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Mašhad, Kitābhāna-i Āsitān-i Quds-i Raḍawī 300, f. 1v; Paris, Bibliothèque nationale de France, grec 1853, f. 186v

Revisiting Avicenna's Semantics of Genus and Differentia

Zhenyu Cai

Abstract

In recent years, the dominant approach to understanding Avicenna's theory of meaning is to speak in terms of a mereology of meaning. In particular, Paul Thom's mereological interpretation of Avicenna's theory of the predicables offers a mathematical model to illustrate how the meaning of definition is mereologically constructed from genus and differentia. This paper aims to revisit Avicenna's semantics of definition to examine the limitations of the mereological approach. I will highlight a few texts from chapter 7, Book V, the *Metaphysics* of the *Cure*, to show that Avicenna is aware of the possibility of developing a mereological interpretation of the meaning of the definition. As I will argue, however, he explicitly rejects this possibility and develops an alternative.

A definition, for Avicenna, is “a phrase signifying the quiddity of a thing” (*qawl dāll ‘alā māhiyyat al-šay’*) and through which one acquires the conception of quiddity.¹ Quiddity is the reality (*al-ḥaqīqa*) of a kind of things, which reveals what the kind is. It contains the common constituents shared by other kinds of things, and the proper constituents not shared with other kinds. For example, humanity contains animality shared by horseness, whereas it also contains rationality not shared by any other animal. Ideally, a definitional phrase also consists of two parts: the proximate genus and all the constitutive differentia.² A genus gives what the common constituent is while the differentia gives what the proper constituent is. This theory naturally triggers two significant problems: What are the significations of genus and differentia (the semantic problem)? Do they also signify two parts of what is signified by the definition (the compositionality problem)?

¹ In this article, Texts 1, 3, 4 and 6–11 are translated and revised based on M. Marmura's translation of *Kitāb al-Šifā': al-Ilāhiyyāt* (henceforth *The Cure*). See the *Metaphysics of 'the Healing'*, trans. M. Marmura, Brigham Young University, Provo 2005. In the footnotes, I will refer to this edition as *al-Ilāhiyyāt*, followed by the page and line numbers. Text 2 is my own translation from *Ta'liqāt*, based on S. Mousavian's edition, see *Ta'liqāt*, ed. S. Mousavian, Iranian Institute of Philosophy, Tehran 2013. Text 5 is quoted from Paul Thom's article and checked against Ṭūsī's commentary on *Pointers and Reminders, al-Išārāt wa-t-tanbihāt* (henceforth *Pointers*), see P. Thom, “Avicenna's Mereology of the Predicables”, in *Mereology in Medieval Logic and Metaphysics: Proceedings of the 21st European Symposium of Medieval Logic and Semantics*, ed. F. Amerini et al., Scuola Normale Superiore, Pisa 2019, pp. 55-74, and *al-Išārāt wa-t-tanbihāt*, ed. S. Dunyā with Ṭūsī's commentary, Dār al-Ma'ārif, al-Qāhira 1971, for the quoted statement, see p. 249.4.

² Insofar as it is related to the species, a differentia is the constitutive differentia; it is a divisive differentia insofar as it is related to the genus of the species. A genus can have its own genus. Genus X can be a proximate genus of the species if and only if there is no other genus Y of the same species such that genus X is also the genus of genus Y. For a clear account of the relation of genus and differentia in definition, see R. Strobino, “Per Se, Inseparability, Containment and Implication. Bridging the Gap between Avicenna's Theory of Demonstration and Logic of the Predicables”, *Oriens* 44 no. 3-4 (2016), pp. 187-8. See also S. Di Vincenzo, “Avicenna against Porphyry's definition of *differentia specifica*”, *Documenti e studi sulla tradizione filosofica medievale* 26 (2015), pp. 144-151.

In recent years, mereology of meaning has become a popular interpretive framework to understand Avicenna's theory of meaning. As far as I know, Daniel D. De Haan first introduced this idea to account for Avicenna's theory of the primary notions, such as 'being', 'one' and 'necessary'.³ Paul Thom later independently developed the idea into a systematic mereological account of Avicenna's theory of the predicables, focusing on Avicenna's theory of definition.⁴ Using a mathematical formulation of his mereological interpretation, Thom's model answers both the semantic problem and the compositionality problem. More recently, Damien Janos has further applied the idea of mereology to account for some metaphysical problems related to quiddity.⁵

