Fārābī and Avicenna on Contraposition

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The rule of contraposition has been investigated thoroughly by Arabic logicians. In this paper, we study the work done by Farābī and Avicenna, the fathers of Arabic logic. Farābī studied contraposition of universal affirmatives, discussed its four forms, and discovered a relation between one form and the conversion of negative universals. Although Farābī and logicians before him have used contraposition only for conditionals, as well as for indefinite and universal affirmative categorical propositions, Avicenna generalized the rule to all the four Aristotelian quantified categorical propositions. However, many of his ideas on contraposition were opposed by his 12th and 13th century followers, which are to be investigated later.

1. Introduction

The logical rules, conversion and contrapositions, have been discussed by Aristotle. They have pleasant histories both in Ancient Greek and Arabic Medieval. The simpler logical rule conversion and its history in Arabic logic have been investigated partially in the works of contemporary researchers such as Tony Street (2000 and 2014) and Henrik Lagerlund (2009). Unfortunately, such a research into the more difficult rule contraposition has not performed so far.

Also, some excellent analyses of quantified categorical propositions in Arabic logic have been published by Paul Thom (2008 and 2010) that give powerful tools for better understanding of those propositions and of their relations such as conversion, contraposition and syllogism.

All these have led to the need to investigate the history of contraposition in Arabic logic in order to determine the contribution and the relative significance of each logician in developing the rule and in order to fill the gaps in previous researches.

The history of contraposition can be divided into two parts: before and after Avicenna (980–1037 a.d.). Before him, the most obvious feature of the rule of contraposition is that it has had been applied only to conditionals, to universal affirmative categorical propositions, and to possible propositions.

Avicenna, as we have found, was the first to apply contraposition to all the four quantified categorical propositions, A, E, I, and O. Unexpectedly, he believed that all these propositions, even the affirmative particular I, had contrapositives. (His view, surprisingly, was dominant for two centuries among his successors before being thoroughly denied by the thirteenth-century Persian logician Athir al-Dīn al-Abhari.) In the last section of the paper, we investigate briefly Avicenna’s odd view on I-contraposition, its reasons and consequences.

Avicenna also considered the rule of contraposition for modal propositions and declared it valid for necessary propositions and invalid for possible ones. It can be shown that his ideas were adapted more or less from the objections of Simplicius of Cilicia (490–560 a.d.) to a possibility-contraposition used by his contemporary John Philoponus, the Grammarian (490–570 a.d.), who had been the first to coin a name for contraposition: ‘sun antithesei
antistrophên’, i.e. ‘conversion with opposition’ (Wilberding 2006, 85). We do not study this in the paper; it needs an independent research.

Now, we begin with Avicenna’s predecessor Fārābī, the Second Teacher as the Muslim scholars called him.

2. Fārābī

Fārābī (872–950 a.d.) discussed contraposition in Kitāb al-Taḥlīl, his commentary on Aristotle’s Topics, in the same place that Aristotle applied the rule. Following Proclus and Philoponus, Fārābī explicitly applied the contraposition to universal affirmative propositions and named it as ‘aks al-naqṣ’ (which means ‘conversion of contradictory’, and which seems an approximate translation of Philoponus’ ‘conversion with opposition’).

Fārābī’s discussion has some important features that may be noticed:

Arabic-Text-1: And one of [the topics] is what is taken in opposition and from the two positions/sides [min jānibayn][i.e. ‘with transposition of subject and predicate’]. And it is that:

[1] If the affirmation of the predicate follows what the subject is affirmed to [then] the negation of the subject follows what the predicate is negated of. [This is] as we say if ‘every man is animal’ then ‘everything that is not animal is not man’.

[2] Also if the negation of the predicate follows what the subject is negated of then the affirmation of the subject follows what the predicate is affirmed to. [This is] as we say if ‘what is not body is not moving’ then ‘whatever moves is body’, and if ‘what is not existent is not in place’ then ‘whatever is in place is existent’.

And this is what is named as ‘conversion of contradictory’ (‘aks al-naqṣ’). And it is a demonstrative topic.

[3] Also if the negation of the predicate follows what the subject is affirmed to then the negation of the subject follows what the predicate is affirmed to. [This is] as we say if ‘whatever is bird is not man’ then ‘whatever is man is not bird’.

And this is that the negative universal is converted as its form [tan’aksu kahay’ātihā].

[4] Also if the affirmation of the predicate follows what the subject is negated of then the affirmation of the subject follows what the predicate is negated of. [This is] as we say if ‘what is not perishable is generated’ then ‘what is not generated is perishable’.

It is notable that the example in the last paragraph is a corrupted version of that of Proclus.

2.1. Four kinds of A-contraposition in Fārābī’s examples

The first important point in Fārābī’s text is that he distinguishes (and validates?) the following four forms of A-contraposition:

\[
\begin{align*}
1 & \quad \forall x(Ax \to Bx) \\
& \therefore \forall x(\sim Bx \to \sim Ax)
\end{align*}
\]

\[
\begin{align*}
2 & \quad \forall x(\sim Ax \to \sim Bx) \\
& \therefore \forall x(Bx \to Ax)
\end{align*}
\]

As far as we have seen, such a thorough investigation of kinds of contraposition is found neither in Fārābī’s predecessors nor in his successors.

2.2. Equivalent forms of contraposition in Fārābī

From 1 and 2, we can see that they form an equivalence; and it is clear that both the forms 3 and 4 are equivalences. So we can see that Fārābī commits to the following three equivalences, which we show by doubling the symbol ‘∴’ in front of both the premises and the conclusions:

\[
\text{1 and 2} \quad \therefore \forall x (Ax \rightarrow Bx) \\
\therefore \forall x (\sim Bx \rightarrow \sim Ax)
\]

\[
3 \quad \therefore \forall x (Ax \rightarrow \sim Bx) \\
\therefore \forall x (Bx \rightarrow \sim Ax)
\]

\[
4 \quad \therefore \forall x (\sim Ax \rightarrow Bx) \\
\therefore \forall x (\sim Bx \rightarrow Ax)
\]

These clear equivalences have not been found in other Arabic logicians.

2.3. Fārābī is not defining contraposition

Another feature of the text is that although like his predecessors, Fārābī names the rule, he does not fully define it. If we take as definitions the italicized sentences in the text above, they are limited only to affirmative universal propositions, because the occurrences of ‘follows’ in all the italicized sentences show that Fārābī is discussing just affirmative universal propositions. It is evident that restricting a rule to A-propositions cannot be a definition. Thus it is not clear whether he is here just interpreting Aristotle, or he rejects contraposition for the other quantified propositions, or this restriction is merely an accident. This deficiency will be fully compensated by Avicenna.

