NAZARİYAT

An Example of the Relationship between Metaphysics and Logic: Genus (*Jins*) and Differentia (*Fasl*) as the Parts of Quiddity (*Mahiyya*) in Ibn Sina and Fakhr al-Din al-Razi's Thought*

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Abstract: Beyond being a tool of science, logic is also a specific discipline in Islamic studies that reflects scholars' metaphysical and ontological assumptions. One feature that best reflects the perceptions of scholars who use logic as a scientific tool is the parallelism between matter-form (*mādda-ṣūra*) and genus-differentia (*jins-faṣl*). Genus-differentia are the reflections of the Avicennian matter-form theory in epistemology. In this article, I examine how Ibn Sīnā approached the relationship between genus-differentia and matter-form by accepting the matter-form ontology. Moreover, I analyze how Fakhr al-Dīn al-Rāzī, by applying an atomic ontology, explained genus-differentia in contrast to the matter-form theory.

Keywords: Genus, Differentia, Matter, Form, Logic, Ontology, Metaphysics

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Introduction

The science of logic is divided into two sections: conceptualization (*taṣawwur*) and affirmation (*taṣdīq*). Conceptualization informs one on how to arrive at concepts using definition (*ḥadd*), and affirmation clarifies how to achieve assent using syllogism (*qiyās*). The definition is also divided into two parts, one is the complete definition (*al-ḥadd al-tāmm*), and the second is the incomplete definition (*al-ḥadd al-nāqiṣ*). The most perfect form of the definition is the complete definition, and the complete definition corresponds to the quiddity (*māhiyya*) of what is being defined. The complete definition comes from the combination of the proximate genus and the proximate differentia. The subject of this article is how the elements of definition, genus, and differentia come together to constitute *māhiyya*. This article comparatively discusses the emergence of quiddity between the philosopher Ibn Sīnā (d. 428/1036), who adopted the matter-form ontology, and the theologian Fakhr al-Dīn al-Rāzī (d. 606/1210), who followed the atomic ontology. For Ibn Sīnā, genus and differentia are the epistemological equivalents of matter and form on the ontological plane. In this case, the question of how Fakhr al-Dīn al-Rāzī addresses genus and differentia on an ontological basis arises. This study aims to reveal the relationship between logic and metaphysics with respect to the parallelism Ibn Sīnā built and al-Rāzī rejected. In this context, I will explain in the first chapter how Ibn Sīnā established the parallelism between genus-differentia and matter-form by defining substance (*jism*). In the second chapter, I will clarify how Fakhr al-Dīn al-Rāzī established the relationship between genus and differentia using the definition of human, although he did not adopt the assumption of matter-form. Therefore, I will shed light on the impact scholars' metaphysical and ontological assumptions had on their logical perspectives, thus revealing the connection between logic and metaphysics.

The Relationship Between Matter-Form and Genus-Differentia

To understand the parallelism established between matter-form and genus-differentia, one should first look at how Ibn Sīnā describes genus and differentia. In line with this he describes genus as "The universal predicated for items differing in reality (*ḥaqīqa*) in answer to the question 'what a thing is.'"[1] On the other hand, differentia is "That which is predicated for many items possessing the same reality

1 Abū ʿAlī Ibn Sīnā, *el-İşârât ve't-tenbîhât* (Istanbul: Litera, 2013), 15.

(*ḥaqīqa*) in answer to the question, 'What sort of thing is it?'" The state of being as an answer to "what a thing is" is used in the genus' description because genus is included in the definition as a constitutive part of a thing's quiddity and is given in response to the question of what quiddity a thing possesses. The variation in species is what is meant by "differing in reality (*ḥaqīqa*)." The statement for describing differentia is "In order to answer 'what *sort* of a thing it is'"; this indicates it occurs when answering an estimating question such as "What are the universals under that genus?" when the genus is already known. Ibn Sīnā expressed this by saying, "Genus is the common constitutive part of the thing, and differentiae are its distinctive constitutive parts."[2] This can be understood from the following example. When the question "What are they?" is asked for humans and horses, the common constitutive part should be answered as animal (*ḥayawān*). In other words, animal is the genus of both the human and the horse and is common between the two. Meanwhile, when the question "What are they?" is asked for humans and horses separately (i.e., "What are the universals under that genus?"), the answer should be rational (*nāṭiq*) for humans and neighing for horses, as these are distinctive constitutive parts for each of them. These are the differentiae of the human and the horse.

