Melissus's So-called Refutation of Mixture

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Abstract: There is discussion among critics about the authenticity of Pseudo-Aristotle's account on Melissus in the *De Melisso, Xenophane, Gorgia*, and especially about the refutation of mixture that he attributes to the latter. For there is no clue in the other testimonies and in the fragments that the Eleatic made such a refutation. In this article, I aim to show that the argument as it is presented is not genuinely Melissean, but inspired by some of Aristotle's considerations on colour-mixture in the *De Sensu*. I then claim that taking this source into account solves many of the difficulties inherent to this demonstration against mixture, and reveals something on Pseudo-Aristotle's doxographical approach.

In the ancient doxography, the corpus of information concerning Melissus appears to be very limited and, most of the time, it matches the fragments that Simplicius has passed down to us. Most of the content of the commentaries concerning this Presocratic can be summed up in four claims: being is one (B5-6), motionless/changeless (B7), ungenerated (B1) and infinite (B2-3).[1] Since all these claims and their demonstration are provided in the fragments, the studies on Melissus are based almost exclusively on the ten fragments of Diels/Kranz's B part, and make little or no use of the testimonies.

There are however a few ancient authors who have provided information that differ from what is contained in the fragments, and in particular the so-called Pseudo-Aristotle, author of the treatise *De Melisso, Xenophane et Gorgia* (*MXG*). This author seems to offer a very trustworthy review of Melissus's theories and arguments.[2] The first part of the *De Melisso* (974a2-974b8) explains the reasoning of the thinker from the eternity of being to the rejection of sense-perception. On one hand, it meets the outline exhibited by Simplicius in his own

[1] These four claims can all be found in the summary of Philoponus, *On Physics* 51.1-2: τὸ ὂν ἄναρχόν ἐστι, τὸ ὂν ἕν ἐστι, τὸ ὂν ἄπειρόν ἐστι, τὸ ὂν ἀκίνητόν ἐστι.

summary of Melissus's thinking,[3] on the other hand it matches the arguments in B1 to B8.

The author however brings in three arguments that are not present in the fragments and the other testimonies. The first argument explains why nothing bigger can come from something that is smaller ($974^{a}5$-9), while the second one explains why what is one is also equal, ὅμοιον ($974^{a}12$-14). Finally, the last argument rejects the possibility of mixture ($974^{a}18$-$974^{b}3$). The first two arguments correspond perfectly to Melissus's fragments: at the beginning of B7, he states that being is both equal and does not grow bigger[4] with no justification; since Melissus usually provides evidence for each attribute of being he is defending, the arguments presented by Pseudo-Aristotle would fill the gap in his reasoning.

The refutation of mixture is however unexpected: among the other authors who dealt with Melissus, no one has ever attributed to him any word about mixture or its impossibility. Moreover, the author associates this argument with the negation of rearrangement and change and yet it does not appear in the middle of B7 where it would be expected, after the arguments on rearrangement and change and before the rejection of movement.

For these reasons the authenticity of the argument has been discussed. In order to find elements for authenticity or rejection, commentators took into consideration the historical aspect of the polemic against two specific models of mixture, which is the main point of the argument in the *MXG*, but also the argumentative coherence with other theses of Melissus.

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[2] See Mansfeld (1988), p. 239: "The report about Melissus, when compared with what is in the fragments of his book, seems to be rather reliable".

[3] *On Physics* 103.13-104.15.

[4] Οὕτως οὖν ἀίδιόν ἐστι καὶ ἄπειρον καὶ ἓν καὶ *ὅμοιον πᾶν*. καὶ οὔτ' ἂν ἀπόλοιτο οὔτε *μεῖζον γίνοιτο* οὔτε μετακοσμέοιτο οὔτε ἀλγεῖ οὔτε ἀνιᾶται, "it is then eternal, infinite, one and *all equal*. And it could neither perish nor *become bigger* nor rearrange itself nor suffer nor be grieved".

• Apelt, Guthrie, Wiesner, and Merrill consider it genuine.[5] They claim that a Melissean polemic against contemporaries is very plausible[6] and that the rejection of mixture works perfectly with other theses defended by Melissus.[7]

• Albertelli, Untersteiner, Loenen, and Reale contest its authenticity.[8] Albertelli, who argued at more length against authenticity, claims that the concepts used in the polemic, especially the notion of ἐπάλλαξις, which he attributes to Democritus, are posterior to Melissus. He also claims that Melissus did not require such subtleties[9] in order to refute the notion of mixture whose presuppositions (movement and multiplicity) he had already rejected.