2.4. Fārābī’s attention to the relation between A-contraposition and E-conversion

After the third kind of A-contraposition, Fārābī notices a similarity or an identity between this third kind and the E-conversion and draws our attention to it. This similarity/identity is important in some respects.

First, in the modern logical proof of E-conversion, we may use the first kind of Fārābī’s A-contrapositions:

1. \( \forall x (Jx \rightarrow \sim Bx) \) \quad Assumption
2. \( \forall x (\sim Bx \rightarrow \sim Jx) \) \quad Contraposition 1
3. \( \forall x (Bx \rightarrow \sim Jx) \) \quad Double Negation 2

This shows the origin of the similarity/identity between the two rules.

Second, although we can use A-contraposition to prove E-conversion, they are not the same in modern logical point of view, because ‘the proved’ and ‘the proved by’ cannot be the same. This is the mistake some later Arabic logicians will commit.

Third, the syntactic difference between A-contraposition of the third kind and E-conversion is that the propositions in the former case are indefinite/infinite/privative affirmatives, (i.e. propositions in which negation is considered as part of predicate), and in the latter, simple/definite/finite/positive negatives, (i.e. propositions in which negation is
not considered as part of predicate but as a particle inside the form of the propositions).

(For the terms used here see Appendix A).

Fourth, in later Arabic logic, although some logicians assumed E-conversion as A-contraposition, some others, instead, generalized Fārābī’s discovery and declared a general law stating that conversion and contraposition are the same inverting negative-affirmative propositions; i.e. an affirmative proposition has contrapositive if and only if its corresponding negative has conversion; and a negative proposition has contrapositive if and only if its corresponding affirmative has conversion. (All this is to be discussed in a next paper).

2.5. Fārābī’s examples for contraposition with inclusive terms

Moreover, consider the second example of the second kind of contraposition in the text:

\[
\begin{align*}
\text{What is not existent is not in place} & \quad \therefore \quad \text{All that is in place is existent.}
\end{align*}
\]

This will cause serious problems to Arabic logicians in the twelfth and thirteenth centuries. Examples with inclusive terms such as ‘existent’ (as well as those with empty ones such as ‘non-existent’) have consequences on contraposition, and sometimes make it invalid. In another paper, it should be discussed the problems encountered by some later Arabic logicians (especially, Suhrawardi and Khunaji).

2.6. Fārābī and Proclus on obversion and existential import

Here is a conflict between Fārābī’s ideas on contraposition and his ideas on obversion and existential import. As Fārābī reports in his Long Commentary on De Interpretatione, Proclus admitted the rule of obversion:

\[
\text{Arabic-Text-2: The commentators thought that Proclus the Platonist, commenting this place of Aristotle’s text, proposed a law for the equivalent modified (al-ma‘dūlāt) and simple propositions (al-basā‘it). He said: each simple proposition that agrees in quantity with a modified one and disagrees in quality then they follow each other. For example, the propositions: ‘every man is just’ and ‘no man is unjust’, for these propositions agree in quantity and disagree both in quality and in the predicate, because the predicate of one of them is definite/positive (mūḥāṣṣāl) and that of the other is indefinite/non-positive. (ghayru mūḥāṣṣāl)3}
\]

Fārābī, however, rejects this law (obversion) in eight pages.4 He elsewhere points out that the affirmative propositions have existential import and the negative ones lack it.5

The important point here is that existential import is inconsistent with A-contraposition because it invalidates the rule. For this, see the following A-contraposition with the premise and conclusion existentially imported:

\[
\begin{align*}
\forall x(Jx \rightarrow Bx) & \& \exists x Jx \\
\therefore \forall x(\sim Bx \rightarrow \sim Jx) & \& \exists x \sim Bx
\end{align*}
\]

It is clear that the second conjunct of the conclusion (i.e. $\exists x \sim Bx$) does not follow the premise. A counterexample is the converse of Fārābī’s example discussed above:

\[
\begin{align*}
\text{All that is in place is existent} & \quad \therefore \quad \text{What is not existent is not in place.}
\end{align*}
\]


It is clear that ‘there exists not existent’ cannot be true and hence the conclusion cannot have existential import. This shows that Fārābī, who admits existential import, cannot accept A-contraposition. However, if we interpret this example without existential import it will be valid with no difficulty:

\[
\forall x(Jx \rightarrow Bx) \\
\forall x(\sim Bx \rightarrow \sim Jx)
\]

But if we deny existential import for universal affirmatives we should accept obversion. It seems that Fārābī here follows Proclus unconsciously on accepting obversion and denying existential import.

3. Avicenna

As far as we found, Avicenna’s discussion of contraposition for categorical propositions occurs only once in his al-Mukhtāsar al-Awsat and just four times in his encyclopedia, Al-Shīfā; three times in its logical part and once in its physics. In the former cases, he investigates quantified propositions, and in the last, modal ones. In what follows, we discuss his texts on the subject, respectively.

3.1. Avicenna’s first discussion of contraposition

In his first and the most extended text on contraposition, Avicenna introduced this rule for all the four Aristotelian quantified propositions and argued for each claim. This occurs in the part of Al-Shīfā on the syllogism, just after his discussion of the conversion of absolute propositions and before that of modal ones. First, we look at his definition:

Arabic-Text-3: Here is another kind of Conversion that we must meditate on. It is named as ‘Conversion of the contradictory’ (‘aks al naqūd) and means to put what contradicts the predicate as subject, and what contradicts the subject as predicate.7

Here Avicenna does not mention the conditions such as ‘truth-preserving’ and ‘quality-preserving’, contrary to his definitions of conversion which explicitly contained them:

Arabic-Text-4: The meaning of ‘Conversion’ (‘aks) is to change the subject as to the predicate, and the predicate as to the subject, with preserving the quality and the truth.8

His neglect of these important conditions leads to some problems for his successors, which should be discussed in another paper. Following in the previous text on contraposition, we see that Avicenna not only would not commit himself to either condition but also opposed them for E- and I-contrapositions. Now we see all the cases, respectively:

Arabic-Text-5: [A-proposition:] When we say ‘all J is B’ it follows that ‘all that which is not B is not J’. Otherwise, it is the case that ‘some that which is not B is not not J’ so ‘is J’. So ‘some which is not B is J’ is converted to ‘some which is J is what is not B;’ [but] we had said ‘all J is B’.