However, as Thom himself observes, Naṣīr al-Dīn al-Ṭūsī (perhaps the most sympathetic interpreter of Avicenna's philosophy) explicitly rejects the mereological approach regarding meaning. In this paper, I partly align with Ṭūsī, aiming to bring our attention to a detailed discussion Avicenna offered in chapter 7, Book V, *al-Šifā': al-Ilāhiyyāt* (henceforth *The Cure*), where Avicenna explicitly addresses the mereological problem. However, he offers, as I will show, a non-mereological account of meaning. In what follows, I will first begin with a clarification of how Avicenna himself answers the semantic problem in chapter 3, Book V, *The Cure*. I will then introduce Thom's mereological account's core principles, followed by Ṭūsī's rejection of it. All these discussions prepare for a reading of chapter 7, Book V, in the final section where I will show Avicenna is aware of the second problem and its possible mereological answer. However, he develops an account that is explicitly non-mereological.

Section 1

In *The Cure*, Book V, chapter 3, after his lengthy discussion of quiddity and the problem of universals in chapters 1 and 2, Avicenna comes to a set of questions regarding genus and differentia, arising from his observation of the ambiguity of the meaning signified by 'body':

Text 1.

Body is spoken of as a genus of man and as the matter of man. If it is the matter of man, it is necessarily a part of his existence, and it would be impossible for that part to be predicated of the whole. Let us, then, examine the manner of difference between the body when considered as matter and when considered as a genus. For this provides us with a means for knowing what we wish to explain.

If we take **body** as a *substance* possessing *length*, *breadth*, and *depth* inasmuch as these belong to it, and on the condition that no other meaning enters into it, such that, if some other meaning—for example, *sensation*, *nutrition*, and the like—is combined with it, this [latter] meaning would be extraneous to corporeality, predicated [of] and added to it, then body would be matter.⁶ If [on the other hand] we take **body** as a *substance*, having *length*, *breadth*, and *depth*, on the condition that it is never at all opposed to some other

³ D. De Haan, "A Mereological Construal of the Primary Notions Being and Thing in Avicenna and Aquinas", *American Catholic Philosophical Quarterly* 88/2 (2014), pp. 335-60.

⁴ Thom, "Avicenna's Mereology of the Predicables" (above, n. 1), pp. 55-74.

⁵ D. Janos, *Avicenna on the Ontology of Pure Quiddity*, De Gruyter, Berlin 2020, pp. 284-300.

⁶ In this paper, I use words or phrases in bold and italics to indicate the expression's meaning, and single quotation marks when I refer to the expression itself.

condition (*bi-šarṭ allā yata'arraḍa bi-šarṭ ākhar al-battata*), and it does not necessitate that its corporeality be due to a substantiality conceived only with these dimensions, but [to] a substantiality in whatever manner it happens to be, even with a thousand meanings posited for the specificity of that substantiality and its forms, but with these dimensions being with it or in it, (so the three dimensions belong to the aggregate insofar as they belong to *body*, in general [for] any combination that is posterior to the aggregate, [namely] *a substance which has three dimensions*, if there were such combinations, these combinations would be entering in the being of that substance, but not in [the sense that] the substantiality has become complete by the dimensions [but] followed thereafter by these meanings, being external to the thing that has become complete), then the thing taken [in this manner] would be the body that is genus.⁷

Avicenna notes that the meaning signified by 'body' is spoken of in different ways. For example, 'body' can occur in a definition (e.g., 'animal is a body that has sensation and is self-moving'). In this case, its meaning is a genus, and it is predicable of the subject such that one could say 'the animal is a body'. The same expression can also occur in a statement such as 'Socrates has a body'. It signifies Socrates's matter, but, in this case, it is not predicable of the subject term because Avicenna holds the following principle of predication: If an expression E1 signifies a part of what another expression E2 signifies, then E1 cannot be predicated of E2.

One could not say 'Socrates is his body' because 'body', in this statement signifies matter, which is a part of what is signified by 'Socrates'. This observation suggests that the same expression 'body' is ambiguous in meaning, driving Avicenna to investigate how the two meanings signified differ. To examine this fully, however, we should first acquire a rough idea of Avicenna's account of the signification of expressions:

Text 2.

