THE RECEPTION OF IBN SĪNĀ’S PHYSICS
IN LATER ISLAMIC THOUGHT

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Abstract

In the Physics of his major encyclopedia al-Shifāʾ, Ibn Sīnā does not limit himself to paraphrase Aristotle’s Physics, but also adds important innovative ideas. However, one may wonder whether they did really influence the later Islamic tradition? Based on the treatise on change, present in Ibn Sīnā’s Physics, II, 1-4, it is shown that major later thinkers as Bahmanyār b. Marzubān, Abū l-ʿAbbās al-Lawkārī, Fakhr al-Dīn al-Rāzī and Mullā Ṣadrā al-Shīrāzī were using his exposé in a significant way. Certainly, they did it in very different ways, but they clearly expressed their own views with an eye on Ibn Sīnā’s doctrine. The present paper details the elements and scope of this influence.


In Ibn Sīnā’s major encyclopedia, Kitāb al-Shifāʾ, the book al-Samāʾ al-ṭabiʿī constitutes the first volume of the collection of the natural books. In this book, Ibn Sīnā paraphrases Aristotle’s Physics. However, he does not limit himself to reproducing the Stagirite’s ideas. On the contrary, in several respects he sensibly modifies the

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latter’s ideas. This immediately manifests itself in his fundamental restructuring of Aristotle’s text. Moreover, Ibn Sinā presents doctrines derived from the “Commentators”, especially Alexander of Aphrodisias, Themistius and John Philoponus. The first four chapters of the second maqāla (section) offer a good illustration of this particular way of paraphrasing and reworking. Indeed, in these chapters Ibn Sinā develops what Hasnawi has qualified as a “petit traité”, a small treatise on change. It is essentially and largely based on Aristotle’s Physics, III, 1-3, but it also uses elements derived from the latter’s V, 1-2; VII, 1 and VIII, 4. Furthermore, change is defined as the “first entelechy of that which potentially is as such [my emphasis]”. The qualification of “first” is absent in Aristotle, but it is in full agreement with Themistius’ wording. The innovative character of that addition by Themistius is particularly stressed by Philoponus, although it seems to have its ultimate source, at least in inspiration, in Alexander. However, Ibn Sinā details—much more than his Greek predecessors had done—this double conception of change in direct relation


3 This kind of small treatise is somewhat reminiscent of the late Hellenistic “corollaries”, e.g., those of Philoponus and Simplicius, in spite of significant differences in the basic approach. It may be worthwhile to note that Ibn Sinā offers, after the “treatise” on change, one on place (chapters 5-9) and another on time (chapters 10-13) in the second section of the book al-Samāʿ al-ṭabīʿī.


to a double notion of perfection. Finally, one finds ideas that in all likelihood are proper to him, such as the distinction between time and the element “in which” of change, or the acceptance of change not only in the three categories of quantity, quality and \textit{ubi} but also in that of \textit{situs}(\textit{waḍ}).

Were these chapters of Ibn Sīnā’s \textit{Samāʿ} read by later thinkers in the Islamic world? Did the newly expressed ideas receive attention or even approval? When looking at the so-called world of the “Islamic East”, the answer is definitely positive, as I will try to show in what follows. In this respect, I will consider four important thinkers: Bahmanyār b. Marzubān, a direct disciple of Ibn Sīnā; Abū l-ʿAbbās al-Lawkārī, possibly a disciple of Bahmanyār, but at least a second or third generation disciple of Ibn Sīnā; Fakhr al-Dīn al-Rāzī (twelfth century), a great “theologian and exegete” and a “commentator” of Ibn Sīnā; and Mullā ʿṢadrā al-Shirāzī (sixteenth-seventeenth century), a major representative of the Ishrāqī school of Iṣfahān. For each of them, I have limited myself to one of their major writings: respectively, \textit{Kitāb al-taḥṣīl}, \textit{Bayān al-ḥaqq bi-ḍamān al-ṣidq}, \textit{al-Mabāḥith al-masbrīqīyya} and \textit{al-Asfār al-arbaʿa}, specifically the seventh \textit{Marbala} of the first \textit{Safar}. I will discuss them each in chronological order.

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6 See the seminal study by Hasnawi, “La définition du mouvement dans la \textit{Physique} du Šifāʾ d’Avicenne”, \textit{Arabic Sciences and Philosophy}, 11 (2001), 219-255.