[Proof of the other side:] And when we say ‘all that which is not B is not J’ it will be true that ‘all J is B’. Otherwise, it will be true that ‘not all J is B’. Then ‘some that which is not J is what B is negated of’. So, ‘that some [dhālika al-ba’d] is J

6 Searching in al-Shīfā shows some other occurrences of the name of contraposition such as in al-Mağūlat 1963, 23, al-Qiyas 1964, 309–10, 470, 575 and al-Jadal 1970, 131–32; but these are mere applications or references to the rule and have no important point to be considered here.
7 Avicenna 1964, 93.
8 Avicenna 1964, 75.
and not B’. [But] we have said ‘that which is not B is not J;’ so ‘that some [dhālika al-ba‘ī] is J and not J’. [Contradiction]

[E-proposition:] And when we say ‘no J is B’ it does not follow that ‘none of that which is not B is not J;’ for when you say that ‘no man is stone’ it does not follow that ‘no that which is not stone is not man’ nor that ‘no that which is not stone is man’.

But it follows that ‘some that which is not stone is man’. Otherwise, ‘no one that is not stone is man’ so ‘no man is not stone’. [Contradiction]

[I-proposition:] When we say ‘some J is B’ it follows that ‘some that which is not B is not J’ for there are beings or non-beings out of both J and B. So ‘some that which is not B is not J’.

[O-proposition:] When we say ‘not all J is B’ it follows that ‘not all that which is not B is not J’. Otherwise, ‘all that which is not B is not J’ so ‘all that which is J is B’. [Contradiction]

And here are other investigations and it is better to put their topics at the book: *al-Lawahiq* (Attachments or post legomenon).9

The summary of this text is (i) that the following is invalid in Avicenna’s view:

$$\begin{align*}
E: & \quad \text{No J is B} \\
\therefore & \quad \text{No not B is not J}
\end{align*}$$

and (ii) that the following are valid in his view:

$$\begin{align*}
A: & \quad \therefore \text{All J is B} \\
\therefore & \quad \text{All not B is not J} \\
E: & \quad \text{No J is B} \\
\therefore & \quad \text{Some not B is J} \\
I: & \quad \text{Some J is B} \\
\therefore & \quad \text{Some not B is not J} \\
O: & \quad \text{Not all J is B} \\
\therefore & \quad \text{Not all not B is not J}
\end{align*}$$

Here the only reversible entailment is the A-contraposition.

Some later logicians had claimed that no one of the above contrapositions are valid.10

3.1.1. **Quality preserving in contraposition** We see that E-contraposition does not preserve the quality. This would cause many quarrels on the correct definition of contraposition among the medieval Arabic logicians. The problem is two folded: is this E-contraposition valid? and if yes, is it really a contraposition? or merely an implication of it? The latter problem is merely a matter of definition, but the former is clearly a logical one.

9 *Avicenna 1964*, 93–94.
3.1.2. Non-Aristotelian justification for I-contraposition

Another feature of Avicenna’s discussion is that he proves all the valid cases by the familiar Aristotelian methods: ‘conversion’, ‘law of contradiction’, and ‘reductio ad absurdum’. He also disproves the invalid cases by the Aristotelian method of ‘presenting counterexamples’.

This is true except for proving I-contraposition. For this, he ventured a completely new approach anticipating Meinongian non-existing objects: ‘for there are beings or non-beings out of both J and B’. We shall be back to this in the last section of the paper.

3.1.3. Equivalent contrapositions

As we see in the first two paragraphs of the text above, Avicenna claims an equivalent A-contraposition for A-propositions, without explicitly announcing corresponding equivalencies for the other propositions. This is partly because E-proposition clearly cannot have equivalent contrapositives because of the evident failure of entailment from particulars to universals.

The I- and O-propositions are claimed to entail the corresponding I- and O-contrapositives without the backward entailments being declared. It is not clear if this is because he undermines the backward direction or he takes it granted as evident.

We may argue that thanks to the law of contradiction, the equivalence between A-propositions entails equivalence between O-propositions.

If this method of argument is correct, we would have to apply it to prove lacking of equivalence between I-propositions because of lacking of equivalence between E-propositions. More explicitly, because Avicenna has presented the following counter-example to E-contraposition:

\[
\begin{align*}
E & \quad \text{No man is stone} \\
\therefore & \quad \text{No not stone is not man}
\end{align*}
\]

he could present the following counter-example to the converse of I-contraposition he had accepted:

\[
\begin{align*}
I & \quad \text{Some not stone is not man} \\
\therefore & \quad \text{Some man is stone}
\end{align*}
\]

This shows that contrary to Fārābī, Avicenna cannot have equivalences for half of his contrapositories.

3.1.4. The book al-Lawahiq

In the end, Avicenna informs us of the existence of ‘other investigations’ that he promises to include in his lost or unwritten book: al-Lawahiq. Unfortunately we don’t know anything about these probably most important ‘investigations’. This fragment of the text imports that Avicenna might have had some doubts or criticisms on what he expressed here. He might also have sought to discuss the modal contrapositions, on which he briefly would discuss in Physics of Al-Shīfā’.

3.2. Avicenna’s second discussion of contraposition

In the conditional syllogisms of Al-Shīfā’, Avicenna discusses the conversions of conditionals and defines contraposition without inverting the positions of the antecedent and the consequent:

\[
\text{Arabic-Text-6: But conversion by contradiction is to put the contradictory of the consequent in place of the consequent and the contradictory of the antecedent in place of the antecedent.}^{11}
\]

\[^{11} \text{Avicenna 1964, 385.}\]
It may be conjectured that there have occurred errors by the copyists. But no additional variants have been recorded in the Cairo edition. Now, it occurs to us that the text is correct and it should be read with an eye to the previous sentence, which defines the direct conversion:

_Arabic-Text-7:_ And direct conversion is to put the consequent as antecedent and the antecedent as consequent, with preserving quality so that it preserve the truth.\(^{12}\)

Now, it seems to us that Avicenna in his defining contraposition intends us to replace the words ‘antecedent’ and ‘consequent’ in the definition of conversion, respectively, by the phrases ‘contradictory of antecedent’ and ‘contradictory of consequent’. So we read the text as below:

_Arabic-Text-8:_ But conversion by contradiction is to put [in the definition of direct conversion] ‘the contradictory of the consequent’ in place of ‘the consequent’ and ‘the contradictory of the antecedent’ in place of ‘the antecedent’. (our reading of Arabic-Text-6)

If this reading is correct, the conditions of ‘quality- and truth-preserving’ automatically will be transmitted to contraposition and thus we can say that Avicenna is the first who do this, implicitly of course. As we have found so far, the first who do this explicitly would be Suhrawardi (we are to discuss this in a future paper).