The expression signifies its meaning in the way that honey, which is merely seen, signifies its sweetness. Just like one eating honey apprehends its sweetness by taste and its colour by visual sense, when he later witnesses [the honey], he knows (*'alima*) that it is sweet. It is not the case that the sweetness comes to him from visual sense, but rather because what is impressed in his soul is its sweetness. Likewise, whenever one hears an expression, and apprehends a meaning with its sound, then the meaning is impressed in the soul together with the expression. So whenever that meaning occurs in the mind, he apprehends the expression; and whenever he hears the expression, he apprehends the meaning. This is not because the expression is the meaning, but rather leads to the apprehension of [the meaning].⁸

An expression E signifies a meaning/intention partly because E makes a speaker aware of this intention, be it estimative or intellectual.⁹ This process is just like how a sensory affection

⁷ Avicenna, *al-Ilāhiyyāt*, p. 163.3-16 Marmura.

⁸ Avicenna, *Ta'liqāt*, p. 485.10-12, p. 486.1-3 Mousavian.

⁹ In Text 2, Avicenna does not make explicit which kind of intention he has in mind. The honey example is typically used to illustrate estimation, but he also uses *'alima* (line 4) to characterize how one grasps "sweetness". A more accurate answer can be found in *Kitāb al-Nağāt*, where Avicenna directly claims that an expression can

leads to an estimative intention. This account of signification seems unable to guarantee the objectivity of language: why can an expression make a group of people objectively pay attention to the same intention? For Avicenna, the reason is that what an expression makes one aware of is also determined by the linguistic conventions that this group of people share.¹⁰ This project is similar to the mentalist's theories in that it reduces the intentionality of expressions to the intentionality of mental contents.¹¹

Given Avicenna's account, what an expression means is primarily determined by the intention of mental consideration to which it connects in a linguistic tradition. Therefore, the two readings of 'body' reflect two different considerations regarding intentions. Nevertheless, intentions are nothing but things insofar as they are intended in certain ways. Take 'body' qua matter as an example: in this intention, one pays attention to an entity, how it is internally structured (a substance essentially possessing length, breadth, and depth), and whether the way it is internally structured is determinate and complete (the "if" condition). This consideration is also in a "universal" way. It pays attention to "any" thing in such and such a way, not "this" or "that" thing.

In this framework, 'body' qua matter directs one to consider a substance whose quiddity is determinate and exhausted by corporeality. Avicenna identifies such an entity as matter because it, in his hylomorphism, can serve as matter for a natural hylomorphic compound.¹² Thus, according to Avicenna's principle of predication, namely that the part cannot be predicated of the whole, we have a clear reason why 'body' read in this way is not predicable. Moreover, because the considered substance has complete quiddity, if one wants to attribute any other intended determination to this entity, the added meaning will be accidental.

In the case of 'body' qua genus, one also pays attention to an entity, how it is essentially structured, and whether the way it is essentially structured is complete (the "if" condition). Unlike 'body' qua matter, what is concerned is an essentially incomplete entity but with some determinate essential components. In other words, one considers something whose quiddity, though having corporeality, is still open to further determination. Therefore, there is still room for an essential meaning to be added to *body* taken in the second sense.

The double reading strategy of an expression does not merely apply to matter/genus but also to form/differentia:

signify either estimative or intellectual content; see Avicenna, *Kitāb an-Nağāt*, ed. M. Dānešpažūh, Entešārāt-e Dānešgāh, Tehrān 1985, p. 18.1-2.

¹⁰ For Avicenna's account of the role of the linguistic convention, see Avicenna, *al-Šifā', al-Mantiq, al-'Ibāra*, ed. M. al-Ḥudayrī, al-Hay'a al-mišriyya al-'amma li-t-ta'lif wa-n-našr, Cairo 1970, p. 3.10-17, p. 4.1-7.

¹¹ Following J. Speaks, I use "mentalist theories" to refer to the approach that the intentionality of expressions is analyzed through the intentionality of mental acts, representations, or mental contents. Paul Grice's project can be viewed as a typical mentalist's theory in the contemporary theory of meaning. See Part 3.1 from "Theories of Meaning", *The Stanford Encyclopedia of Philosophy*, ed. E. Zalta, Winter 2019 Edition, <https://plato.stanford.edu/archives/win2019/entries/meaning/> (consulted 2023-01-16).

¹² For a detailed account of 'body' qua matter in light of Avicenna's physics, see J. McGinnis, "Logic and Science: The Role of Genus and Difference in Avicenna's Logic, Science and Natural Philosophy", *Documenti e Studi Sulla Tradizione Filosofica Medievale* 18 (2007), pp. 176-7. See also F. Benevich, *Essentialität und Notwendigkeit: Avicenna und die Aristotelische Tradition*, Brill, Leiden 2018, pp. 147-8 (Islamic Philosophy, Theology, and Science: Text and Studies, 107).

Text 3.