The most recent studies concerning Melissus implicitly agree with the second opinion, since the argument is almost never mentioned: it is especially noteworthy that Curd (2004), while referring in her index to "Melissus's argument against mixture", does not even allude to the *MXG* in the quoted passage but relies only on B8. This however rather reflects a lack of consideration for the passage than a conscious rejection of its authenticity. On the contrary, studies on the *MXG* itself tend to claim that the material provided by their author is valid, but without providing any strong evidence. We will however try to provide evidence in order to state that, at the very least, the polemical part of the argument against mixture (i.e. the criticism of two models of mixture) does not belong to Melissus. For the purpose of our demonstration,

[5] Apelt (1986), pp. 738-742, Guthrie (1965), p. 116, Wiesner (1974), pp. 130-147 and Merrill 1998, pp. 127-128. See Apelt p. 738: "doch ist es unzweifelhaft, dass hier echt Melissische Gedanken vorgetragen ist".

[6] See Apelt (1886), pp. 739-740 and Wiesner (1974), pp. 131-138.

[7] Apelt 1886, pp. 738-739 explains that mixture was a greater danger for Melissus's system than all other kinds of change, since it fulfils the criterion of unity. On the other hand, Wiesner (1974), p. 141 finds a connection with the rejection of sense-perception in B8: just as Melissus rejects in this fragment the multiplicity that we see by referring to the criterion of immutability, he would reject mixture by referring to the criterion of unity.

[8] Albertelli (1939), pp. 224-225, Untersteiner (1956), pp. CV-CVI, Loenen (1959), p. 179, n. 9 and Reale (1970), pp. 305-308.

[9] P. 225: "non aveva nessun bisogno di sottilizzare tanto".

we will first introduce the argument and exhibit some difficulties related to its polemic against two models of mixture; these difficulties can be solved by finding the source of Pseudo-Aristotle, which, as we will see, is not Melissus's work. This will not allow us to assert that there was no argument against mixture by Melissus, but it reveals something of Pseudo-Aristotle's approach and weakens the trust we may grant to his account on Melissus, and in general to the *MXG*.

1 The argument (*MXG* I, 974a18-974b3)

(1) Τοιοῦτον δὲ ὂν τὸ ἓν ἀνώδυνόν τε καὶ ἀνάλγητον ὑγιές τε καὶ ἄνοσον εἶναι, οὔτε μετακοσμούμενον θέσει οὔτε ἑτεροιούμενον εἴδει οὔτε μιγνύμενον ἄλλῳ· κατὰ πάντα γὰρ ταῦτα πολλά τε τὸ ἓν γίγνεσθαι καὶ τὸ μὴ ὂν τεκνοῦσθαι καὶ τὸ ὂν φθείρεσθαι ἀναγκάζεσθαι· ταῦτα δὲ ἀδύνατα εἶναι. (2) καὶ γὰρ εἰ τὸ μεμῖχθαί τι ἓν ἐκ πλειόνων λέγοιτο, καὶ εἴη πολλά τε καὶ κινούμενα εἰς ἄλληλα τὰ πράγματα, (3) καὶ ἡ μίξις ἢ (3a) ὡς ἐν ἑνὶ σύνθεσις εἴη τῶν πλειόνων (3b) ἢ τῇ ἐπαλλάξει οἷον ἐπιπρόσθησις γίγνοιτο τῶν μιχθέντων· (4a) ἐκείνως μὲν ἂν διάδηλα χωρὶς ὄντα εἶναι τὰ μιχθέντα, (4b) ἐπιπροσθήσεως δ' οὔσης ἐν τῇ τρίψει γίγνεσθαι ἂν ἕκαστον φανερόν, ἀφαιρουμένων τῶν πρώτων τῶν ὑπ' ἄλληλα τεθέντων τῶν μιχθέντων· (5) ὧν οὐδέτερον συμβαίνειν. (6) διὰ τούτων δὲ τῶν τρόπων κἂν εἶναι πολλὰ κἂν ἡμῖν ᾤετο φαίνεσθαι μόνως.

(1) Since the one is such, it is without pain and grief, healthy and without disease, and it is neither rearranged in its position nor changed in its form nor mixed with anything else; for in all those cases it is necessary that the one becomes many and that non-being is engendered and being perishes; and this is impossible. (2) For even if mixture was said to be some unity from a plurality and if there were many things that are moved toward one another, (3) mixture (3a)

would either be a combination of many things into some sort of unity (3b) or it would be produced like a superposition of the mixed things by interweaving; (4a) in the first case the mixed things would be obviously distinct, (4b) in the case of the superposition, each one of them would become apparent by rubbing off, when the first mixed things, which lay one upon another, are destroyed; (5) but neither happens. (6) He thought that in both ways it would be multiple and that it is only [in those ways] that it would appear to us.

We read the argument as following:

1. The author states the main thesis of the first part of B7: all changes are impossible for two reasons, since they would contradict the unity of being by creating multiplicity and the impossibility of generation and corruption by engendering a non-being and destroying a being.