3.2.1. **Qualifying conversion as ‘direct’ as opposed to contraposition**

The above text of Avicenna is the first of the only three places in _Al-Shifa‘_ in which he adds to the name of ‘conversion’ the adjective ‘direct’ (‘aks al-’istiqāma) to distinguish it from ‘conversion by contradiction’. (In another place, he uses ‘al’aks al-mustaqīm’).\(^ {13}\) As we shall see in the next section, in the third place, another Arabic word (‘al-mustawi’) will be used. This third word, instead of the first two, will be popularized later in Arabic logic.

3.3. **Avicenna’s third discussion of contraposition**

Following Aristotle’s _Prior Analytics_ 53a4-8 in discussing many conclusions of a single syllogism, Avicenna claims that a syllogism gives beside the conclusion its conversion; but he adds that a syllogism gives also the contrapositive of its conclusion:

_Arabic-Text-9:_ [Chapter 10] On increasing the conclusions that follow the first intended [conclusion] of a composed syllogism.

The syllogisms that entail a universal [conclusion] entail that universal, the particular underneath, and their conversions: the _direct_ [conversion] and the conversion by contradiction. The meaning of ‘Conversion by contradiction’ is to take the affirmative-negative-opposite of the predicate as subject, and the opposite of the

---

\(^{12}\) *Avicenna* 1964, 385.  

\(^{13}\) *Avicenna* 1964, 58:

[Aristotle] said: ‘things’ and didn’t said: ‘a thing’ in order to distinguish between syllogism and what is implied by a single premise such as direct conversion and [conversion] attributed to contradictory.


As I searched in _al-Shifa‘_ , Avicenna uses the words ‘’istiqāma’ and ‘mustaqīm’ for two other meanings: straight lines and direct syllogisms and demonstrations or proofs (versus curve lines and indirect proofs). I preferred the adjective ‘direct’ instead of ‘straight’ in translating the Arabic words in the context of conversion, but I wonder which translation is more appropriate.
subject as predicate. Such as if [a syllogism] entails ‘all A is B’ it entails ‘what is not B is not A’. But [the syllogism] entails the former per se and primarily and the latter per accidens and secondarily as the way of implication.14

This text is the second and the last of the only two places in *Al-Shifā‘* where he adds to the name of ‘conversion’ the adjective ‘direct’ (here by the word ‘al-mustawī’) to distinguish it from ‘conversion by contradiction’.

Although Avicenna seems to accept the invalid I-contraposition here, more surprisingly he denies the valid O-contraposition:

*Arabic-Text-10:* And the affirmative particular is added to what entails its conversion and its conversion by contradiction.

But the negative particular does not entail anything because it does not convert.15

3.3.1. Problems in Avicenna’s third discussion of I- and O-contrapositions The first sentence (of Arabic-Text-10) is perplexed and seems meaningless in a careful examination, for some reasons:

1. The verb ‘tujma’u’ means ‘is added’ and this seems not relevant.
2. Also, it is not known what is meant by ‘what entails its conversion and contraposition’, to which the affirmative particular is to be added.
3. The masculine pronouns in ‘aksahu va ‘aks naqiḏīhī’ does not seem to refer to anything! because no masculine word is present in the Arabic text.

Fortunately, Abū al-Barakāt al-Baghdādī (1080–1165 a.d.)’s book, *al-Mu’tabar*, which seems in many cases as copies of Avicenna’s *al-Shifa‘*, contains an addition which partly helps us to understand Avicenna’s text. Here is the text in al-Mu’tabar:

*Arabic-Text-11:* And what entails the affirmative particular is added to what entails its conversion and its conversion by contradiction.16

This text seems to say that the syllogism entailing an I-proposition is added to (another?) syllogism that entails its conversion and contraposition. This is a little better but not fully satisfactory.

More fortunately, we find the same phrase in the same discussion of the Arabic translation of Aristotle’s *Prior Analytics*:

*Arabic-Text-12:* The Arabic translation of Aristotle’s text

First, let’s look at the Greek text of Aristotle:

*Greek-Text-1:* ἐπεὶ δ’ οἱ μὲν καθόλου τῶν συλλογισμῶν εἰσίν οἱ δὲ κατὰ μέρος, οἱ μὲν καθόλου πάντες αἰεὶ πλείον συλλογισμοῦ, τὸν δ’ ἐν μέρει οἱ μὲν κατηγορικοὶ πλείον, οἱ δ’ ἀποφασικοὶ τὸ συμπέρασμα μόνον.18

14 Avicenna 1964, 497.
15 Avicenna 1964, 497.
16 Baghdādī 1994, 497.
Here, the noun ‘συλλογισμόν’ (sullogismun) and the verb ‘συλλογίζονται’ (sullogizontai) play important roles. The first have been translated in to the Arabic ‘المقياس’ and the second to ‘تَعِظَ’. So the verb ‘تَعِظَ’ should be understand so that it means something related to the noun ‘المقياس’. For this, we get help from English translations. The verb ‘συλλογίζονται’ has been translated to English as the verbs: ‘deduce’ by Smith and ‘give’ and ‘yield’ by Jenkinson:

Now, seeing that some deductions are universal and others are particular, all the universals always deduce several results; among particular deductions, positive deductions deduce several things, but negatives only deduce their conclusions. For, although the privative < particular > premise does not convert, the other premises convert.\(^{19}\)

Since some deductions are universal, others particular, all the universal deductions give more than one result, and of particular deductions the affirmative yield more than one, the negative yield only the stated conclusion. For all propositions are convertible save only the particular negative; and the conclusion states one thing about another.\(^{20}\)

So, as Smith and Jenkinson did in translating Aristotle’s, we should understand the verb ‘تَعِظَ’ as an active verb ‘تَعِظَ’ meaning ‘deduce’ not as a passive one ‘تَعِظَ’ meaning ‘be added’. So should we translate the same verb in the Avicenna’s text:

\[
\text{Arabic-Text-13: [I-proposition:] And [the syllogisms which entail] the affirmative particular deduce, [in addition] to what they entail, its conversion and its conversion by contradiction.}
\]

\[
\text{[O-proposition:] But [the syllogisms which entail] the negative particular does not entail anything [else] because it does not convert.}\(^{21}\)
\]

Here, the phrase ‘its conversion and its conversion by contradiction’ is no longer the object of the verb ‘تَعِظَ’, but the object of ‘تَعِظَ’. Now, it seems that we understand the text with no problem remaining.

3.3.2. Avicenna’s discussion of E-contraposition in his third text Avicenna in this third text of \(\text{Al-Shifā’}\) entirely forgets to give examples for E-contraposition, maybe trusting on his former discussions.

3.3.3. Avicenna’s discussion of O-contraposition in his third text Here, in this third text, although he repeats a summary of the previous text, he denies the O-contraposition! (We couldn’t find any later scholar who protested on this issue.) It seems somehow as a simple iteration of the last sentence of Aristotle’s text above.