Similarly, understand the states with respect to the *sentient* and the *rational*. For, if the *sentient* is taken to be a *body* or a *thing* that has *sensation*, on condition that there is no other addition [to this], then it would not be a differentia, even though it is part of man. In a similar way, animal is not predicated of it. If [on the other hand] it is taken to be a *body* or a *thing* to which, in which, and with which are allowed whatever forms or conditions, so long as these contain *sensation*, then it would constitute a differentia, and animal would be predicated of it.¹³

According to Text 3, what Avicenna proposes is a framework in which both genus and differentia can be read in two ways: just as one can consider 'body' in two senses, one can also read 'the rational' or 'the sentient' in two different senses: differentia or a part of the hylomorphic whole. In this framework, the genus and the differentia signify in the same way: they both signify something essentially indeterminate, though possessing some determinate essential components. Just as 'body' qua genus differs from 'body' qua matter in meaning, 'the rational' qua differentia also differs from 'the rational' qua form in meaning. This further drives one to consider the problem of compositionality: if 'body' qua matter and 'the rational' qua form constitute two parts of a hylomorphic whole, could we also conceive the meaning of a genus and the meaning of a differentia as two parts of the meaning of a species?

Section 2

Avicenna appears to have an obvious answer to the compositionality problem. In *The Cure*, V6, he claims the following:

Text 4.

We say, moreover, that genus is predicated of species as part of its quiddity, and of differentia as an implicate (*lāzim*) of it, not a part of its quiddity. An example of this is *animal*. It is predicated of the *human* as part of its quiddity and on the *rational* as an implicate of it, not as being part of its quiddity.¹⁴

In *Pointers*, Avicenna reiterates the same point. This leads to Ṭūsī's puzzle:

Text 5.

And it may be said to him 'part of the quiddity' is metaphorical, for the part strictly so-called is not predicated of its whole univocally, while the essential is predicated of the quiddity; indeed, the expression signifying it is a part of its definition, and therefore it resembles a part; therefore, he is forced call it 'part' for want of an expression for it.¹⁵

Ṭūsī points out that reading genus and differentia as parts of quiddity goes against Avicenna's principle of predication. To solve this problem, Ṭūsī suggests preserving the principle of predication and treating 'part of quiddity' as metaphorical. He also explains why Avicenna tends to see genus or differentia as a 'part'. Because genus and differentia are

¹³ Avicenna, *al-Ilāhiyyāt*, p. 164.12-15 Marmura.

¹⁴ Avicenna, *al-Ilāhiyyāt*, p. 177.11-13 Marmura.

¹⁵ Thom, "Avicenna's Mereology of the Predicables" (above, n. 1), p. 64; Avicenna, *al-Iṣārāt wa-t-tanbīhāt*, p. 201 Dunyā.

parts of a definitional phrase, it might be this linguistic feature that forces Avicenna to talk metaphorically about a part–whole relation at the level of meaning.

Thom has recently questioned Ṭūsī's suggestion. He argues that a mathematical formulation of some of Avicenna's fundamental claims regarding the significations of genus, differentia, and species can show that Avicenna has a mereology of meaning. In Thom's formulation, he accepts the following:¹⁶

T1: Genus signifies a given quiddity, which is a constituent of the quiddity signified by species.

T2: Constitutive differentia signifies a denominative part of the quiddity signified by species.

In Thom's framework, 'body' qua genus signifies corporeality and 'human' qua species signifies humanity. Because corporeality is part of humanity, the signification of 'body' qua genus is, therefore, a part of the signification of 'human' qua species. Moreover, there is a clear distinction between genus and differentia in the sense that genus signifies a determinate quiddity, but, differentia, as a denominative expression, signifies something indeterminate as to its quiddity.

However, if my reading of 'body' qua genus is correct, its signification is not corporeality but any quiddity containing corporeality. Corporeality is complete because it contains all the essential determinations it should have, whereas 'body' qua genus is not. Moreover, in Text 3, Avicenna has read genus and differentia in the same way: both signify an essentially indeterminate whole. It is, then, not clear in what sense an indeterminate whole can constitute a "part" of the determinate quiddity. What motivates Ṭūsī's puzzle is a tension within Avicenna's framework: on the one hand, Avicenna seems to anticipate a mereology of meanings based on mereology of quiddity; on the other hand, he holds the principle of predication.

Section 3

Avicenna himself is aware of this problem:

Text 6.