2. However, he takes into account the hypothesis that there could be mixture since it can be considered that mixture, contrary to the other cases, creates a form of unity (καὶ γὰρ introduces the long explanation why even in the case of mixture there is no unity). This hypothesis supposes as a necessary condition the existence of many moved objects.

3. In this case there would be only two possible models of mixture:

   (a) Combination (σύνθεσις), i.e. the mixed things are one next to another.

   (b) Superposition (ἐπιπρόσθησις), i.e. the mixed things are one upon another. The author also describes this phenomenon with the word ἐπαλλάξει (interweaving), but does not keep the term in his second description of the process (4b) nor in his criticism (*MXG* II, 177[a]4-11).[10]

[10] Ἐπαλλάξις is a correction made by Miller (1851) since all manuscripts have the reading ἀπαλλάξει, which means "release" or "going away". This word would make the sentence quite

4. According to both models of mixture, it would become visible that they include distinct ingredients:

(a) In the first case, the mixed things would obviously (διάδηλα) be distinct.

(b) In the second case, it would become visibly distinct (ἕκαστον φανερόν) if the first layer is rubbed off.

5. Both possibilities are rejected since "neither happens", i.e. both models are inconsistent with what is actually true. This can be interpreted in two different ways, depending on the referent we give to ὦν: either the things are not mixed in those ways (3a and b) or they do not appear to be mixed in those ways (4a and b). We will discuss later on the difficulties related to this sentence.

6. According to Melissus, appearing in either way does imply multiplicity, and those are the only two ways for mixture to appear. Therefore mixture is not possible[11].

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obscure: only Cassin (1980), p. 167 keeps the manuscripts' reading but has to translate it by "par séparation", which is hardly a possible meaning for ἀπάλλαξις.

[11] The meaning of the second part of this sentence (κἂν ἡμῖν ᾧετο φαίνεσθαι μόνως) was often considered as obscure. First, the text is uncertain: ᾧετο is a reconstruction by Diels of a defective transmission (the manuscript L has ὥ ετ and the manuscript R ὡς τὸ). Apelt offers to read ὡς ἐστι, but most editors follow Diels. Therefore, a first reading of the sentence is that not only there would be multiplicity, but only this multiplicity would appear to us (see Cassin (1980), p. 173). This interpretation makes however the author attribute to Melissus much more regards for perception than he ever had. Another solution, provided by Mullach (1883), is to introduce a negative, in order to mean the following: "it would be multiple and would not appear to us as single". Apart from the fact that it has to change the text, this solution presents the inconvenience of giving to μόνως a meaning it usually does not have: μόνως means "in a single way" and not "as something single". We may understand this sentence if we remember that the question of the appearance was the main point of (4). If we understand διὰ τούτων τῶν τρόπων not as referring to the two models of mixture but to the two ways in which they would appear, and if we consider mixture as the subject for both verbs, the sentence means: "in those two ways of appearing it [i.e. mixture] would be multiple and that is the only two ways it [i.e. mixture] could appear to us according to him".

2 Two problems

Two problems can be raised, an argumentative and a historical one. First, there seem to be two interwoven lines of argument in this passage:

- An argument on unity and plurality: in order to exist, mixture should result in unity; yet it does not, since in all cases mixture leaves the components distinct; mixture is therefore impossible. This argument raises no great issues, and is described by all commentators, without any consideration for the second one.
- An argument on appearance: mixture would follow two models, which would have a different kind of observable result. But "neither happens".[12]

This second argument rests above all upon the sentence ὧν οὐδέτερον συμβαίνειν, which raises two questions: what are the things that do not happen and what is the role of this assumption in the argument? If it is not the case that mixture follows the two presented models, i.e. combination and superposition, we would still expect an argument to prove it. If it is not the case that it appears as described, i.e. with distinct ingredients, the argument looks flawed: first, it can happen that we see the mixed things as distinct, secondly, it could just mean that the components are too small to be seen, not that there is no mixture. In both cases, the argument can hardly prove that there is no mixture at all.

Apelt (1886), p. 742, followed by Reale, Guthrie and Wiesner, avoids the difficulty in the following way: he translates συμβαίνειν with "passe" in German, "fits", from the *convenire* meaning of συμβαίνειν mentioned by Bonitz (1870), p. 713. The sentence would then mean: "none of these are suitable", i.e. none of these descriptions of mixture fulfil the criterion of unity. But the few examples given by Bonitz for this meaning of the verb συμβαίνειν all exhibit as

[12] Both arguments appear in (6) if read as translated.

subject a reasoning:[13] συμβαίνει means "happen" for a thing and "be true, apply" for a thought or speech. The other critics then translate as we did with the usual meaning of συμβαίνει, but do not interpret this sentence in their commentary.[14]