7 For the first idea, see Abū ʿAli Ḥusayn b. ʿAbd Allāh b. ʿAlī Ibn Sīnā, \textit{al-Shifāʾ, al-Samāʿ al-ṭabiʿī}, (ed. S. Zayed; Cairo: al-Hay’a al-Miṣriyya al-ʿĀmma li l-Kitāb, 1983), 87, 5; for the second, \textit{ibid.}, 103, 8-106, 3. In what follows, all references are to this edition. According to Fakhr al-Dīn al-Rāzī, al-Fārābī was the very first thinker to include change in the category of \textit{situs}, but his opinion is based on a work the ascription of which to the latter is not certain: see infra, pp. 28-29.

8 This qualification of al-Rāzī was inspired by the title of the work of Roger Arnaud, \textit{Fakhr al-Dīn al-Rāzī: Commentateur du Coran et philosophe}, (Paris: Vrin, 2002).

Bahmanyār b. Marzubān had an important number of epistolary exchanges with Ibn Ṣīnā; he appears to be one of the latter’s favorite disciples, if not the most loved one, in spite of his having been severely reproved on occasion by his master. The composition of his Kitāb al-taḥṣīl, in all likelihood, has to be dated after Ibn Ṣīnā’s death. In this work, it is obvious that he draws heavily upon Avicennian texts, especially in using quotations and/or paraphrases of different parts of Kitāb al-shifāʾ. However, an in-depth analysis of the structure of the work shows a profound rupture from the major ideas and/or structural démarches of his master. He clearly rejects some of the latter’s most important innovations, and he thereby at least gives the impression that he wants to restore a more genuinely Aristotelian thought.

Let us now examine whether this rather general characterization applies as well to the exposé on change. The latter is presented in the twelfth chapter of the second part (maqāla) of book (kitāb) two, which is entitled mā baʾd al-ṭabiʿa, meta-physics. The second section is devoted to the discussion of the nine categories of accidents. The twelfth chapter opens with a brief discussion of the categories of action and passion. After this short introductory section, motion becomes the central issue until the end of the chapter. Attention is paid


12 Bahmanyār, Kitāb al-taḥṣīl, 417-418, 10.
to its definition, its relationship to the different categories, and its opposition to rest. It is evident that for Bahmanyār, change belongs in an essential way to the category of passion. He may have been inspired in this case by Ibn Sīnā’s affirmation in his *Samāʿ* that change has to be placed in the category of passion, at least if one wants to limit the number of categories, as Aristotle had done, to ten. However, it is clear that in al-Shaykh al-raʾīs’ eyes, this is not the only (and likely not the best) solution. In fact, he clearly suggests that it is better to conceive of change as a separate category in itself.\(^{13}\) A general outline regarding the derivations from Ibn Sīnā’s *Samāʿ*, II, 1-4, either by way of quotation or paraphrase (a question mark indicating a rather casual correspondence), is presented in the following list:

\begin{itemize}
  \item **Kitāb al-taḥṣīl**
  \item **al-Shīfāʾ, al-Samāʿ al-ṭabīʿī**
\end{itemize}

\begin{itemize}
  \item 418, 14-16
  \item 81, 10; 81, 15-82, 7 (change and gradual passage from potency into act)
  \item 418, 1-419, 1
  \item 82, 3-7 (to define change by time is impossible, because circular)
  \item 419, 2-420, 4
  \item 84, 10, 13-19 (change and the “middle”)
  \item 420, 5-10
  \item 86, 7 (?) (a moment in change only exists in potency)
  \item 420, 11-14
  \item 84, 1-4 (in its quality of completed process, i.e., in its second perfection, change has no real existence)
  \item 420, 15-421, 8
  \item 85, 8-87, 4 (?) (change as having parts in potency)
  \item 422, 1-2
  \item 84, 1-2 (change is intelligible)
  \item 422, 3-7
  \item 85, 1-6 (change in time: a double interpretation)
  \item 422, 8-423, 13
  \item 86, 15 (?) (a body as something stable to which change happens)
  \item 423, 14-15
  \item 87, 5 (enumeration of six elements that characterize change)
\end{itemize}

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424, 1-12 90, 15-92, 1 (the link between change and its *termini a quo* and *ad quem*)

424, 13-425, 1 92, 7-10, 5 (the distinction between change, being in change and the action of changing is purely conceptual)

425, 3-12 94, 17-95, 6 (against the opinion that change is a homonym\(^{14}\))

425, 13-426, 7 95, 8 (?) (change necessarily requires the existence of an external cause)

426, 8-427, 6 98, 10-17 (no change in the category of substance)

429, 11-430, 3 108, 14-109, 6 (how are rest and change related to each other?)