According to Ibn Sīnā, genus and differentia are accidents that settle in the soul. However, this does not mean genus and differentia have no counterparts in the external world. We mentioned above that genus and differentia are parts of quiddity. When considering that something's quiddity is used for both the truth of that thing in the outside world and its mental equivalent, the same can be understood to apply to genus and differentia. Accordingly, as we will explain in more detail, matter and form as parts of the quiddity in the outside world are transformed into genus and differentia on the epistemological plane. After all, genus and differentia constitute the definition of something. The definition aims to signify something's quiddity through words.[3] Therefore, genus and differentia are the statuses of that thing's quiddity in the mind, and quiddity becomes defined when they are expressed.

According to Ibn Sīnā, every actual (*bi-l'fiʿl*) existing object is composed of matter and form because objects are also the potential they have in terms of being able to exist *in situ* under the object. However, in terms of an object having form, objects have actuality. In other words, matter provides the body with the state of

2 Ibn Sīnā, 16.

3 Abū ʿAlī Ibn Sīnā, *Kitâbu'ş-Şifâ: Medhal*, 3rd ed. (Istanbul: Litera, 2017), 41.

having potential, and form gives the state of having actuality. The definition of matter is "a thing upon which an existent's capable potentiality is based."[4] Form is "a thing upon which an existent's coming into actuality is based."[5] According to Ibn Sīnā, matter additionally cannot exist without form, and form cannot exist without matter.[6] This is because matter without form remains potential and cannot become actual, and likewise without the possibility of actual matter, form cannot find a basis for coming to be made actual.

Ibn Sīnā lists the possibilities of what kinds of relationships exist between matter and form, and states one to be preferable among the possibilities. Accordingly, the following possibilities exist in this relationship:

(a) Relativity *(iḍāfa)*. We can understand this relationship through the relationship between father and son. There is relativity between father and son. Either of the two objects in a relativity, relationship cannot be considered without the other. In other words, a son cannot be imagined without a father or a father without a son. Still, the possibility exists to think about the forms many things have without matter. For this reason, Ibn Sīnā eliminates this as a possibility.

(b) Cause and effect (*'illa-ma'lūl*).[7] Ibn Sīnā stated this possibility to not be practical because it leads to a vicious cycle due to the existence of the effect depending on the presence of cause. When considering both matter and form, each would have to be both cause and effect as the formation of one depends on the other. Hence, this is impossible.

(c) Unity of Existence (*mutakāfi' al-wujūd*). A relationship exists between matter and form where the existence of matter and form is equal, and one does not cause or affect the other. In addition to this, when one exists the other also exists, and when one does not exist the other also does not exist either. Because no cause and effect relation exists between two such things, the existence of one is not the reason for the existence of the other. When one is not a reason for another's existence, it does not become a reason for the other's absence. In this case, there is only a co-existence between their occurrence and absence. Such a relationship between two things can occur in three ways:

4 al-Sayyid al-Sharīf al-Jurjānī, *al-Taʿrīfāt* (Bayrut: Dār al-kutub al-ʿilmiyya, 1983), 195.

5 Abū ʿAlī Ibn Sīnā, *Kitâbu'ş-Şifâ: Metafizik* (Istanbul: Litera, 2017), 135.

6 Ibn Sīnā, 75.

7 Cause is "the thing on which the other's existence depends, what is external to it, and what has an effect on it." (Jurjānī, *Taʿrîfât*, 154) The effect is whose existence depends on the cause and what is affected by the cause.

1. With the disappearance of one of these two things, a third thing disappears.
2. The existence and absence of these two things are directly related to a third thing.
3. The existence and absence of these two things are not directly linked to a third thing but to each other. Again, this possibility can occur in three ways:
    - Both matter and form are interconnected because of their quiddity. However, in this case, matter and form must be stated as being relative, yet this was eliminated in option (a).
    - This could be due to the existence of these two things. Such a thing would be a necessary existence. This possibility is also wrong since both cannot have a necessary existence together.
    - A third thing exists. Both matter and form are possible (*mumkin*) due to their essence (*li-dhātih*), but they become necessary through a third thing.

Ibn Sīnā asserts that the last option is correct; namely, matter and form are possible in their essence (*li-dhātih*) but acquire necessity through a third thing. Accordingly, either matter or form is closer to the third thing and provides the necessity of the other as a mediatory cause (*ʿilla mutawassiṭa*). Ibn Sīnā argues whether this mediatory cause is matter or form and concludes it to be form because matter is a preparedness (*istiʿdād*) and potential. Potential cannot possibly become a cause for the actual. In short, according to Ibn Sīnā, we can summarize the relationship between matter and form as follows: a third thing exists that makes form and matter necessary. Although equality is present between matter and form, form becomes a mediatory cause between the third thing and matter, and matter becomes its effect. This relationship can be made more understandable through the relationship of kinship. For example, suppose that Mehmet is the father of Ali and Ali is the father of Muhammad. Mehmet is the cause of both Ali's and Muhammad's coming into existence. While Mehmet primarily influences Ali, Ali resembles a mediatory cause between Mehmet and Muhammad and an immediate cause for Muhammad because no one else exists between them. Matter and form can be thought of in this way. Ali is the form, Muhammad is the matter, and Mehmet is the third element that affects both.