The second issue is the attribution of the second model of mixture, the superposition (ἐπιπρόσθησις) model. The σύνθεσις theory can be attributed to Empedocles: Aristotle describes with this term his conception of mixture.[15] The author of the *MXG* himself at least knew that Empedocles developed a theory of mixture since he quotes a little after Empedocles's B8, according to which everything comes to be through mixture.[16] But the second depiction of this phenomenon finds no taker. Mullach (1883) was the first to suggest that it could be the atomists because of the use of the term ἐπάλλαξις, which Simplicius attributes to Democritus as a synonym of συμπλοκή;[17] he was followed, though with little enthusiasm, by most critics.[18] Cassin (1980), p. 171, suggests that it could be Anaxagoras, but without any strong commitment. Since actually no known atomist or altogether no thinker developed a theory of mixture through layers, all critics remain very cautious.[19] The term itself ἐπιπρόσθησις is odd, since this very technical word usually describes eclipses, meaning "occultation", and not a superposition of layers.[20]

We can go further by saying that this model of mixture does not make much sense: a superposition of layers is not usually called mixture.[21] It seems

[13] The only exception is a passage quoted from the *De Caelo* $297^{a}4$, whose subject is τὰ φαινόμενα. However the meaning of συμβαίνειν in this passage is rather "happen" than "is suitable".

[14] See Albertelli who translates p. 217 with "tutto ciò è impossibile" and rejects in his n. 10 p. 225 Apelt's translation, Hett (1936) or Cassin (1980) who translate respectively with "neither of which things happens in fact" and "mais des deux, ni l'un ni l'autre ne se produit". But neither of them provides a commentary on this point.

[15] *On Generation and Corruption* II.7 $334^{a}26$.

[16] II, $975^{b}7$-8.

[17] *Comm. In De Caelo* 609.23-24

[18] See Apelt (1886) p. 739, Wiesner (1974) p. 134, Albertelli (1939) pp. 224-225 etc.

[19] Wiesner concludes p. 138 "wenn sich der historische Hintergrund auch nur für die σύνθεσις, nicht für die ἐπιπρόσθησις erhellen läßt..." and Cassin p. 171 "nous n'avons pu rapporter [le terme ἐπιπρόσθησις] plus précisément à une doctrine physique".

[20] See for example Aristotle's *De Caelo* II.13 $293^{b}22$.

[21] Cassin gives the example of a mixture of oil and water that would be called oil.

difficult to justify why the mixed things would form such layers and how this explanation of the phenomenon would help to understand it. This theory is actually very similar to the first one, since the mixed things remain distinct, but adds to it the implausibility that they would arrange themselves in distinct layers one upon another, without having any obvious advantage.

We can solve both the argumentative and the historical problem if we find the source for this passage, which was unnoticed by former commentators.

3 The source

A depiction of those two models of mixture can be found in Aristotle himself, *De Sensu et sensibilia* 3 $439^{b}19$-$440^{b}25$, where he explains how the different colours may come to be from the mixture of black and white. He first considers two possible models for this mixture: one where the elements of colour are one next to the other and one where they are one upon another; he concludes by giving his own concept of a mixture that is "wholly blend together":

> Ἐνδέχεται μὲν γὰρ παρ' ἄλληλα τιθέμενα τὸ λευκὸν καὶ τὸ μέλαν, ὥσθ' ἑκάτερον μὲν εἶναι ἀόρατον διὰ σμικρότητα, τὸ δ' ἐξ ἀμφοῖν ὁρατόν, οὕτω γίγνεσθαι. [...]
>
> εἷς μὲν οὖν τρόπος τῆς γενέσεως τῶν χρωμάτων οὗτος, εἷς δὲ τὸ φαίνεσθαι δι' ἀλλήλων, οἷον ἐνίοτε οἱ γραφεῖς ποιοῦσιν, ἑτέραν χρόαν ἐφ' ἑτέραν ἐναργεστέραν ἐπαλείφοντες, ὥσπερ ὅταν ἐν ὕδατί τι ἢ ἐν ἀέρι βούλωνται ποιῆσαι φαινόμενον, καὶ οἷον ὁ ἥλιος καθ' αὑτὸν μὲν λευκὸς φαίνεται, διὰ δ' ἀχλύος καὶ καπνοῦ φοινικοῦς. [...]
>
> εἰ δ' ἔστι μίξις τῶν σωμάτων μὴ μόνον τὸν τρόπον τοῦτον ὅνπερ οἵονταί τινες, παρ' ἄλληλα τῶν ἐλαχίστων τιθεμένων, ἀδήλων δ' ἡμῖν διὰ τὴν αἴσθησιν, ἀλλ' ὅλως πάντη πάντως, ὥσπερ ἐν τοῖς περὶ μίξεως εἴρηται καθόλου περὶ πάντων.[22]

[22] *De Sensu et Sensibilia* 3 $439^{b}19$-22, $440^{a}6$-12, $440^{a}31$-$440^{b}4$.