430, 4-7 110, 16-17 and 108, 10 (definition of rest as privation of change)

In addition, one finds a few passages that ultimately have been inspired by the *Najāt*:\(^{15}\)

*Kitāb al-taḥṣil* al-Najāt

421, 9-19 204, 7-205, 2 (100) (definition of change)

427, 7-429, 10 205, 8-208, 8 (105-107) (change and categories other than substance)

430, 8-431, 10 208, 13-210, 3 (107-108) (something in rest is in potency a change)

Even this rather rough survey makes it clear that Bahmanyār covers almost all the essential elements of Ibn Sināʾs small treatise on change in the *Samāʿ*. However, he systematically omits all historical


\(^{15}\) All references here, and later as well, are to the edition by Dānish-Pazhūh, Teheran: Intishārāt Dānishgāh-i Tehrān, 1364 H.S. (between the brackets the corresponding pagination of the Cairo, 1938 edition has been added because this latter edition is easier to find).
or doxographical references, although they occupy a not negligible part of his master’s work. However, it has to be noted that this attitude might have been inspired by Ibn Sīnā’s so-called “Oriental” project, which mainly consisted of a systematic presentation of his philosophy that explicitly avoids historical considerations. Less understandable, however, is the extremely slight attention that is paid to the distinction between two conceptions of change that were amply elaborated in the first chapter of the Samāʾ: change as a finished process and change as an ongoing process. Certainly, Bahmanyār does not reject that distinction, but he mentions it so briefly that it can easily escape the reader’s attention. In a similar vein, he mentions only in passing his acceptance of change in the category of situs, as if it were a long-standing, classical idea. Of course, in these cases, one has to admit that he remains faithful to Ibn Sīnā’s basic ideas and gives them less attention than they had received in the latter’s work. However, regarding Bahmanyār’s analysis, much more is involved than just a difference in emphasis. Indeed, to discuss the issue of change in the context of metaphysics, not of physics, is not only surprising, from an Avicennian point of view, but also totally unacceptable. It blurs the distinctive domains of the two philosophical sciences, a distinction that was very clear to Ibn Sīnā. Moreover, it provides, at least in principle, a way to include in a metaphysical context the argument of the Unmoved Mover as a valid proof for the existence of God, whereas Ibn Sīnā had vehemently rejected the validity of this démarche. If the differences with Ibn Sīnā were rather limited


18 Hasnawi, “La définition du mouvement dans la Physique du Šīfāʾ d’Avicenne”, highlights this distinction very well, which he articulates in French by using the (innovative) terms “mouvement-parcours” and “mouvement-intermédiaire”.


on the level of the contents proper (i.e., mainly restricted to a difference in accentuation), this is no longer the case with respect to the place of motion within the broader system. Here, an important rupture shows itself, insofar as change is dislocated from physics to metaphysics.

As for al-Lawkari, he not only respects the letter of Ibn Sinā’s exposé (even more than Bahmanyār had ever done, as he quotes verbatim, or almost verbatim, entire pages of the Samāʾ) but he also maintains the treatment of change within the framework of physics proper. Although there are a few very minor omissions, there is also a major one: that of the entire second chapter of the Samāʾ in which Ibn Sinā explains the presence or absence of change in the different categories. The details of the latter are offered in the third chapter. Hence, al-Lawkari may have judged the second chapter somewhat superfluous. Thus, after all, he offers a shortened version of Ibn Sinā’s treatise on change, which largely respects the latter’s spirit.

The correspondences between al-Lawkari’s and Ibn Sinā’s discussions are as follows:

<table>
<thead>
<tr>
<th>Bayān al-ḥaqq</th>
<th>al-Shifāʾ, al-Samāʾ al-ṭabiʿī</th>
</tr>
</thead>
<tbody>
<tr>
<td>20v, l. 10-21r, l. 5 passage from potency to act</td>
<td>81, 7-82, 4 (change and the gradual passage from potency to act)</td>
</tr>
<tr>
<td>21r, l. 5-19</td>
<td>82, 9-83, 4 (the true definition of change)</td>
</tr>
<tr>
<td>21r, l. 19-22r, l. 12</td>
<td>83, 17-85, 6 (the double notion of change; discussion of a problem linked with the notion of change as a completed process)</td>
</tr>
<tr>
<td>22r, l. 12-25v, l. 7</td>
<td>98, 9-99, 16; 100, 16-102, 8; 102, 16-103, 8; 104, 2-17; 103, 14-104, 1; 104, 18-105, 8; 106, 7-107, 14 (change and the diverse categories)</td>
</tr>
</tbody>
</table>

