, thus heated, it attracts straw. And this power of attraction, like magnetism, varies according to distance; Langermann (1992), 271.
- 12) *Risāla fī al-adwiya al-qalbīya* p. 247. Similar opinion may be traced to Alexander; Langermann (1992), 270–272.
- 13) Fuat Sezgin (ed.), *The complete medical art = Kāmil al-ṣinā’a al-ṭibbīyah* (Institute for the History of Arabic-Islamic Science at the Johann Wolfgang Goethe University, Frankfurt am Main, 1985), 132.
- 14) Ibid 197.
- 15) Tzvi Langermann, “Another Andalusian revolt? : Ibn Rushd’s critique of al-Kindī’s Pharmacological computus,” in: Jan. P. Hogendijk and Abdelhamid. I. Sabra (eds.), *The enterprise of science in Islam : New Perspectives* (Cambridge, The MIT Press, 2003).
- 16) Luisa Fernanda (ed.), *Kitāb al-adwiya al-mufrada : Libro de los medicamentos siples*, (Consejo Superior de Investigaciones Científicas, Madrid, 1995), 35–36.
- 17) J. Vernet “Natural and technical sciences in al-Andalus,” in: Salma Khadra Jayyusi and Manuela Marín (eds.), *The legacy of muslim Spain* (Brill, Leiden, 1992), 944.
- 18) Muḥammad ibn ‘Abd al-Jalīl Bilqazīz (ed.), *Kitāb al-kullīyāt* (al-Dār al-Bayḍā’, Maṭba‘at al-Najāḥ al-Jadīdah, 2000), 476–77. Although he does not mention Avicenna in this passage, this statement is clearly denying him. In *Book of theriaca (Kitāb al-tiryāq)*, Averroes also criticizes Avicenna’s theory of the specific property of theriaca. Georges C. Anawati (ed.), *Rasā’il Ibn Rushd al-ṭibbīyah* (al-Hayah al-Miṣriyyah al-āmmah lil-kitāb, al-Qāhirah, 1987), 390. Bertolacci shows that Averroes’ attacks on Avicenna are not occasional, but widespread in his works, and

these reveal Averroes' keen interest in Avicenna's thoughts. Bertolacci states that as to medicine, Averroes shows a positive attitude towards Avicenna in his commentary on Avicenna's *Urjūzat al-ṭibb* but it is obvious that his criticism extends into medicine; Amos Bertolacci "Averroes against Avicenna on human spontaneous generation: the starting-point of a lasting debate" in: Anna Akasoy and Guido Giglioni (eds.), *Renaissance Averroism and its aftermath : Arabic philosophy in early modern Europe* (Springer, Dordrecht, 2013), 38–39.

- 19) *Kitāb al-adwiya al-mufrada*, 41–46.
- 20) *al-Kullīyāt*, 477–78.
- 21) On the other hand, Ibn Zuhr (d. 557/1162), who was highly esteemed by Maimonides among the physicians in the same age, criticizes physicians for arguments of little substance about specific properties in *Book of nutriment (Kitāb al-aghḏhiya)*. But he himself does not suggest any explanations and he only states that God endows medicine with specific properties; Gracia Sánchez (ed.), *Kitāb al-aghḏiya : Tratado de los alimentos*. (Consejo Superior de Investigaciones Científicas, Madrid, 1992), 110.
- 22) With respect to Averroes, he afterward constructed his own physics, which could reduce the idiosyncrasy of specific property. According to him, the cause of movements of an inanimate object is not inherent, whereas Avicenna admitted the inherence in it; Wolfson (1929) 89. Averroes also declares that the theoretical part of medicine is received from physics; *al-Kullīyāt*, 129–30. But the relation between Averroes' medical theory and his philosophy is beyond this paper.
- 23) J. O. Leibowitz and Shlomo Marcus (eds.), *On the causes of symptoms* (University of California Press, Berkeley, 1974), 173–174.
- 24) Gerrit Bos (ed.), *On poisons and the protection against lethal drugs* (Brigham Young University Press, Provo, 2009), 16. This passage is referring to cardiac medicines which Ibn Zuhr or Avicenna mentioned such as emerald and gold.
- 25) Gerrit Bos (ed.), *Medical Aphorism Treatises 6–9* (Brigham Young University Press, Provo, 2007), 41.
- 26) Again, about the scientific procedure, see Gutas (2003).
- 27) Maimonides does not refer to *al-Qānūn*; Freudenthal and Zonta (2012), 227–28.
- 28) Shlomo Munk (ed.), *Dalālat al-ḥā'irīn* (Defus Azriel, Yerushalaim, 1930), 14.
- 29) *Guide*, 194.
- 30) According to McGinnis, this substantial change was recognized by Aristotle but later philosophers did not investigate this subject. It is Avicenna who states first that this kind of change occurs all at once; Jon McGinnis "On the moment of substantial change: a vexed question in the history of ideas" in: Jon McGinnis (ed.), *Interpreting Avicenna: science and philosophy in medieval Islam* (Brill, Leiden, 2004), 38–39.
- 31) *Ibid*, 194.
- 32) *Ibid*, 115.
- 33) Bos criticizes this Hebrew text for insufficiency according to modern editorial standards, but I refer to this here.

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- 34) *Perush le-pereki Abuḳraṭ* (Mosad ha-Rav Kōq, Yerushalayim, 1961), 14.
- 35) Ibid.
- 36) Avicenna divides the effects of the medicine into three classes, that is, general effects (*af'āl kullīya*), partial effects (*af'āl juz 'īya*) and effects like general (*af'āl tushbih kullīya*). On the other hand, Maimonides adopts the ordinary threefold division, i.e. the primary effect, which is the action of each element, the secondary effect, which is caused by the mixture and the third effect, namely specific property. The third effect is not always identified with the specific property, but it acts on specific organs.
- 37) This term is borrowed from the monograph of Freudenthal and Zonta. They made clear the tendency of reception of certain characteristic Avicennian concepts into Hebrew literature despite their scarce mention of his name; Freudenthal and Zonta (2012).
- 38) Schwartz made a general survey of the specific property of Jewish culture; Schwartz (2011).