It is possible that the white and the black are juxtaposed in such small parts that either is invisible, though the joint product is visible. [...]

This then is one way to explain the coming to be of colours, another is that they appear one through another, e. g. when painters overlay a colour upon a more vivid one, as when they want to represent something in water or in a haze, and in the case of the sun, which in itself appears white but looks crimson through a fog or smoke. [...]

If there is a mixture of bodies, it is not merely such as some suppose, i.e. by juxtaposition of minimal parts, which, owing to sense, are imperceptible to us, but a mixture by which they are wholly blend together, as we have described in the treatise on mixture about all cases in general.[23]

The two models described here correspond exactly to the ones we find in the *MXG*: on one side a juxtaposition of small particles, on the other a superposition of layers, for whose illustration Aristotle gives two examples: the picture with several layers of painting and the sun that is seen through fog or smoke. He names in 440^{b}16 the first model τὴν παρ' ἄλληλα θέσιν and the second τὴν ἐπιπόλασιν. The identification of the second depiction with our model in the *MXG* is confirmed by another passage of Aristotle's *Meteorology*, where he describes again the phenomenon of the sun's purple colour, but this time with the term ἐπιπρόσθησις:

Διά τε γὰρ πυκνοτέρου διαφαινόμενον ἔλαττον φῶς καὶ ἀνάκλασιν δεχόμενος ὁ ἀὴρ παντοδαπὰ χρώματα ποιήσει, μάλιστα δὲ φοινικοῦν ἢ πορφυροῦν, διὰ τὸ ταῦτα μάλιστα ἐκ τοῦ πυρώδους καὶ λευκοῦ φαίνεσθαι *μειγνυμένων κατὰ τὰς ἐπιπροσθήσεις*, οἷον

ἀνίσχοντα τὰ ἄστρα καὶ δυόμενα, ἐὰν ᾖ καῦμα, καὶ διὰ καπνοῦ φοινικᾶ φαίνεται.[24]

For a weaker light shines through something denser, and air, catching a reflection, makes all kinds of colour appear, especially crimson and purple, for these colours generally appear when fire-colour and white are *mixed by superposition*, e. g. the stars when they rise and set look crimson in a hot day and through smoke.[25]

Alexander of Aphrodisias at least made the connection between the two texts since in his commentary of the passage of the *De Sensu*, he uses the term ἐπιπρόσθησις.[26] The author of the *MXG* obviously also did so.

Reference to this so far unnoticed source can help us in two ways:

1. first, the distinction between two models of mixture can be found in Aristotle rather than in Melissus, the use of the Aristotelian term ἐπιπρόσθησις shows that the author of the *MXG* inspired himself directly from Aristotle: either from a parallel that he draw between the *De Sensu* and the *Meteorology*, or from another lost text.

2. secondly the two models of mixture do not concern all kinds of mixture but only the specific case of colour mixture: most of all the superposition model, which appeared as odd as a description of mixture altogether, makes suddenly sense as a description of colour mixture.

This may not allow us to reject definitly the attribution of the argument to Melissus, even if it strongly undermines it: we could assume that Aristotle took over a distinction he found in Melissus. In order to support the hypothesis that

[23] Translation Beare (in Barnes 1984) modified.
[24] *Meteorology* I.5 $342^{b}5$-11.
[25] Translation Webster (in Barnes 1984) modified.
[26] In 61.9 and 62.12.

Melissus is still the author of this argument, one could assert that Pseudo-Aristotle's source was the lost Aristotelian treatise *On Melissus*.[27]

We can go further by using this source in order to solve the problems that we raised before: the attribution of the ἐπιπρόσθησις theory and the strange rejection of the fact that mixture appears according to the two models. This will allow us to examine further the probability that Aristotle used an argument that was already to be found in Melissus's work.

3.1 Attributing the superposition theory

It is possible to attribute the superposition-theory of colours to some precise thinkers since just after his presentation of this model, Aristotle begins a criticism of the theory of vision through emanations, ἀπορροία:

> Τὸ μὲν οὖν, ὥσπερ οἱ ἀρχαῖοι, λέγειν ἀπόρροιαν εἶναι τὴν χρόαν καὶ ὁρᾶσθαι διὰ τοιαύτην αἰτίαν ἄτοπον.[28]
>
> Therefore saying, as the ancients do, that colour is an emanation and is seen in this way is absurd.