totle himself “guilty” of such a mistaken view. It looks as if he reproaches him for a lack of precision in his Metaphysics. However, one has the impression that he thought that the Stagirite correctly pronounced himself in the (pseudo-)Theology. If this is correct, then he never seriously doubted the attribution of this work to Aristotle.
On the one hand, some omissions can easily be detected. The major one (i.e., that of the entirety of Chapter Two) has already been noted. The other ones are rather limited in scope and never concern crucial issues. Illustrative in this sense is the omission of Samāʿ, 88, 15-90, 15. This passage deals with a purely hypothetical objection regarding rest and what is self-moving (but, in fact, nothing is self-moving). At first sight, more significant is al-Lawkarī’s silence concerning the fact that the category of state (jidda) does not allow for change, but it seems probable that this results from an involuntary oversight.

On the other hand, two major relocations show up:

1. The passage covering p. 104, 2-17 of the Samāʿ precedes the fragment given there (p. 103, 14-104, 1). This clearly constitutes a minor change of order because it concerns two passages that are part of the discussion of the existence of change in the category of situs (waḍʿ).

2. Pages 87-92 of the Samāʿ are reproduced only after the almost complete reproduction of Chapter Three. In doing this, al-Lawkarī completely separates the discussion of the constitutive elements of change from the elaboration of its definition. Hence, a more important modification is involved here. Nevertheless, because he maintains the same wording, it is of little or no relevance, doctrinally speaking.\footnote{It is worthwhile to note that Hasnawi, “La définition du mouvement dans la Physique du Šifāʿ d’Avicenne”, does not include the discussion or the translation of this part of the first chapter and thus suggests that it does not have an intimate link with the former discussion of change.}
Finally, a small addition (f. 27r, 15-17) has to be mentioned. It deals with the notion of time, but in a very superficial way. Moreover, its presence here is fitting because time is explicitly mentioned by Ibn Sinā as one of the six elements that characterize change. It is rather surprising that Ibn Sinā no longer makes any mention of it in his discussion of change (of course, he deals extensively with time in chapters 10-13).

In sum, al-Lawkārī does not modify Ibn Sinā’s basic options or ideas in any way. He shows a great respect for the spirit of the latter’s thought and even remains largely faithful to the letter of his exposé. One could easily have believed that one was dealing with a copyist of Samāʿ, II, 1, 3 and 4, if it had not been for the few omissions and rearrangements in the textual order.

As for Fakhr al-Dīn al-Rāzī’s al-Mabāḥith al-mashriqiyya, it is a vast encyclopedic work that shows many traces of Avicennian influence, even if it is undeniable that it also entails criticisms against Ibn Sinā.22 It is divided into three books. The “treatise” on motion of Samāʿ, II, 1-4, has been integrated (with rewordings and criticisms) in the fifth section (fānm), entitled “On motion and time”, of the first major part (jumla) of the second book. This means that it is included in the wider context of the discussion of the “principles” (aḥkām) of substances and accidents (the subject of the second book), and more particularly of accidents (the proper object of the first major part). In other words, the overall context (i.e., the discussion of the ten categories) is logical. In spite of this, al-Rāzī does not hesitate to include issues that Ibn Sinā had designated as belonging to the domain of physics. Hence, just as Bahmanyār had done before him, he weakens the demarcation lines between the domains of logic and physics. In spite of this (and like Bahmanyār), he is not reluctant to draw upon the exposé of the al-Shaykh al-raʾīs, as is shown by the following table of comparison (a question mark again indicates a casual correspondence):

