

20

Thomas Aquinas On the Mixture
of the Elements

It is customarily a point of doubt among many people how the elements exist in a mixed [body].

[Avicenna's Theory¹]

Now it seems to some that when the active and passive qualities of the elements are somehow reduced to an intermediate through alteration, the substantial forms of the elements remain. For if they do not remain, there will seem to be a kind of corruption of the elements and not a mixture.

Again, if the substantial form of a mixed body is the act of matter without presupposing the forms of simple bodies, then the simple bodies of the elements will lose their definition (*rationem*). For an element is that of which something is primarily composed, and exists in it and is indivisible according to species. But if the substantial forms [of the elements] are taken away, the mixed body will no longer be composed of simple bodies in such a way that they remain in it.

But it is impossible for this [view] to be so. For it is impossible for matter to take on diverse forms of the elements in the same way. If therefore the substantial forms of the elements are going to be preserved in a mixed body, it will be necessary for them to inhere in different parts of matter. Now it is impossible to get diverse parts of matter without quantity's being already understood in the matter. For if quantity is taken away, the indivisible substance remains, as is clear from *Physics* I [3 185^b16].² But a physical body is constituted out of matter, existing under quantity, and an advening substantial form. Therefore, the diverse parts of matter, subsisting through the forms of the elements, take on the aspect (*rationem*) of several bodies. Now it is impossible for [a physical body] to be many bodies at once. Therefore,

1 Avicenna, *Sufficientia*, I.6, (Venice, Bonetus Locatellus for Octavianus Scotus, 1508; photoreprint, Frankfurt am Main: Minerva, 1961), fol. 17va; *Metaphysica*, VIII.2 (ibid., fol. 98ra). See also Avicenna's view as reported by Averroës, *In De generatione et corruptione*, I, comm. 90, in *Aristotelis Opera cum Averrois commentariis*, 10 vols in 13 (Venice: Juntas, 1562–1574; photoreprint, Frankfurt am Main: Minerva, 1962), vol. 5, fol. 370k; *In De caelo*, III, comm. 67 (Juntas ed., vol. 5, fols. 226d–227h).

2 See also Aristotle, *Physics* I.7 189^b30–191^a22.

the four elements will not exist in each part of the mixed body. And so [if they do exist,] there will not be a true mixture but [only a mixture] according to sensation, as happens when bodies come together that are insensible because of their smallness.

Furthermore, every substantial form requires a proper disposition in matter, without which it cannot exist. Hence alteration is the way to generation and corruption. Now it is impossible for the proper disposition that is required for the form of fire and that which is required for the form of water to come together in the same thing. For fire and water are contraries in accordance with such dispositions; but it is impossible for contraries to be in exactly the same thing at once. Therefore, it is impossible that the substantial forms of fire and water should be in the same part of the mixed [body]. Therefore, if the mixed [body] should come to be while the substantial forms of the simple bodies remain, it follows that it is not a true mixture but only [a mixture] for sensation when the parts, insensible because of their smallness, are as it were placed next to one another.

[Averroës' Theory³]

But some people, wishing to avoid both these arguments, fell into an even greater inconsistency. For in order to distinguish a mixture from a corruption of the elements, they said that the substantial forms of the elements do remain in the mixed [body] somehow. But again, in order not to be compelled to say it is a mixture [only] for sensation and not in truth, they claimed that the forms of the elements do not remain in their fullness in the mixed [body], but are reduced to a certain intermediate. For they say that the forms of the elements admit of more and less and have a contrariety toward one another. But since this is plainly inconsistent with the common view and with the statements of Aristotle, who says in the *Categories* [5 3^b24 & 3^b33–34] that nothing is the contrary of substance, and that it does not admit of more and less, [therefore] they go further and say that the forms of the elements are the most imperfect inasmuch as they are closer to prime matter. Hence they are intermediate between substantial and accidental forms. And so, insofar as they approach the nature of accidental forms they can admit of more and less.

Now this position can be refuted in many ways. First, because it is entirely impossible for there to be anything intermediate between substance and accident; it would be something intermediate between affirmation and negation. For it is peculiar to an accident that it be in a subject, but to a substance that it not be in a subject. Now substantial forms are in matter, to be sure, but not in a subject. For a subject is a “this something.” A substantial form, on the other hand, is what *makes* a “this something.” But it does not presuppose it.

Again, it is ridiculous to say there is an intermediate between things that are not in one genus, as is proved in *Metaphysics* x [9 1057^a19–20 & 1057^a33–^b1]. For an intermediate and its extremes must be in the same genus. Therefore, nothing can be an intermediate between substance and accident.

Next, it is impossible for the substantial forms of the elements to admit of more and less. For every form admitting of more and less is divisible accidentally, insofar namely as a subject can participate [in] it either more or less. But there can be continuous motion with respect to what is divisible [either] by itself or accidentally, as is clear in *Physics* vi [5 234^b10–20]. For there is change of location, and increase and decrease with respect to quantity and place, which are by themselves divisible, while there is alteration with respect

3 Averroës, *In De caelo*, iii, comm. 67 (Juntas ed., vol. 5, fols. 226d–227h).

to qualities that admit of more and less, like hot and white. Therefore if the forms of the elements admit of more and less, both the generation and the corruption of the elements will be a continuous motion, which is impossible. For there is no continuous motion except in three categories, namely, quantity, quality and place, as is proved in *Physics* v [3–4 225^b7–9 & 226^a24–^b10].

Furthermore, every difference in substantial form varies the species. But [as for] what admits of more and less, what is more differs from what is less, and is in a certain way contrary to it, like more white and less white. Therefore if the form of fire admits of more and less, [then] when it is made more or made less it will vary the species and [will] not be the same form but another one. This is why the Philosopher says in *Metaphysics* viii [3 1043^b36–1044^a2] that just as among numbers the species is varied by addition and subtraction, so among substances.

[Aquinas' Own Theory]

Therefore, we must find another way whereby a true mixture will be kept intact and yet the elements not be totally corrupted but somehow remain in the mixed [body]. Thus we must consider that the active and passive qualities of the elements are contraries to one another and admit of more and less. Now from contrary qualities admitting of more and less an intermediate quality can be constituted that may have the flavor of the nature of both extremes, like pale between white and black and tepid between hot and cold. So therefore, when the perfections (*excellentiis*) of the elementary qualities are relaxed, a kind of intermediate quality is constituted out of them that is the proper quality of the mixed body, yet differs in diverse [mixed bodies] according to the diverse proportion of the mixture. And this quality is the disposition proper to the form of the mixed body, just as a simple quality [is] to the form of a simple body. Therefore, just as the extremes are found in the intermediate, which participates [in] the nature of both, so the qualities of simple bodies are found in the proper quality of a mixed body. Now of course the quality of a simple body is other than its substantial form. Nevertheless, it acts in virtue of the substantial form. Otherwise heat would only make [something] hot, but the substantial form [for which heat is the proper disposition in matter] would not be drawn into act through [heat's] power, since nothing acts outside its species.

So therefore the powers of the substantial forms of simple bodies are preserved in mixed bodies. Thus the forms of the elements are in mixed [bodies] not actually but virtually. And this is what Aristotle says in *On Generation* i [10 327^b29–31]: “Therefore they do not remain actually – that is, the elements in the mixed [body] – as body and white do. Neither is either or both of them corrupted. For their power is preserved.”