He then obviously considered that the thinkers who had such a theory of colour also claimed that we see them because of emanations: the colour is mixed since the emanations from the underlying colour are mixed with the ones of the colour laid upon it before reaching our eye. There is a parallel assertion in the *De Anima* II.10 422^{a}14-15:

> Τὸ δὲ χρῶμα οὐχ οὕτως ὁρᾶται τῷ μίγνυσθαι, οὐδὲ ταῖς ἀπορροίαις.

[27] A work in one book πρὸς τά Μελίσσου is referred to by Diogenes Laertius (V.25.23) and Hesychius of Miletus (*Life of Aristotle* 86). It is however not impossible that they refer to the Pseudo-aristotelian text.
[28] *De Sensu et Sensibilia* 3 440^{a}15-17.

Colour is not seen because of mixture nor because of emanations.

Τῷ μίγνυσθαι refers to the first model of mixture, ταῖς ἀπορροίαις to the second one.[29] It confirms that there is a strong association between the layers-theory of colour and the emanation-theory of vision.

There are as far as we know two ancient thinkers who had a theory of vision through emanations: Empedocles and Democritus.[30] Aristotle could have thought of both thinkers, but probably rather of Empedocles since he mentions his theory of emanations a little before our text in the *De Sensu*. As for the author of the *MXG* or its source, he could rather have thought of Democritus: this would explain the use of the term ἐπάλλαξις, which belongs to Democritus, in the first description of the phenomenon in the *MXG*. The thinkers who conceived both models of colour-mixture can be the same ones, since the two models are not in conflict but mixture by superposition is a specific case of mixture by juxtaposition: it could have been used by some thinker in order to illustrate the way emanations work.

Let us now consider the possibility that Melissus himself criticized this theory of mixture. This task raises the difficult question of the chronology of Presocratic thinkers. There is relative agreement on the fact that Democritus is posterior to Melissus. The anonymous author of the *MXG* would then have linked this theory to an atomistic vocabulary either by himself or from a source posterior to Melissus, possibly Aristotle himself. As for the criticism of

[29] Aristotle admittedly calls also the second model "mixture", but the layers-theory is only a mixture in a peculiar sense: the layers themselves are not mixed, only the colour that emanates from them.

[30] Aristotle himself attributes the term to them: to Empedocles in the *De Sensu* 2 438^{a}3-4, a little before our passage, where he claims that it is one of the two ways in which Empedocles explained vision (the other one being when a light issues forth from the eyes), and to Democritus in the *De divinatione per somnum* 2 464^{a}5-6 about the images in dreams. We also know from Theophrastus (*De Sensu* 73-78) that Democritus developed a theory of colour-mixture*;* moreover Plato in the *Meno* 76c claims that according to Empedocles colour is an emanation: ἔστιν γὰρ χρόα ἀπορροὴ χρημάτων. We can also refer to B23 where Empedocles describes two painters using several colours: it could explain the example taken by Aristotle of the painter.

Empedocles, the question is subject to debate: was Melissus's work prior to Empedocles's and is there a criticism of Empedocles by Melissus?[31] We will not take over this question here, but will leave open the possibility that Melissus criticised Empedocles's theory of mixture in his work.

3.2 Colour-mixture and vision

As we saw, the sentence ᾗ οὐδέτερον συμβαίνειν did not make much sense in the argumentation: why would Melissus reject that the mixture happens in this way, without making any demonstration? Or if we understand that ᾗ refers to the way the mixture appears, how could he say that the mixture does not appear as separate? If we consider that the whole criticism of the two models originates from Aristotle, we can understand why he considers that "it is not the case" that mixture appears as distinct: the question of vision is a major one in the *De Sensu* passage. For Aristotle considers that a true mixture of colour is not one that looks red if we see it from far away but would appear as a juxtaposition of black and white if we looked closer, but it should look red in all cases:[32]

> Ὅτι ἀνάγκη μειγνυμένων καὶ τὰς χρόας μείγνυσθαι, δῆλον, καὶ ταύτην τὴν αἰτίαν εἶναι κυρίαν τοῦ πολλὰς εἶναι χρόας, ἀλλὰ μὴ τὴν ἐπιπόλασιν μηδὲ τὴν παρ' ἄλληλα θέσιν· οὐ γὰρ πόρρωθεν μὲν ἐγγύθεν δ' οὗ φαίνεται μία χρόα τῶν μεμειγμένων, ἀλλὰ πάντοθεν.[33]
>
> It is clear that necessarily the colours of the mixed things are also mixed, and that *this* is the reason why there are many colours, not the superposition nor the juxtaposition: for it is not true that the colour

[31] The answer to this question mostly depends on the interpretation of B8, where Melissus criticises the ones who believe that there is "earth and water and air and fire and iron and gold": is the mention of the four elements a reference to Empedocles? Coxon (1986), p. 265 assumes that it is obvious, but this position can be contested: for example Makin (2005) considers that Melissus's opponent is just some "Bluff Realist" who believes in the truth of sense-perception. For those difficulties of chronology, see Curd (2004), pp. 17-18 and p. 206, n. 72.