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<table>
<thead>
<tr>
<th>al-Mabāḥīth al-mashriqiyya</th>
<th>al-Shifa’, al-Sama’ al-ṭabi‘i</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>547, 10-15</td>
<td>81, 7-10</td>
<td>(gradual passage from potency to act)</td>
</tr>
<tr>
<td>547, 17-548, 6</td>
<td>82, 3-7</td>
<td>(mistaken circular definition of change)</td>
</tr>
<tr>
<td>548, 7-19</td>
<td>82, 9-17</td>
<td>(proper perfection of change)</td>
</tr>
<tr>
<td>548, 20-549, 7</td>
<td>82, 19-83, 6</td>
<td>(evocation of two potencies – definition of change)</td>
</tr>
<tr>
<td>549, 7-10</td>
<td>83, 7 and 11</td>
<td>(improper definitions of change, i.e., as inequality and alteration)</td>
</tr>
<tr>
<td>550, 13-551, 8</td>
<td>83, 18-84, 16</td>
<td>(a double concept of change)</td>
</tr>
<tr>
<td>551, 9-15</td>
<td>85, 5-7</td>
<td>(change in time)</td>
</tr>
<tr>
<td>551, 9-554, 14</td>
<td>84, 18-85, 14 and 86, 7-20</td>
<td>(?) change as both imaginary and real, universal and particular: an interrogation</td>
</tr>
<tr>
<td>554, 14-16</td>
<td>87, 5</td>
<td>(six elements of change)</td>
</tr>
<tr>
<td>554, 18-555, 19</td>
<td>88, 5-11</td>
<td>(impossibility of a self-moving being)</td>
</tr>
</tbody>
</table>

23 Although the definition as given by al-Rāzī (549, 7) includes the qualification of the perfection of what is in potency as “primary”, he attributes it to Aristotle. However, that qualification is a later addition: see supra, p. 16, especially note 5. It has to be noted that al-Rāzī entirely partakes of Ibn Sinā’s double notion of change, even if he never explicitly mentions that of “second perfection” (at least if I have not overlooked it).

24 al-Rāzī assigns these definitions to Plato and Pythagoras, respectively. This specification is lacking in the corresponding passage of Samā’. Regarding the Pythagoreans as adepts of a conception of change in terms of alteration, see Yahyā, Sbarh al-Ṭabi‘a, I, 184, 16. As for Plato, he is mentioned (together with the Pythagoreans) in Aetius Arabus as belonging to the thinkers who have defined change in terms of inequality (but expressed by the notion of ikhtilāf wa taghayyur, not khurūj ‘an al-musāwāt): see Hans Daiber, Aetius Arabus: Die Vorsokratiker in arabischer Überlieferung, (Wiesbaden: Franz Steiner, 1980), 132-133 (I, 23, 1).
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555, 20-561, 5  
87, 6-88, 11 (?) (impossibility of a self-moving being –remarks and objections)

561, 6-562, 3  
90, 15-91, 5 (termini a quo and ad quem in change)

562, 4-16  
91, 16-18 (termini a quo and ad quem in circular change)

562, 17-563, 18  
90, 17-91, 2 (?) (opposition between termini a quo and ad quem in change)

563, 19-564, 4  
93, 4-94, 15 (?) (link between change and the categories)

564, 5-18  
94, 17-95, 8 (proof that no category is subject to change)

566, 4-15  
93, 8-94, 5 (proof that no category is a genus of change)

567, 4-20  
96, 1-10 (change: equivocal or univocal?)

568, 1-569, 7  
93, 5-6; 95, 10-96, 1; 96, 11-17 et 96, 11 (change and the category of passion)

569, 9-10  
107, 16-17 (change is present in four categories)

575, 12-17  
102, 12-16 (kind of opposition suffices to qualify growth and diminution as change in the category of quantity)

581, 22-582, 19  
103, 4-5; 103, 11-104, 10 (change in the categories of ubi and situs)

588, 18-591, 9  
98, 9-101, 7 (no change in category of substance\(^{25}\))

593, 2-594, 12  
102, 11-12; 103, 5-8; 106, 4-5 and 106, 17-107, 5 (categories besides that of substance having no change\(^{26}\))

\(^{25}\) al-Rāzi divides Ibn Sīnā’s text in a way that is not present in the original, but nevertheless is doctrinally tenable.
Generally speaking, al-Rāzī paraphrases rather than reproduces Ibn Sinā’s text. One rarely finds literal quotations, as was the case with al-Lawkārī. Like Bahmanyār, al-Rāzī does not hesitate to reformulate Ibn Sinā’s thought. However, contrary to the latter, he explicitly indicates those cases where he expresses fundamental additions, investigations and/or criticisms. Certainly, a good number of them are limited in scope, and therefore most of the time they do not exceed a few lines. Nevertheless, they sometimes reveal themselves to be substantial, as the following three cases may illustrate:

1. While discussing the problem of the origination of a thing in terms of gradual change on pages 549, 1-550, 12, al-Rāzī inclines toward an eleatic conception of change—a conception that is substantially different from that of Ibn Sinā’s.27

2. On pp. 564, 19-566, 3, al-Rāzī emphasizes that qualitative change implies a quantitative aspect. I looked in vain for this kind of affirmation in Ibn Sinā. Hence, in all likelihood this has to do with an innovative development of al-Rāzī, although this in no way contradict Ibn Sinā’s basic conception of the general link between the categories and change.