3.3.4. Avicenna’s discussion of O-contraposition in al-Mukhtaṣar But another surprise: Avicenna in his \(\text{Al-Mukhtaṣar al-Awsat}\) in the same discussion, has added to the contraposition of O-proposition another sentence, which corrects the false statement in \(\text{Al-Shifā’}\):

\(^{19}\) Aristotle 1989, 65, Prior Analytics, 53a4–8, translated by Robin Smith.
\(^{21}\) Avicenna 1964, 497.
But the negative particular does not entail anything because it does not convert. [But it entails its conversion by contradiction; for it is demonstrated that if we say ‘not all J is B’ it follows in conversion by contradiction that ‘not whatever is not B is not J’, i.e. ‘some what is not B is not J’].\[22\]

This addition is absent in some manuscripts, as a footnote in the same page indicates. Because Al-Mukhtasār al-Awsāt has been written before Al-Shifā’, it is more probable that the addition is not authentic. Another doubt is that the equivalence claimed in the end of the text is wrong, for the last words ‘not J’ must be ‘not not J’ or simply ‘J’.

3.4. Avicenna’s fourth discussion on modal contraposition

In the Physics of Al-Shifā’, Avicenna quotes Philoponus’ possibility-contraposition:

\[\text{Arabic-Text-15: But this man syllogized a bad syllogism and said:}\]

If

it is possible (in the simple bodies the species of whose natures is not a singular species) that they move simple movements whose species is naturally a singular species,

it will be converted by negation:

then it is possible that there would be a singular natural species for things that does not move a natural singular simple movement.

Thus he made what he thought contrapositive as a consequent of a premise, of which it is contrapositive.\[23\]

If the set of all simple bodies has been taken as the domain of discourse, let ‘Ax’ mean that ‘the nature of x has a singular species’ and ‘Bx’ mean that ‘the nature of the movement of x has a singular species’. Thus we can symbolize the man’s argument as Avicenna reports by one of the following formalizations:

<table>
<thead>
<tr>
<th>de dicto</th>
<th>de re</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\Diamond \forall x(\sim Ax \rightarrow Bx))</td>
<td>(\forall x(\sim Ax \rightarrow \Diamond Bx))</td>
</tr>
<tr>
<td>(\therefore \forall x(\sim Bx \rightarrow Ax))</td>
<td>(\therefore \forall x(\sim Bx \rightarrow \Diamond Ax))</td>
</tr>
</tbody>
</table>

It is clear that the de dicto reading is valid and the de re one invalid. But Avicenna proposes for the argument two other interpretations: a valid an invalid ones which differ with what we presented above:

\[\text{Arabic-Text-16: He made a mistake in this conversion; because he took the proposition as possible, and assumed it absolute or necessary, then validated its conversion. And this kind of conversion by negation is not valid in the possible premises when the possibility is taken as modality and not as part of predicate, such as if someone says:}\]

If

it is possible that the various substances (the nature of whose species is not a singular one) share a common singular essence or attribution,

\[\text{[then]}\]

\[\text{22 Avicenna 2009, 158, and 2017, 197.}\]

\[\text{23 Avicenna 1960, 14.}\]
it is possible for things (that does not share a common singular essence and attribution) that their nature and species is one.

And when this conversion is not valid then know that what he said is not necessary.\textsuperscript{24}

The reader may suppose that the reading Avicenna proposes as ‘possibility as modality’ and not ‘possibility as part of predicate’ reflects the \textit{de dicto} reading as opposed to the \textit{de re} one. But why he assumes it invalid? As we formalized the \textit{de dicto} reading, we saw that it was valid. Let’s look at the remaining of the text:

\textit{Arabic-Text-17}: But if he made ‘possible’ as part of predicate [then] the conversion would be valid; but it wouldn’t what he wanted; and the contrapositive of that premise would be:

That for which it is not possible to move a singular simple movement whose species is one, then it is not one of the simple bodies the species of whose nature is not a singular one.

And this is true.\textsuperscript{25}

The reader may truly suppose that the reading Avicenna proposes as ‘possibility as part of predicate’ reflects the \textit{de re} reading; but it is not the \textit{de re} reading we presented above! For the possibility in the contrapositive in Avicenna’s reading is in the subject and not in the predicate:

\[
\begin{align*}
\text{de re-1} & \quad \text{de re-2} \\
\forall x(\sim Ax \to \Diamond Bx) & \quad \forall x(\sim Ax \to \Diamond Bx) \\
\therefore \forall x(\sim Bx \to \Diamond Ax) & \quad \therefore \forall x(\sim \Diamond Bx \to \sim \sim Ax) \\
\therefore \forall x(\sim \Diamond Bx \to \sim \Diamond Ax) & \\
\end{align*}
\]

Possibility in the predicate of the contrapositive
Possibility in the subject of the contrapositive

It is clear that the \textit{de re—1} reading is invalid and the \textit{de re—2} valid. These formalizations clearly explain why Avicenna’s \textit{de re} reading is valid. But it remains to be explained why his \textit{de dicto} reading is invalid.

3.4.1. \textit{An analysis of Avicenna’s claims on the forms of }\Diamond\textit{-contraposition} \ It seems to us that the \textit{de re—de dicto} distinction does not work for explaining Avicenna’s readings. He does not care for \textit{de dicto} readings at all. All that is important for him is \textit{de re} readings. Here it seems that Avicenna distinguishes the following two \textit{de re} interpretations:

\[
\begin{align*}
\text{Interpretation-1} & \quad \text{Interpretation-2} \\
\text{de re-1} & \quad \text{de re-2} \\
\forall x(\sim Ax \to \Diamond Bx) & \quad \forall x(\sim Ax \to \Diamond Bx) \\
\therefore \forall x(\sim Bx \to \Diamond Ax) & \quad \therefore \forall x(\sim \Diamond Bx \to Ax) \\
\text{Possibility as modality} & \quad \text{Possibility as part of the predicate}
\end{align*}
\]

It is clear that the left rule is invalid and the right one valid, and it seems to us that this is exactly what Avicenna had claimed. It remains for us to justify these interpretations.