[32] This is why in the *De Anima*'s text we quoted above Aristotle claims that the *vision* of colours is not caused by mixture.

[33] *De Sensu et Sensibilia* 3 440^{b}14-18.

of the mixed things appears as one from afar but not close up, but it appears so in every case.

This is the point Pseudo-Aristotle is referring to when he says that the two models of mixture would visibly have distinct ingredients: if we look closely enough (without any consideration of the possibility or not for an actual eye to do so) or if we rub off the surface, we would see that the mixture is not a true one but a trick of the eye, and that there is actually no mixture. Then we can understand the sentence ὧν οὐδέτερον συμβαίνειν: *it is not the case* that in mixture, i.e. in true Aristotelian mixture, we can see the components as distinct. The author of the *MXG* initiates here a criticism of models of mixture that rely only on vision and not on a homogeneous blend.

This consideration is definitly not a Melissean one, but an intrusion of Aristotelian considerations of colour-vision: Melissus would not rely on vision to reject mixture, and would not consider that mixture does not have visibly distinct components. We can then conclude that the argument relying on the distinction of two models of mixture and especially on the way they appear does not come from Melissus but from Aristotle, since its main point is that colour-mixture does not appear as separate but should look homogeneous from an Aristotelian point of view.

4 Understanding this insertion

We come therefore to the conclusion that the anonymous author introduced the distinction between two models of mixture in his account of Melissus, and that it is not the trace of a polemic of Melissus's against his contemporaries but of an Aristotelian polemic about colour-mixture. He clearly prepares thus his criticism of the rejection of mixture by taking up a dialectical discussion he found in Aristotle himself. This criticism, which appears at the end of the *De Melisso* treatise, takes up two points from Aristotle: first, that a

mixture that creates a true homogeneity is possible, secondly, that there are no ultimate bodies:

> Τὴν γὰρ μίξιν οὔτ' ἐπιπρόσθησιν τοιαύτην εἶναι οὔτε σύνθεσιν εἰκὸς οἵαν λέγει, ὥστε ἢ χωρὶς εὐθὺς εἶναι, ἢ καὶ ἀποτριφθέντων ὅσ' ἐπίπροσθεν ἕτερα ἑτέρων φαίνεσθαι χωρὶς ἀλλήλων ταῦτα, ἀλλ' οὕτως συγκεῖσθαι ταχθέντα ὥστε ὁτιοῦν τοῦ μιγνυμένου παρ' ὁτιοῦν ᾧ μίγνυ<ται γίγνε>σθαι μέρος οὕτως, ὥσ<τε> μὴ ἂν ληφθῆναι συγκείμενα, ἀλλὰ μεμιγμένα, μηδ' ὁποιαοῦν αὐτοῦ μέρη. ἐπεὶ γὰρ οὐκ ἔστι σῶμα τὸ ἐλάχιστον, ἅπαν ἅπαντι μέρος μέμικται ὁμοίως καὶ τὸ ὅλον.[34]
>
> For it is unlikely that mixture is the superposition or the combination he described which would imply that the [mixed things] are immediately distinct or look distinct one from another when what is on top is rubbed off; but it is combined in such an order that each of the mixed things, when beneath whatever it is mixed with, is a part of it in such a way that they are not considered as combined but as mixed, and not as any part of it.[35] For since there is no smallest body, each part is mixed with each one and so is the whole.[36]

The last criticism is the main point in Aristotle's treatment in the *De Sensu* of the first model, which supposes according to him the existence of ultimate bodies. The first one relies on a description of the Aristotelian model of mixture; this model is sketched in the *De Sensu* but most of all developed in the treatise *De Generatione et Corruptione* (*GC*).[37] Our anonymous author could have found this whole discussion by Aristotle convenient for his purpose and taken it up as a

[34] *MXG* 2 977^{a}4-11.
[35] The construction of this sentence is intricate and the last bit difficult to understand, but the idea arises that a mixture makes of all its components a part of a whole.
[36] Bollack (1992) curiously introduces this passage in his edition of Empedocles, without giving any explanation for this choice.
[37] We can find both criticisms in the *GC* I.10 328^{a}5-9.

whole. But by doing so, he had to generalise to all kinds of mixture an analysis specific to colour-mixture; it is strange that he did not rather choose to take up the argument in the *GC*. The reason could be a misunderstanding of some intermediate source.