3. On pp. 591, 10-593, 2, the presence of a succession of moments in a qualitative change is defended in a way that seems to be absent in Ibn Sinā. In this respect, al-Rāzī does not hesitate to put into service a passage derived from al-Shifāʾ, Kitāb al-nafs, III, 5.28

Moreover, on three occasions (pp. 569, 11-575, 19, change in the category of quantity; pp. 575, 20-581, 18, change in the category of

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26 For four of these categories, al-Rāzī also utilizes passages taken from al-Najāt, 205, 13-15 (106) (relation); 206, 3-5 (106) (“quando”) and 207, 12-208, 5 (107) (action and passion).

27 Regarding al-Rāzī’s inclination toward a non-dynamic, eleatic conception of change, see Arnaldez, Fakhr al-Dīn al-Rāzī, 181.

28 See Ibn Sinā, al-Shifāʾ, Kitāb al-nafs, (ed. F. Rahman; London: Oxford University Press, 1959), III, 5, 117, 9-118, 4. In this passage, Ibn Sinā insists that, due to their extreme shortness, the difference between the time of perceiving a nearby object and the time of perceiving a distant one cannot be perceived by the senses, although the latter can be divided into infinite parts, one of which corresponds to the time to perceive the nearby object.
quality; and pp. 582, 20-588, 17, absence of change in the category of substance), al-Rāzī’s exposé is substantially different from that in Samā’. However, another book from Kitāb al-shifā’ treating issues in natural philosophy (al-Kawn wa l-fasād) has clearly functioned as a major source.29

Generally speaking, al-Rāzī offers a valuable idea of what is said in Samā’, II, 1-4. He presents a genuine survey of Ibn Sīnā’s major ideas, making them his own most of the time, although not always. Two of the most significant among the latter, the double notion of change and the presence of change in the category of situs, are not only accepted, but also well developed. In this respect, he remains even closer to Ibn Sīnā’s thought than Bahmanyār had done. Certainly, he also opposes Ibn Sīnā on some issues. Like Bahmanyār (though in a different way), he does not respect the basic division of the sciences as elaborated by Ibn Sīnā. Furthermore, even when he agrees with Ibn Sīnā, he does not always explicitly say so. On the contrary, although it happens now and then, it does so only rarely. At any rate, he gives proof of being a careful reader of the latter’s work(s). His critical sense also shows itself in his remark that al-Fārābī (hence, not Ibn Sīnā) was the first thinker who accepted change in the category

29 A quick survey revealed the presence of a direct influence of this work on the chapter on growth (pp. 573, 4 sqq. –inspired by Chapter 8 of Kawn), on the entire exposé of change in the category of quality (with special attention to kalām doctrines, especially the notion of kumūn –inspired by Kawn, Chapter 4) and on that of the absence of change in substance (intellectual and observational proofs –inspired by Kawn, Chapter 6). A more systematic investigation is needed to fix the precise details of this influence, but it exceeds the limits of the present paper. The passage on p. 588, 11-17, however, deserves special attention, because al-Rāzī explicitly qualifies it as a saying of al-Shaykh al-raʾīs. It presents the example of the “bottle with the long neck”, called in Arabic qumquna, in the context of the discussion of the transformation of water into air. This passage might have been inspired by Ibn Sīnā, Dānish-nāmeb, Ṭabiʿiyāyāt, (ed. M. Meshkāt; Tehran: Intishārāt Anjuman-i Āthār-i Millī, 1953; repr. Hamadān: Dānishgāh-i Bū ‘Ali Sīnā, 2004), 55, 6-56, 8, although the wording is far from identical. A more correct rendering of the latter is offered by Abū Ḥamīd Muḥammad b. Muḥammad al-Ghazālī, Maqāṣid al-falāṣifa, (ed. S. Dunyā; Cairo: Dār al-Maʿārif, 1960), 327-328, to which one may compare Abū l-Fatḥ Tāj al-Dīn Muḥammad b. ʿAbd al-Karīm al-Shahrastānī, Kitāb al-Mīlāl wa l-nīhil, (ed. W. Cureton; London: n.p., 1842-1846), 409 [reference borrowed from Jolivet, in al-Shahrastānī, Livre des religions et des sectes, (traduction avec introduction et notes par J. Jolivet et G. Monnot; Paris: UNESCO, 1993), II, 458, note 84].
He bases this, however, on a small passage in the work ʿUyun al-masāʾil, where it is said: “The motions of the Heavens are according to situs (and) circular.” The work was undoubtedly attributed to al-Fārābī in the manuscript that he had at his disposal. Although the authenticity of this attribution can be questioned, it is not totally implausible, and so al-Rāzī’s remark is not necessarily devoid of sense, even if its historical accuracy is not evident. Whatever the case, al-Rāzī exclusively bases the further development of this idea on Ibn Sīnā’s exposé. It is therefore beyond question that al-Rāzī, at least in his Mabāḥith, found in Ibn Sīnā a major source of inspiration.