As for the relationship between genus and differentia, having already mentioned their definitions above, we can directly address here how these two come together to form species and how they relate.

Ibn Sīnā says that two things can come together and transform into something in four ways:[8]

a. Something akin to the combination of matter and form as described above. While the matter has its own potential, it gains actuality as it comes together with form, and the unity of these two is neither strictly matter nor form.
b. Something possibly in the form of a unity which has no need for the other to exist, such as matter and form. Here, the two things come together and change into something new with a change of state or mixture. For example, water and yogurt come together to form buttermilk.
c. As is the case with substance and accident, something that does not exist by itself can be in the form of the unity that exists in relation to what can exist by itself and the unity it forms in this way. For example, we cannot imagine that redness exists in the outside world without being associated with an object.
d. Perhaps two things come together, and the ambiguous thing becomes reified (*taʿayyun*). While two things come together here, they do not produce another thing, because becoming reified does not mean becoming altered; on the contrary, it means to become more real and concrete. Ibn Sīnā stated genus and differentia to come together this way. While genus is an ambiguous thing, it becomes reified through the differentia associated with it and thus becomes realized (*taḥaqquq*). According to this, while animal is an ambiguous thing, it becomes reified through the addition of the differentia of "rational" on itself, which becomes realized as a human being.

According to Ibn Sīnā, genus and differentia are included in the unions composed from the combination of matter and form. Genus originates from the matter a thing has and its form from the differentia. However, Ibn Sīnā emphasizes genus and differentia to not be matter or form in terms of existence. This is because the distinction between genus and differentia is mental, whereas the distinction between matter and form is external. The fact that genus and differentia originate from matter and form means that what is matter in the external world corresponds to genus in the mind, and that which is form in the external world corresponds to differentia in the mind. In short, what is matter on the ontological level in this

8 Ibn Sīnā, *Metafizik*, 211–12.

system corresponds to genus on the epistemological plane, and what is the form on the ontological plane in this system corresponds to form on the epistemological plane.[9]

In these explanations, the similarities in the modes of existence for matter-form and genus-differentia are striking. As can be understood from the definition, matter is potentiality and enters actuality through form. Likewise, genus is ambiguous and becomes reified by adding differentia. What is ambiguous cannot actually exist in the external world and must be reified to become actual. Differentiae are added to the ambiguous genus and come into existence as species. Just as form enters between matter and the third thing that gives it existence to enter a close cause, differentiae are added to genus to allow it to enter existence.[10]

We need to apply *Burhān*'s Chapter 10 to clarify how the relationship between genus-differentia and matter-form is established according to Ibn Sīnā. Ibn Sīnā aims to find solutions to two problems by explaining this relationship. One of these problems is shown in Figure 1: Starting from the conception of substance, how are differentiae added to genus and how do they constitute species (i.e., quiddities). Genus and differentia also become parts of quiddity as they combine to form species. In other words, the object (genus) and three-dimensionality (differentiae) are parts of the animal (species); according to the principle of the whole is greater than the sum of its parts, quiddity must be prioritized by genus and differentia. In other words, object and three-dimensionality prioritize the animal. On the other hand, Ibn Sīnā says that the animal must be the mediator/cause for the human to become an object because, when we look at the hierarchy in Figure 1 for example, the animal is first included in human, then the object enters by means of the animal becoming included. With respect to the principle of "the cause prioritizes the effect," the animal must prioritize the object and three-dimensionality. How can the object prioritize the animal and the animal prioritize the object?[11]

9 Ibn Sīnā, 204; Jon 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): 174; For more information see İbrahim Halil Üçer, *İbn Sînâ Felsefesinde Suret, Cevher ve Varlık*, Klasik; 150 (İstanbul: Klasik, 2017).

10 Ibn Sīnā, *Metafizik*, 210.

11 Abū ʿAlī Ibn Sīnā, *Kitâbu'ş-Şifâ: Burhân*, 2nd ed. (Istanbul: Litera, 2015), 22; McGinnis, "Logic and Science: The Role of Genus and Difference in Avicenna's Logic, Science and Natural Philosophy," 175.