\textsuperscript{24} Avicenna 1960, 14.
\textsuperscript{25} Avicenna 1960, 14–15.
The premises in both interpretations are the same; but in the left, the modality in the consequent of the conditional of the premise is taken just as modality (i.e. as part of the form of the proposition and not part of its matter (i.e. of its predicate)) and the predicate is just ‘\(^\Box B\)’; however, in the right formalization, the modality in the premise is not taken as modality but as part of predicate, so that the predicate is whole ‘\(^\Box B\)’, which is shifted to the subject in the conclusion. To understand better what Avicenna means here we can re-formalize the two readings as below with brackets [] indicating the predicates:

\[
\begin{align*}
\text{de re-1} & \\
\forall x([\sim A]x \to [\Diamond B]x) & \quad \forall x([\sim A]x \to [\Diamond B]x) \\
\therefore \forall x([\sim B]x \to [\Diamond A]x) & \quad \therefore \forall x([\sim \Diamond B]x \to [A]x)
\end{align*}
\]

Possibility as modality Possibility as part of the predicate

or with tools of \(\lambda\)-calculus:

\[
\begin{align*}
\text{de re-1} & \\
\forall x(\lambda y[\sim A]x \to \Diamond \lambda y[B]y) & \quad \forall x(\lambda y[\sim A]x \to \Diamond [\Diamond B]y) \\
\therefore \forall x(\lambda y[\sim B]x \to \Diamond \lambda y[A]y) & \quad \therefore \forall x(\lambda y[\sim \Diamond B]x \to \lambda y[A]y)
\end{align*}
\]

Possibility as modality Possibility as part of the predicate

All this shows that Avicenna does not believe possibility-contraposition in universal affirmative propositions. But what if we interpret the propositions in Philoponus as particular affirmatives? This is not discussed explicitly in Avicenna’s texts, although he accepted the contraposition of the particular affirmatives. Now let’s turn to this subject.

### 4. Avicenna’s accepting I-contraposition

In all the first three texts of Avicenna, the most astonishing claim is the contraposition of I-proposition. We know that this contraposition is invalid. Its invalidity can be shown better by its modern logical analysis:

\[
\begin{align*}
\exists x(Jx \& Bx) & \\
\therefore \exists x(\sim Bx \& \sim Jx)
\end{align*}
\]

It is clear that we cannot move from \(Jx\) to \(\sim Jx\), nor from \(Bx\) to \(\sim Bx\). Thus, it is evident that from the existence of black ravens we cannot deduce that of non-black non-ravens (say, white swans).

How then could Avicenna claim such a strong statement? He might not accept the modern logical analysis of I-propositions and may replace it here with some other one, say the analysis Mahdi Haeri Yazdi (1982, 105) proposed:

\[
\begin{align*}
\exists x(Jx \rightarrow Bx) & \\
\therefore \exists x(\sim Bx \rightarrow \sim Jx)
\end{align*}
\]
But we know that this interpretation demolishes the contradiction between I- and E-propositions.\(^{26}\)

It seems better to look at Avicenna’s reason. He argues: ‘for there are beings or non-beings out of both J and B so that “some that which is not B is not J”’. But this reason contains a contradiction because it says: ‘for there are . . . non-beings . . .’, i.e. ‘for there exist . . . non-existents’!

Can we say that what Avicenna had in mind here was two meanings of ‘being’: the wide and the narrow ones? No, because he did not believe in the wide meaning. He explicitly opposes Mu‘tazilites’ teaching on the two meanings of ‘being’, which corresponds more or less to Meinong’s views. Here is Avicenna’s critical text:

Arabic-Text-18: And if [the thing] is nonexistent then how can it be judged that it is existent except on the people who . . . regard it possible that the non-being has some existent descriptions and that they are not beings?

And ‘being’ is other than ‘existent’ before these [people]. But our discourse is on the meaning of ‘existent’ and we do not intend from the meaning of ‘being’ but this. And they may intend by ‘being’ what they want.\(^{27}\)

But if he does not believe in the wide and narrow meanings of ‘being’ then how can we interpret the clear contradiction in the statement: ‘for there are beings or non-beings out of both J and B’?

An answer can be to divide the beings into the mental and the extra-mental, as Farabī himself had done in advance. This is the solution explicitly proposed by Shahāb al-Dīn Suhrawardī in one of his books. But the latter in another book of his and many later Arabic logicians would not be convinced by this solution. The many problems they have investigated need another research. So, we make a stop at this place.

5. Conclusion

As we showed, Farabī and Avicenna have done radically different works on contraposition. The former had presented four forms of A-contraposition; but the latter claimed one or other form of contraposition for all the four A-, E-, I-, and O-propositions. Farabī’s four forms could be classified in three equivalences, but only two of Avicenna’s claims seem to be equivalences. Farabī seems to be totally in Aristotelian tradition, but Avicenna takes grate steps getting away. The latter’s claims for E- and I-contrapositions are forbidden by modern logical analyses, and his claims for A- and O-contrapositions are excluded by the existential imported analyses in traditional logic. At last, we should say that Farabī’s impact on later researches on the subject in the medieval Arabic logic is so little but Avicenna’s so grate.

We indicated in places in the paper that some ideas of Farabī and Avicenna would be disputed by later Arabic logicians. This shows that a far-reaching discussion of later Arabic logic on contraposition is in need to further research. This is more urgent if we know that some Arabic medieval logician, such as Afḍal al-Dīn al-Khūnajī, has discussed modal contraposition in more than 48 pages.

It seems that Latin medieval developments of the rule have had completely different way to pass; hence, the necessity of a comparative study of the two parallel paths.

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\(^{26}\) For one criticism, see Movahed 1987, 146–49.

\(^{27}\) Avicenna 1970, 80.
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References


Appendix A. The terms ‘infinite’, ‘privative’, ‘ma’dūla’ and ‘adamiyya’

The adjectives ‘infinite’ and ‘privative’ in logical texts have some ambiguity and it is not clear whether or not they are synonymous. Use of them for propositions is from Boethius and for terms (i.e. names and verbs) form Aristotle:

In his on *Interpretation*, Aristotle coins ‘infinite’ for names and verbs:

‘Not man’ is not a name, nor is there any correct name for it. It is neither a sentence nor a negation. Let us call it an *infinite name* δόμος ὁδόριστον, [since it applies in the same way to what exists and what does not exist].

‘Does not run’ and ‘does not work’ I do not call verbs. They additionally signify time and are always of something else, but what makes them different has no name. Let it be an *infinite verb* ὁδόριστον ῥήμα, since it applies in the same way to what exists and what does not exist. (Aristotle 16b11-15 (see also *Boethius 2010*, 53)).

And in his *Prior Analytics*, he defines ‘privative’ terms:

Privative στερητικα terms, are similarly related to positive *κατηγορία* terms in respect of this arrangement. Let A stand for equal, B for not equal, C for unequal, D for not unequal.

Then Boethius uses the same adjectives for propositions:

But in the rest of our discussion we will call propositions which have infinite names as predicates *infinite propositions* so that the affirmation ‘man is not-just’ and the negation ‘man is not-not-just’ are infinite without any further discussion, so that, as we were about to say, a proposition with an infinite name as predicate we will name infinite, but the two which have no infinite name either as subject or predicate we call *simple*. Then the simple propositions are ‘man is just’, ‘man is not just’.