Separated by almost four centuries from al-Rāzī, Mullā Ṣadrā al-Shirāzī, the great master thinker in the Illuminationist (Ishraqī) tradition in Iran, discussed in his monumental work al-Asfār al-arbaʿa (more precisely, in the seventh stage (marḥala) of the first “journey” (ṣafar) a theory of change more or less corresponding with Samāʾ, II, 1-4. This first “journey” deals with the nature of being and its major accidents, which is a quite natural (and hence adequate) context for the discussion of change, at least when one takes into account the specific framework of Illuminationist philosophy. Certainly, this deviates in many important respects from the “classical” Aristotelico-Avicennian system. However, this does not mean that Mullā Ṣadrā completely ignores Ibn Sīnā. Even if he does not often quote him directly, he nevertheless was influenced by the latter’s thought, showing a great familiarity with its major aspects. Mullā Ṣadrā’s under-

30 al-Rāzī, Mabāḥith, 582, 17-19.
standing of Ibn Sinā’s doctrine owes a considerable debt to his careful reading of the *Mabāḥīth* of al-Rāzī. Therefore, among the sources of his exposé on change, mention has to be made of both Ibn Sinā’s *al-Samāʿ al-ṭabīʿī* and al-Rāzī’s *al-Mabāḥīth al-mashriqiyya*.

*al-Asfār ar-al-arbaʿa*  
*al-Shīfā*, *al-Samāʿ al-ṭabīʿī* or *al-Mabāḥīth al-mashriqiyya*

21, 1-23, 4  
*Mabāḥīth* 547, 10-548, 6 (potency/act)

23, 5-6  
*Samāʿ* 82, 7-8 (circular definition of change)

23, 6-25, 8  
definitions of change

25, 9-26, 9  
*Samāʿ* 83, 5-14 (three definitions of change by the ancients)

26, 17-27, 18  
*Mabāḥīth* 549, 11-550, 12 (interrogation expressed by al-Rāzī regarding gradual change)

30, 14-18  
*Samāʿ* 83, 14-17 (to conceive change as “passage” is an erroneous opinion)

31, 6-32, 8  
*Samāʿ* 83, 18-84, 19 (?) (double notion of change)

32, 9-15  
*Mabāḥīth* 551, 9-15 (change in time)

36, 5-37, 1  
*Mabāḥīth* 552, 3-11 (change as containing divisible parts)

41, 1-46, 16  
*Mabāḥīth* 554, 15-555, 16; 555, 20-557, 11 and 557, 21; 558, 1-18; 559, 14-21 (every mobile has a motor)

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34 With al-Rāzī, Mullā Şadrā presents Plato and the Pythagoreans as the authors of two mistaken definitions of change, i.e., those of inequality or alteration (compare supra, note 24).

35 Mullā Şadrā, who quotes here literally from Ibn Sinā, mentions the three opinions on change that Aristotle, *Physics*, III, 2, 201 b 20-21, had qualified as utterly mistaken: change as alterity, as inequality or as non-being. This fragment partly overlaps the previous one (largely corresponding with al-Rāzī’s *Mabāḥīth* 548, 7-549, 10), because the former two of these three doctrines were already dealt with there. The only reason that I can see for the direct use of Ibn Sinā’s text is the presence in it of a third view, although that is also a mistaken one.
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Mabāḥith 563, 19-564, 26 and 565, 14-566, 1 (nature of link between change and categories)

Samāʿ 93, 8-9, 13-14 and 5 (change: a homonymous notion?)