Someone may say: definition, as the agreement made among the people of the art, is composed of genus and differentia. Each of the two is separate from the other; their combination (*mağmū'uhumā*) is the two parts of the definition (*ğuz'ā l-ḥadd*). [Now,] definition is nothing other than the quiddity of the defined [Claim one]. As such, the relation of the meanings signified by the genus and differentia to the nature of the species is the same as their relation in definition to the defined (*al-mahdūd*) [Claim two]. And, just as genus and differentia are the two parts of the definition, likewise their two meanings constitute the two parts of the thing defined [Claim three]. If this, then, is the case, it would be incorrect to predicate the nature of the genus of the nature of the species, because it is part of it.¹⁷

¹⁶ Thom, "Avicenna's Mereology of the Predicables" (above, n. 1), pp. 62-3.

¹⁷ Avicenna, *al-Ilāhiyyāt*, p. 180.10-15 Marmura.

Here Avicenna proposes a possible argument against his semantic theory of genus and differentia. This argument focuses on two levels: the linguistic level and the semantic level. On the linguistic level, we have a definitional phrase and its two parts, genus and differentia; on the semantic level, we have the signification of definition: the meaning of genus and the meaning of differentia. According to Avicenna's reconstruction, the objector holds that quiddity "is" definition. Given that the objector's strategy is to list a few of Avicenna's central claims and argue for the incoherence of holding them together, I propose to read "is" in claim one as an abbreviation of "signifies"; thus, we could read this claim as an emphasis of a common Avicennian position: definition signifies quiddity. The objector thinks that, by holding claim one, Avicenna might suggest that the relationship between the nature of species and the meanings of genus and differentia is the same as the relationship between the two, in the definition and the defined. This conclusion is baffling: how is the nature of species related to the defined? Are both on the side of meaning?

Avicenna further clarifies what the objector intends to mean by claim 2: the claim suggests that the relationship of the meanings of genus and differentia to the defined is similar to the relation of genus and differentia to the definition. I suggest viewing this clarification as the key to understanding the whole argument. We could accept claim one as a pointer toward Avicenna's position that quiddity is signified by definition; meanwhile, we use claim 3 to clarify claim 2. Thus, we could develop a very concise argument against Avicenna's claim in V6: If Avicenna believes how the meanings of genus and differentia are related to the meaning of species is the same as how the genus and differentia are related to the definition, then the meanings of genus and differentia are parts of the meaning of species. However, if an expression E1 signifies a part of what another expression E2 signifies, then E1 cannot be predicated of E2 (the principle of predication). Therefore, genus and differentia are not predicable of species. Avicenna thus contradicts himself because he also holds the opposite view.

Avicenna's strategy to solve this difficulty is to reject the idea that the part-whole relation between expressions corresponds to a part-whole relation between their meanings:

Text 7.

We say: If we give a definition and say, for example, 'Man is a rational animal', our intention by this is not that *man* is the combination of *animal* and *rational* (*mağmū'u l-ḥayawāni wa-l-nāṭiq*).¹⁸

Or, more explicitly,

Text 8.

And, here, if there is undoubtedly a kind of multiplicity (*katra*), it is a multiplicity not in the way that it is [composed] of parts (*al-ağzā*).¹⁹

If meanings are not combined in a part-whole relation, how are they unified? What is Avicenna's solution to the unity of the meanings of genus and differentia?

¹⁸ Avicenna, *al-Ilāhiyyāt*, p. 180.17-18 Marmura.

¹⁹ Avicenna, *al-Ilāhiyyāt*, p. 183.17-18 Marmura.

Text 9.

Rather, our intention (*murādunā*) by that is that [*man* is] the *animal* which is that *animal* being *rational*—indeed, the one that is by itself *rational*—as though *animal* in-itself is something whose existence is not determinate (*yataḥaṣṣalu*) in the manner we discussed earlier. If this *animal* is *rational*, such that the one of which we have said is: it is the one possessing an *apprehending soul* in general, which is not determinate; in other words, as something having *soul*, it has become determinate through its state that its *soul* is *sensitive* and *rational*. This, then, is a determination of its being in possession of an apprehending soul. Thus, it is not the case that a *body* having an *apprehending soul* is one thing and its being in possession of a *rational soul* is something external added to it. Rather, this thing which is an *animal* is the *body* possessing an *apprehending soul*. Its *soul* being *apprehending* is something indefinite (*amr mubham*). But that which is in actuality in existence cannot at all be indefinite but is determinate in [existence]. This underdetermination (*al-ibhām*) would only be in the mind (*fī d-dihn*), since the true nature of the *apprehending soul* is problematic (*muṣkil*) for [the mind] until it is differentiated (*yufaṣṣal*), then it is said [that it is] *apprehending* through *sensation*, *imagination*, and *rationality*.²⁰

In Avicenna’s proposal, we find, first, that he suggests reading the meaning of genus and differentia “in the manner we discussed earlier,” which refers to his clarification of ‘animal’ qua genus and ‘the rational’ qua differentia in V3, where both ‘animal’ and ‘the rational’ signify an indeterminate whole. Second, Avicenna conceives the unification of genus and differentia as a mental process in which indeterminate meaning becomes determinate.