I call *privative propositions* those which have a privation. Privative propositions are of the kind ‘man is unjust’ for this will deprive the subject of justice, and again ‘man is not unjust’; this will in turn deprive the subject of injustice.

The Arabic synonyms of the words ‘ma’dūla’ and ‘adamiyya’ seems to be literally translated as ‘modified’ and ‘in-existential’. The second Arabic term seems to be the translation of ‘privative’, but the first Arabic term has been translated to ‘privative’ by Aloys Sprenger:

*Arabic-Text-19*: Third Section. On Privatives and Attributes

§45. If a negative particle is part of the subject, e.g. ‘an inanimate being is a mineral;’ or of the predicate e.g. ‘minerals are without intellect (unintellectual);’ or of both; the proposition is called *privative* whether it be affirmative or negative. But if no particle forms part of either extremity then the proposition, if it be affirmative, is called *attributive* and if it be negative *indivisible*. (Kāṭibī 2007 p. 15).

But we note that the term ‘ma’dūla’ in Arabic logic has not been used in one meaning. For example, Fārābī had presented three meanings for it

*Arabic-Text-20*: Thus these are three meanings of indefinite/non-positive names:

[1] The first is privation.

[2] And the second is superior than it and is the removing of a thing from an existent entity. The thing removed has the capacity to exist in it or in its species or in its genus, either by necessity or by possibility. This is as our saying: ‘a number is non-even’; because it is an affirmation of a modified [or: it is a modified affirmation], and it is the removing of ‘even’ from that whose capacity or the capacity of some of which is to be even by necessity.

[3] And the third is superior than this too: and it is the removing of a thing from an existing entity, even if it is not of its capacity to be in it, neither in some of it nor in all of it. This is as our saying on God that he is not mortal, not he is perishable.

---


29. *Aristotle 52a15-52a17*. *Barnes’ edition 1991*, 54. It is wonderful that in Arabic translation, the same words have been interpreted not for terms but for propositions:

μσαω], و ‘μσαω’ و ‘μσαω’ و μσαω

Aristotle 1980, 246.


Appendix B. Arabic texts

Arabic Text 1. Fārābī on contraposition

و منها المأخوذة على علائق و من جانبي، و هو أنه

1. إن كان إجاب المعلوم لاحقاً ما يوجب له الموضوع كان سلب الموضوع لاحقاً ما يُنسب عليه
المعلوم. كوننا إذا كان «كل إنسان حيوان» فكل ما ليس حيوان ليس إنسان.

و كذلك إن كان سلب المعلوم لاحقاً ما يُنسب عليه الموضوع فإجاب الموضوع لاحقاً ما يوجب له
المعلوم. كوننا إذا كان «ما ليس بجسم ليس ينحاز» فكل ما ينحاز جسم، و إن كان «ما
ليس يوجد فليس في مكان» فكل ما هو في مكان فهو موجود.

و هذا هو الذي يسمى «عكس النفي»، و هو موضوع برهاني.

2. و أيضاً إن كان سلب المعلوم لاحقاً ما يوجب له الموضوع، فسلب الموضوع لاحقاً ما يوجب له
المعلوم. كوننا إذا كان «كل ما هو طائر فليس إنسان»، فكل ما 32 هو إنسان فليس طائر.

و هذا هو أن السالبة الكلية تتعكس كليتها.

3. و إن كان إجاب المعلوم لاحقاً ما يُنسب عليه الموضوع فإجاب الموضوع لاحقاً ما يُنسب عليه
المعلوم. مثل ذلك قول من قال إن كان «ما ليس ينحدر متكوناً» فما ليس ينحدر فهو ذي.

(التاريكي، 1987، ج 1، 248)

Arabic Text 2. Fārābī on obversion and existential import

و المشروتون يوزعون أن برقلوس الأثيلوتوني أعطى حين ما فشل هذا الموضوع من كلام أرسطو
قانون في المتلازمات المعدلات و اليساقي، فقال: كل قضية بسيطة وافقت مطولة ما في الكلية
و كالنها، فإن كل واحدة منها تلزم الأخرى و تتبعا كوننا: كل إنسان يوجد عدلاء
و قوله: «لا إنسان واحد يوجد [لا] عدلاء» فإن هناك قضيتان تقتضيان في الكلية و مقتضيان في
الكلية في المعلوم، فإن المعلوم أحدهما محض و معلوم الآخر غير محض. (التاريكي 1987، ج 2،
و 1987، ج 1، 145)

Arabic Text 3. Avicenna on defining the contraposition

و هيما نوع من الفكاك آخر يجب أن تأمله، و هو الذي يسمى «عكس النفي» وهو أن يؤخذ
ما ينافض المعلوم فيجعل موضوعا و ما ينافض الموضوع فيجعل معلوما (إبن سينا 1987، ج 1، 93)

Arabic Text 4. Avicenna on definition of the conversion

و معنى «العكس» هو تصور الموضوع محولا و المعلوم موضوعا، مع بقاء الكلية و التصدق على
حالة. (نفس المصدر، ج 1، 75)

Fārābī and Avicenna on Contraposition

Arabic Text 5. Avicenna on contraposition

[الموجبة الكلية] إذا قلنا «كل ج ب» لم ن منه أن «كل ما ليس ب ليس ج» ولا فلكن «بعض ما هو ج هو ليس ب» و نقلنا «كل ج».


[السالبة الكلية] وإذا قلنا «لا شيء من ج ب» لا نقل «لا شيء ما ليس ب ليس ج» فإن ذلك إذا قلت «لا شيء من الناس جائرة» لم يلزم أنه «ليس شيء ما ليس جائرة ليس إنسان» أو «ليس شيء ما ليس جائرة هو إنسان».

[الموجبة الجزئية] وإذا قلنا «بعض ما ليس ب ليس ج» فإنه يوجد موجودات أو معطيات خارجة عن ج و ب مما فيكون «بعض ما ليس ب ليس ج».

[السالبة الجزئية] وإذا قلنا «ليس كل ج ب» فإنهم «ليس كل ما ليس ب ليس ج» و إذا فكل ما ليس ب ليس ج» فكل ما هو ج فهو ب».

و هنالك جوامع أخرى وأولى أن مجال مواضع كتب المواقف (ابن سينا 1964، 93-94).

Arabic Text 6. Avicenna’s second definition of contraposition

و وأنا عكس العنصرين أفن جعل النتيجة نتائج النائلي، و بناء المفهوم نتائج المفهوم. (ابن سينا، 1964، 385).