Samāʿ 87, 5 (six elements of change)

Samāʿ 90, 15-91, 5 (termini a quo and ad quem of change)

Samāʿ 98, 11-18 (against accepting change in the category of substance)

Mulla Ṣadrā, Asfār, III, p. 29, 6-8, offers an explicit quotation from Najāt (p. 203, 10-12 [105]). It consists of a definition of change that omits the qualification of “first perfection”: “(Change) is the gradual transformation of a state established in a body, in such a way that it tends towards something; and it reaches this (latter) in potency or in act”. Afterwards (ibid., pp. 29, 9-30, 13), Mulla Ṣadrā analyzes in detail the different elements of restriction involved in this definition.

Three passages show an evident link with the Samāʿ, but closer inspection reveals that their direct source is Bahmanyār’s Kitāb al-taḥṣil:

al-Asfār al-arbaʿa 1420, 14-16 (non-real existence of change as a process of becoming)

Kitāb al-taḥṣil 422, 8-9 (necessity of the existence of a stable thing in view of the possibility of change)

80, 12-18 428, 1 and 5-14 (existence of change in the categories of ubi and of situs)

Mulla Ṣadrā mentions many elements of Ibn Sinā’s doctrine of change, and agrees with the most typical of them, i.e., the acceptance of a double notion of change and the presence of change in the cate-

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36 I lack certainty about the exact end of the fragment involved, due to the fact that in the edition at my disposal pages 81-97 are missing. It is obvious that in these pages still more derivations from Ibn Sinā (or Bahmanyār or al-Rāzī) may be present.
category of situs. However, on other issues he strongly questions, not to say completely rejects, the view of the al-Shaykh al-raʾīs. In this respect, he goes much further than Bahmanyār or al-Rāzī had done before him. He sometimes makes fundamental innovations—for example, when he seriously puts into question the non-real character of change as process. However, his most radical departure from Ibn Sinā consists in the acceptance of change in a fifth category, i.e., that of substance. He thereby lays the foundations for his famous theory of substantial change. This has been the object of a wide range of interpretations and has given rise to many controversies. However, for our present investigation they are not relevant. The only significant fact is that even if Mullā Ṣadrā develops an entirely new view, he still presents elements of Ibn Sinā’s exposé—of course, without agreeing with them.

In the preceding sections, we focused on the reception of Ibn Sinā’s Physics in the Eastern part of the Islamic world, or, to be more precise, on a significant part of it: its “small treatise” on change. The results of our survey make it clear that this text has played more than a secondary role in the physical exposés included in the encyclopedic writings of some of the greatest representatives of the Oriental posterity of Ibn Sinā. One detects not only a respect for the spirit of the original text but also for the letter of the text as well. Such an important and innovative idea as the acceptance of the existence of change in the category of situs is never put into question, in sharp contrast with the Latin reception. In spite of deviations or even fundamental rejections of its elements by some of our authors, Ibn Sinā’s theory evidently remained a most significant source of inspiration.

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37 Albert the Great, in his Physica, V, 1, 7 (ed. P. Hossfeld; Aschendorf: Monastery Westfalorum, 1988), and Thomas Aquinas, in his Commentarium in VIII Libros Physicorum, IV, 7, § 475 (ed. Maggiolo; Taurini: Marietti, 1954) explicitly reject the existence of change in the category of situs. However, Robert Grosseteste seems to have accepted it: see his Commentarius in VIII Libros Physicorum Aristotelis, (ed. R. C. Dales; Boulder: Colorado, 1965), 83. For further details on the reception of Ibn Sinā’s Physics in the Latin tradition, see Janssens, “The Reception of Avicenna’s Physics in the Latin Middle Ages” in I. Vrolijk and J. P. Hogendijk (eds.), O ye Gentlemen: Arabic Studies on Science and Literary Culture in honour of Remke Kruk, (Leiden & Boston: Brill, 2007), 55-64. For the historical background of Ibn Sinā’s acceptance of change in the category of situs and its particular significance, see Jon McGinnis, “Positioning Heaven: The Infidelity of a Faithful Aristotelian”, Phronesis, 51 (2006), 140-161.
Even five centuries after it was written, the *Samāʿ* still constitutes a basic work of reference. However, it must be emphasized that this does not mean that our authors blindly relied on it. On the contrary, they did not hesitate to introduce innovations on the level of structure as well as content.

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