He takes ‘animal’ (genus) and ‘the rational’ (differentia) as examples. According to Avicenna’s early discussion in Texts 1 and 2, we already know that ‘animal’, as a genus, should signify “*that which essentially has animality*”; likewise, ‘the rational’, as a differentia, should signify “*that which essentially has rationality*”. Both meanings are indeterminate, but in what sense? Let us consider a scenario in which I try to see something in the distance. Because the thing stands far from me, I cannot see it clearly, though I only notice that it is an extended object in space, having length, breadth, and depth. At this moment, I will consider this extended object as something indeterminate for me in the sense that I am not sure what it really is. This kind of indeterminacy is, therefore, built upon how I cognize the object. It is cognitive indeterminacy. The indeterminacy of genus and differentia regarding their meaning can also be interpreted as cognitive indeterminacy. When I read ‘animal’ as a genus, I am aware of something having an apprehending soul, but I am still unsure what this “something”, as the attended object in my awareness, really is. Back to our example, the extended thing I saw might be a tree or a man. To figure out what it really is, I go toward it and find that it is a tree. In this example, I experienced three stages: in the first stage, I saw something extended without knowing what it really is; in the second stage, I did something to clarify this indeterminate object—namely, that I went to check what it really is; and, finally, in the third stage, I am aware of the fact that the extended object I saw a few moments ago is actually a tree.

The three stages in this example might also shed light upon how, in Avicenna’s understanding, one “combines” genus and differentia: in the first stage, when I read ‘animal’ as a genus, I

²⁰ Avicenna, *al-Ilāhiyyāt*, p. 180.18, p. 181.1-9 Marmura.

attend to something indeterminate but having the apprehending soul; in the second stage, I hope for a bit of clarification as to what this thing really is, therefore adding differentia 'the rational' to 'animal'; finally, in the third stage, thanks to the added clarification, I realize that the indeterminate object signified by 'animal' is actually the animal that has rationality. In what sense is the adding of the differentia a clarification of the first stage? I propose to understand this kind of clarification as an awareness of identity under different descriptions: when I hear the expression 'rational' is added to clarify the expression 'animal', I am aware that the thing described by 'animal' is the same as a thing described by 'rational'. Thus, my initial awareness of the indeterminate thing becomes more determinate in the sense that I am aware that the same thing has another determinate aspect.

In my initial example, by knowing the identity between the extended object and the object being a tree, the cognitive indeterminacy in my initial awareness of the extended object is further specified. In this example, we have three kinds of awareness: the initial awareness of the extended object, the awareness of the object being a tree, and finally a "combination" of the two, not literally piecing two kinds of awareness together, but a new awareness in which one finds the two kinds of awareness are about the same thing with different aspects. Likewise, for genus and differentia, each of them makes us aware of an indeterminate and intellectual "vision," but, in the "combination" of the two visions, they are not literally combined as two bricks combined to form a bigger brick. Rather, the combination means we are aware the two visions are about the same thing under different aspects.

Avicenna explicitly holds that, in this unusual combination, the unity of genus and differentia is a unity of determination and that this combination is only in the soul:

Text 10.

And, here, if there is undoubtedly a kind of multiplicity, it is a multiplicity not in the way that it is [composed] of parts, but a multiplicity in the way that [it is composed of] something indeterminate and something determinate. For the thing determinate in itself could be considered as indeterminate in the mind; therefore, there is otherness (*gayriyya*). But, if it becomes determinate, it would not be some other thing except through the consideration which has been mentioned [and] which belongs solely to the intellect. For determination does not change it but verifies it (*yuhāqqiqubū*). This is how one must intellectually apprehend unity in genus and differentia.²¹

According to Avicenna, the indeterminate things, signified by genus or differentia, only exist in the soul because the indeterminacy depends on the limitation of our cognitive perspectives. How concrete things exist in the world does not depend on how they appear to us in a certain perspective. They are always determinate (Text 9) in the sense that they are what they are. In the example I just discussed, because the tree is at a distance, it only appears as something extended in my perspective. However, in the world, what exists is a determinate tree, and there is no indeterminate object called 'something extended'. Based on this distinction between the determinacy of the concrete being and the indeterminacy of the mental being, Avicenna further points out that the mental process from the indeterminate things (the meaning of genus or differentia) to a more determinate

²¹ Avicenna, *al-Ilāhiyyāt*, p. 183.17-18, p. 184.1-4 Marmura.

thing does not indicate a change in the world. This process is only an affirmation of the same thing.