Arabic Text 7. Avicenna’s definition of direct conversion

و عكس الاستنات، هو أن نجعل النتيجة نتائج النائلي مقدماً مع نتائج الكلية على أن يكون مع ذلك حافظاً للصداقة. (نفس المصدر).

Arabic Text 8. Avicenna’s second definition of contraposition

و وأنا عكس العنصرين أفن جعل [في تعريف العنصرين المستوي]. بناء النتيجة نتائج النائلي، و بناء المفهوم نتائج المفهوم. (our reading of Arabic-Text-6).

Arabic Text 9. Avicenna on the contraposition of the consequences of syllogisms

[الفصل العاشر] في استعمار النتائج التالية للمطلوب الأول بالقياس المطلق.

النظري التي نتبين الكلية فإنها تنتج ذلك الكلية وتاريخي تجاه و نكثها المستوي و عكس النتيجة. معنى «عكس النتيجة» هو أن يجح مباني النتيجة بالإضافة إلى السبب وضعًا و مقابل الموضوع جمعاً. مثل أنه إذا أنتج «كل أ ب»، أنتج: «ما ليس ب ليس أ» و لكن النتيجة الأول بالذات و أولاً و هذه بالعرض ن ثانياً على سبيل الزروم. (ابن سينا 1964، 497).

Arabic Text 10. Avicenna on the contraposition of the particular propositions

و الجزئية الموجبة تتجزئ إلى ما ينتج عكسه و عكس نتائجه.

و إذا السالبة الجزئية فليسها تستنتج شيئاً لأنها لا تتعكس. (ابن سينا 1964، 497).
Arabic Text 11. Baghdadi on the contraposition of the particular propositions

و التي تنتج الجزئية الموجبة تُنعج إلى ما ينتج عكسيه و عكس نقيضه. (البغدادي، 1373، ج. 1)

Arabic Text 12. The Arabic translation of Aristotle's text

فلاش: المقولن فيها كليت و منها جزئية، فإن: [المقاس] الكليه: إذا شغل أشياء كثيرة. و أما
المقاس: الجزئية فلوجبة منها تجعل أشياء كثيرة [أيضاً]: و أما [المقاس] السالبة فإنها تجعل
النتيجة فقط لأن المقاسات (= التقضية = النتيجة) الأخرى [تيتسويس] و أما [المقاسة] أي النقضية أو
النتيجة] السالبة ليس تعكس. (بدوي 1980 مطوق أرسطو، ج. 1، 251.)

Arabic Text 13. Completing Avicenna's text on contraposition of particular propositions


1964، 497.)

Arabic Text 14. Avicenna on O-contraposition in his al-Mukhtasar

و أما السالبة الجزئية فليست تستبعض شيئاً لأنها لا تعكس. [إب] تستبعض عكس نقيضه; فقد يُقَبَّل
أذا إذا قلنا ليس كل ج ب، لزمن عكس النقض ليس كل ما ليس ب ليس ج أي [بعض
ما ليس ب ليس ج]. (ناجيي 2009، 158.)

Arabic Text 15. Avicenna on contraposition in physics

و مع ذلك، فقد فاس هذا الإنسان قياساً رديًا فقال:

إن أمكن في الأجرام السبسة التي ليس نوع طبيعيتها نوع واحداً أن تتحرك حركة

بسيطة نوعها بالطبع نوع واحد،

العكس: العكس النقيض:

فأمكن أن يكون للأشياء التي لا تحرك حركة طبيعية واحدة بال نوع بسيطة نوع

واحدة طبيعي.

جعل ما طلبه عكس النقيض تائياً لمقاس هو عكس نقيضها.

Arabic Text 16. Avicenna on contraposition in physics

و إذاً، فليس في هذا العكس؛ لأنه أخذ القضية مكتملة و طلباً و وجودية أو ضرورية، فوجب عكسها.

و هذا النوع من عكس النقيض لا يصح في المقاسات الممكنة إذا جعلت المكانة حجمه و لم يجعل

جزءاً من الحمول، كما لو قال دائماً:

إن أمكن المعاوض المختلفة التي ليست طبيعية نوعها طبيعية واحدة، أن تتشكل في ماهية

مشتركة واحدة أو صفة واحدة،

أمكن للأشياء التي لا تتشكل في ماهية واحدة و صفة واحدة أن تكون طبيعية و

نوعها واحدة.

و إذا كان هذا عكس لا يصح فاعلم أن ما قاله لا يجب.
Arabic Text 17. Avicenna on contraposition in physics

و أننا إن فعلنا "الذين" جزءا من المخلوق فحماط، ولكن لم يكن ما يريده وكأنه نقيض

تلك المقدمة:

أنما ليس يمكن أن يتحرك حركة بسيطة واحدة نوعها واحده، فليس من الأجسام

البسيطة التي ليس نوع طبيعية نوعا واحدا.


Arabic Text 18. Avicenna on non-beings

و إذا كان [الشيء] معذوراً فكيف يحكم به لم توجد إلا عند قوم محذورون [عوام، نسخة بدل]

أنفسهم فتجوزون أن يكون للمشي صفات حاسلة ولا تكون موجوده؛ وهو "الحاصل"

عندهم غير "الوجود". و كلامنا في المعلوم من "الحاصل". ولا نريد بالمعلوم من "الوجود". غبره.

و فين أن يريدوا بالموجود ما شأوا (بن سينا 1970، 80).

Arabic Text 19. Kātibī on ‘infinite’, ‘finite’ and ‘simple’ propositions

البحث الثالث في العقول والتحصيل

حرف السلب إن كان جزءا من الموضوع كوننا: "اللاخطئ جد". أو من المعلوم ككوننا: "المعلوم لا

عامة". أو منهما جميعاً. "تمت الفرضية المعلولة". موجبة كانت أو سالبة. و إن لم يكن جزءاً نشيء منها

"تمت الفرضية" إن كانت موجبة، و "بسيطة" إن كانت سالبة.

Arabic Text 20. Fārābī on ‘infinite’ and ‘privative’

فهذه ثلاثة معانى للأشياء غير المحضاة:

[1] فأول تعني تعني الاسم [ما يذكرها الملكة].

[2] و الثاني منهما: وهو تعني الشيء عن أمر موجود، شأن الشهر، الذي يغير عنه أن يوجد فيه أو

في نوعه، أو في نفسه، إما باعتبار، إما باعتبار، ككوننا: "عديد لا زوج". فإنه يقبلة معقول


[4] و الثالث من هذا أيضاً: وهو تعني الشيء عن أمر ما موجود، وإن لم يكن من شأن الشهر

أن يوجد فيه، لا في بعضه ولا في كله، ككونا في الإله: إنه لا مائدة ولا بالي. (الفراي، 1987،

ج. 1، 105).