5 Some consequences

We reached therefore several conclusions:

- The source of Pseudo-Aristotle for the dialectical argument against mixture is not Melissus himself, but Aristotle.
- Our first argumentative problem can be explained by the reference to a rejection of mixture-models that do not create a true blend but only a superposition or juxtaposition of visibly distinct elements.
- Our historical problem also disappears since we have found potential defenders of the layers theory, i.e. Empedocles and Democritus. Moreover the strangeness of the second model vanishes if we consider that it does not describe just any kind of mixture but the specific phenomenon of colour-mixture by superposition of different colours.

These analyses obviously weaken the hypothesis of the existence of any argument against mixture in Melissus's work. They are therefore two possibilities: the more global argument, according to which there is no mixture because it cannot create unity but remains plural, may be genuine and the anonymous author would have added considerations borrowed from Aristotle. It would then have been after B7, either directly after it or rather, as Wiesner suggests, together with B8 in the general rejection of sense-perception (see n.). Apelt and Wiesner are right to notice that a rejection of mixture could fit in Melissus's general argument. Such an hypothesis could find support in the existence of at least another Eleatic argument against mixture that can be found in *GC* I.10 $327^{a}34$-b6: Aristotle asserts that some (τινες) deny the possibility of

mixture. The argument in *GC* is very different of the one in the *MXG*, and it makes an assimilation difficult, but many critics noticed the Eleatic tone of the text,[38] and it could be the trace of the existence of Eleatic refutations against mixture.

It remains however difficult to attribute with certainty such an argument to Melissus and to save some elements in a spurious argument, without any support in the whole doxography nor in the trustworthiness of the author, which has been proved deficient, especially since, as our author indicates himself[39], mixture presupposes both multiple elements and movement, whose existence Melissus already refuted. It could then seem more probable that the whole argument is spurious and was added for some reason about which we can only hypothesize: Pseudo-Aristotle could have thought that mixture escapes the two reasons that make all other kind of change impossible, i. e. the impossibility of generation and the creation of multiplicity, and he would have wanted to fill this gap by considering this particular case. Or the author might have wanted to add mixture to the list of the changes that Melissus rejected, following the cases studied in the *GC*: Melissus refutes generation, alteration and growth, he should have, according to Pseudo-Aristotle, also refuted mixture. Another possibility was suggested by C. Rapp in the first presentation of this paper: the author could have been influenced by the atomistic trilogy σχήμα/θέσις/τάξις, as described by Aristotle at the end of the *Metaphysics* A.4: we have already θέσις in the greek text, εἴδος, which could be an equivalent for σχήμα, and mixture would then play the role of τάξις. We could also consider Pseudo-Aristotle's account of change: in 977[a]3-4, just before his criticism of mixture's negation, the author claims that change can happen if the bodies are multiple since they are then *mixed* and separated:

...καὶ εἰ πολλά, συμμισγομένων καὶ διακρινομένων ἀλλήλοις.

[38] Solmsen (1960) p. 369, n. 5 attributes this argument to Zeno.
[39] 974[a]24-25. See Albertelli (1939), pp. 224-225.

> And if [beings] are many, [they would] be mixed one with another and separated.

Our author then explains the change among multiple beings by mixture: he would then have wished to refute Melissus on this precise point, and invented some argument for the Eleatic to defend.

Whether or not there was any lost argument against mixture by Melissus, Pseudo-Aristotle intervened in his presentation of the thinker. It means that he does not want to present merely what Melissus *said* but what he *should have said*. His main preoccupation is not authenticity or accuracy, but the reconstruction of a coherent and complete argumentation, whether the arguments were actually used by the author or not. This throws suspicion especially on the two other arguments, which we mentioned in our introduction, that are not present in Melissus's fragments, i.e. the one about growth and the one about equality. As we said, they would fit within the global argumentation of Melissus, but since we saw that the author is not afraid to add arguments that according to him would complete Melissus's development, we can only consider them with the greatest caution.[40]

These considerations have also strong consequences for the reception of the *MXG* altogether: the chapter on Melissus always seemed to be the most reliable and could give some credit to other accounts where the lack of fragments do not allow a strict textual parallelism.[41] It appears that even in the presentation of the philosopher's thoughts, where he is supposed to be the closest to the text, Pseudo-Aristotle could introduce personal reflections and even insert a whole argument without distinguishing it from his report on the thinker. This should increase the usual scepticism toward Pseudo-Aristotle's

[40] For a rejection of the argument on growth, see Albertelli (1939), p. 224, n. 2 and Loenen (1959), pp. 69-70.

[41] See Wiesner (1974) p. 167: "Der Melissosbericht macht auf den ersten Blick einen recht zuverlässigen Eindruck". He undermines this affirmation by showing that there are points where Pseudo-Aristotle was influenced by his own interpretation, but this does not concern the first part of the *De Melisso* and Wiesner only sees small distortions, no true fallacy.

account: for not only does he have a personal understanding of the thinkers that influences his presentation, but he can go as far as to insert an argument that could fit in the demonstration.

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