Back to our example, when I realized that the extended object is a tree, there seems to have been a change from “the extended object” to “the tree” because “the extended object” is other than “the tree” in the sense that, when I at first attended to this extended object, I did not know it was a tree. However, this otherness, according to Avicenna, is due only to the difference of perspectives. Because I see the same tree from different perspectives, the same tree appears in its different aspects. If there is a change, the change is only in the mind as a change of perspectives or a change in the way in which a thing appears to me. The otherness and change, shown in the combination of genus and differentia, only reflect this kind of mental process. However, this mental process does not correspond to any eternal process. The perfect, determinate tree is already there. It is not the case that, when I saw an extended object, there was only an extended object in the world, but that it further became a tree merely because I found the previously extended object was a tree. As Avicenna emphasizes, the operation of determination in our mind does not reflect a change but an affirmation: in my interpretation, this means, in an awareness of the sameness under different descriptions, we affirmed what is signified by genus is the same as a thing signified by differentia.

Then, if unified in the way mentioned above, why are genus and differentia not unified by the part–whole relation? Avicenna has a reason:

Text 11.

In all these divisions, no one thing is identical with the thing it unites with; the aggregate [of the two] is not identical with [each] of [the] parts, and neither one is at all predicated univocally of the other.²²

In V7, Avicenna lists four types of unification: form and matter; different independent entities unified through composition, transformation, or mixture; entities that cannot subsist in themselves but depend on entities that can subsist in themselves (e.g., body and whiteness); and the multiplicity of determination.²³ Avicenna thinks the unification of genus and species belongs to the fourth type, not the former three. He summarizes the former three types of unification as part–whole unification (Text 8). In Text 11, he points out why the unification of genus and differentia cannot belong to the former three: in part–whole unification, first, parts are not identical with one another nor identical with the whole. Second, parts are not predicated of each other, nor predicated of the whole.

For example, suppose Brick C is composed of two distinct bricks (Brick A and Brick B). Brick C cannot be the same as Brick A or Brick B.

And:

‘Brick A’ or ‘Brick B’ cannot be predicated of ‘Brick C’. Nor can they be predicated of each other. However, when unified through illustration, we affirm the identity between the things under different descriptions:

The thing signified by ‘animal’ is a thing signified by ‘rational’.

They can also be predicated of each other:

²² Avicenna, *al-Ilāhiyyāt*, p. 182.17–18 Marmura.

²³ Avicenna, *al-Ilāhiyyāt*, p. 182.10–16 Marmura.

'The animal is rational.'

'The rational is an animal.'

'Human is rational/human is an animal.'

In addition, the meaning of genus or differentia is grasped from different perspectives. We cannot literally piece two perspectives together to form a new perspective. I might be able to hold two perspectives together: in the previous example, when seeing the tree in front of me, I can memorize the extended object at the same time. Concerning genus and differentia, when reading a phrase such as 'rational animal', I can first understand the meaning of 'rational' on its own, then the 'animal' on its own, as if I understand each of the two words separately. Having grasped their meanings separately, I continue to "combine" them into a unity. If they are literally "combined," the new perspective should contain the indeterminacy within the old perspectives. However, the generation of the third, new perspective precisely means eliminating the indeterminacy contained in the two previous perspectives. Therefore, the two meanings are not unified by a literal combination; rather, they are unified in the sense that they lead to a third meaning through mutual illustration.

The nonliteral unification leaves room for Avicenna to point out an ambiguity of definition: a definition can mean the thing defined. This is the meaning we grasp when we read a definitional phrase in the unity of mutual illustration. A definition can also mean a kind of multiplicity of meanings in the sense that, when we read each word of a definitional phrase separately, concerning their own meanings, we still group them together, perhaps in virtue of a grammatical unity.²⁴ This ambiguity resembles a use-mention distinction of definition.

When using a definition, say 'the rational animal', I read its grammatical parts in mutual illustration. Hence the definition signifies the thing defined, namely 'the animal which possesses the rational soul'. I can also mention 'the rational animal'; for example, I can say that 'the rational animal' contains the word 'rational'. In this case, I pay attention to the linguistic formula, noting that three words are unified in certain grammatical rules. However, Avicenna's point is not to contrast the use of a definition with the mention of the linguistic formula of the definition. It is more accurate to say that he holds that, in addition to using a definition, we can mention a set of meanings by isolating each linguistic part of a definitional phrase and considering each part with respect to its separate meaning. For example, when considering the phrase 'the rational animal', I do not focus on the whole meaning of this phrase. Instead, I consider the meaning of 'the', the meaning of 'rational' and the meaning of 'animal' separately such that I form a set in my mind, say set A, which is a set containing three meanings:

A = {the meaning of 'the', the meaning of 'rational', the meaning of 'animal'}

I group them together because I generate them through three words grammatically united in a phrase. Let us call this kind of operation or consideration <>-consideration, and use '<>' to bracket a phrase or sentence to indicate the mention of the meanings of this linguistic formula insofar as reading its linguistic parts separately. Thus, just like we could say that 'the rational animal' contains the word 'rational', we could also say <the rational animal> contains the meaning of 'rational'. Therefore, when taking a definitional phrase signifying <the rational animal>, we are allowed to talk about a part-whole relation between the meaning of a definitional phrase and the meanings of its constituents. However, as Avicenna emphasizes, in this case, just as we could not say that the word 'rational' is predicated of the phrase 'the

²⁴ Avicenna, *al-Ilāhiyyāt*, p. 184.12-17, p. 185.1-7 Marmura.

rational animal’, likewise, we could not say the meaning of ‘rational’ is predicated of <the rational animal> because the meaning of ‘rational’ is a part of <the rational animal>.

Concluding Remarks

Avicenna accepts the following:

C1: The signification of genus is a part of the meaning signified by species.

C2: If E1 signifies a part of E2’s signification, then E1 cannot be predicated of E2.

In V7, strictly speaking, Avicenna rejects C1 as an accurate account of how the meanings of genus and differentia connect to the meaning of species. When definition means the thing defined, it has the same meaning as the meaning of species, but the signification of genus is not a part of the meaning of the definition—and hence not a part of the meaning of species. When definition means the group of meanings generated in the <>-consideration, the signification of genus can be a part of the meaning of the definition; however, the meaning of definition taken in this sense is not the meaning of species. Therefore, the meaning of genus is still not a part of the meaning of species.

Ṭūsī has a clear grasp of the tension between C1 and C2. If my interpretation of V7 is correct, it will partly support Ṭūsī’s interpretation. The mutual illustration reading of definition explains in what sense the meanings of genus or differentia cannot be parts of the meaning of definition. The <>-consideration reading of definition illustrates in what sense the “grammatical features” of a definitional phrase might still “force” Avicenna to talk about part–whole relations between genus or differentia-meaning and definition-meaning.

Following Ṭūsī, I recommend an analogical reading of C1. Strictly speaking, C1 does not reflect the real way in which the meanings of genus and differentia unify in our mind. However, if this is the case, why does Avicenna still hold C1, even in an analogical way? More importantly, Thom has forcefully shown that his mereological model can explain the logical relations among genus, differentia, and species. Why, then, does the model still work if it is just based on an analogical conception of how the three key notions are connected? One way to solve this problem is to suggest a gap between *The Cure* and *Pointers*. In other words, one might think that Avicenna does not hold C1 in *The Cure*, whereas, in *Pointers*, he drops his view in V7 and accepts C1. However, this is not the case because Avicenna also explicitly holds C1 in *The Cure* (Text 4).

To reply to this worry, I propose a middle way to evaluate the debate between Ṭūsī and Thom. Ṭūsī is right to point out that C1 can hardly be the real picture of how the meanings of genus and differentia connect; however, Thom is right to point out that C1 is still helpful in Avicenna’s logical analysis. The problem is that we cannot infer from the thesis that C1 is analogical to the conclusion that C1 cannot be beneficial in logical analysis because we can treat C1 and the whole mereological account developed from C1 as a heuristic tool in Avicenna’s logical analysis. Just like the possible world semantics is not necessarily committed to a realism interpretation of the possible world, the mereological account of the semantics of definition is not necessarily committed to a realism interpretation of the mereology of meanings. Avicenna gives us his independent reasons in the *Cure* V7 that, metaphysically speaking, the meanings of genus and differentia, in our mind, are not unified in a part–whole relation.