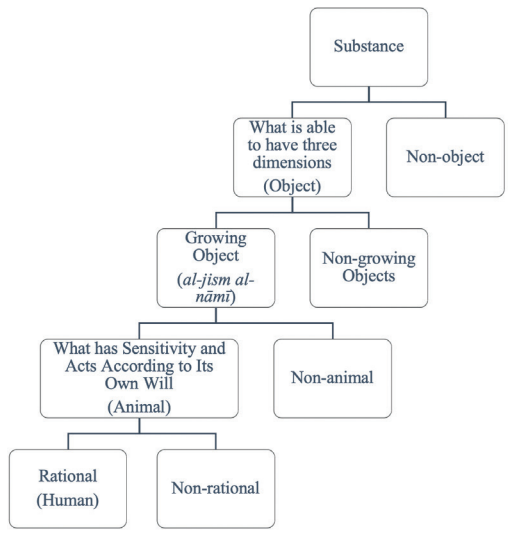

Figure 1. Hierarchy of genus-differentia and matter-form[12]

To deepen the issue a little bit more, the proposition "human is animal" needs no middle term for predicating the predicate to the subject, as being animal is a direct indication of quiddity and directly within the definition of being human because being animal is immediately (*badīhiyyan*) known to predicate being human. However, when we propose "human is object," this proposition does not clearly show that the predicate signifies the subject. Therefore, this must be proved by deduction. This deduction is as follows:

Every animal is an object (major premise)

Every human is an animal (minor premise)

Every human is an object (conclusion)

The result that we attempt to derive from this deduction is that "every human is an object." We have made a conception that predicates the major term of this deduction (object) without any mediator, the middle term (animal). This middle term is also predicated to the minor term (human). Thus we have used "animal" as a middle term and therefore as a cause to explain why the human is an object

12 Negative expressions like "non-object" or "non-growing" on the right side of the figure are not species. They have only been used to negate other species.

without any mediator. However, following the principle of "the cause prioritizes the effect," the animal must prioritize the object. Yet we said that the object should prioritize the animal because it is part of the animal. In this case, we come to the conclusion where both the object and the animal should prioritize each other, which is impossible. Because renouncing any of the principles is impossible, how should this problem be resolved?[13]

As for the second problem, the meanings of being object and having sensitivity were mentioned as parts of being animal because these two meanings combine to form the meaning of being animal. But how can we predicate the meaning of the object or the sensitivity to the animal and make a proposition like "the animal is an object?" Ibn Sīnā likens this predication to the proposition "2 = 1" where "1" is predicated to the "2" it contains.[14]

The relationship between genus-differentia and matter-form comes to the fore in solving these problems. Ibn Sīnā states that the solution to these problems lies in the difference between object in the sense of matter and object in the sense of genus, as well as between sensitivity (*ḥassās*) in the sense of form and sensitivity in the sense of differentia.[15] We can briefly explain these differences as follows:

1. In consideration of object, when the object is taken in the meaning of matter, it is taken with the condition of "not being perched to anything" (*bi-sharṭi lā*); namely this is in terms of being itself (*min ḥaythu huwa huwa*) and having no ability to be predicated. This is because when we make a proposition like "A = B," if the meaning of this proposition is "Quiddity $_{A}$ = Quiddity $_{B}$ as it exists," predication becomes inappropriate due to the fact that in order to be a predication, a divergence (*mubāyana/tabāyun*) must exist between the subject (A) and the predicate (B). For example, when we say "The animal is an object", if we take the object as an "object in terms of being an object", we must say that the object is equal to the quiddity of animal, which is impossible.[16] Here, the object in the sense of genus allows us to predicate because the object in the meaning of genus is taken with the condition

13 Ibn Sīnā, *Burhân*, 46; Ayman al-Miṣrī, *Dustūr al-ʿulamāʾ fī sharh Burhān al-Shifāʾ*, vol. 1 (Baghdād: al-Muṣbāḥ, 2015), 531.

14 Ibn Sīnā, *Burhân*, 46; Ayman al-Miṣrī, *Dustūr al-ʿulamāʾ fī sharh Burhān al-Shifāʾ*, 1: 533; McGinnis, "Logic and Science: The Role of Genus and Difference in Avicenna's Logic, Science and Natural Philosophy," 175.

15 Ibn Sīnā, *Burhân*, 46.

16 Ayman al-Miṣrī, *Dustūr al-ʿulamāʾ fī sharh Burhān al-Shifāʾ*, 1:540; McGinnis, "Logic and Science: The Role of Genus and Difference in Avicenna's Logic, Science and Natural Philosophy," 175.

of *Ibhām* (*bi-sharṭ al-ibhām*).[17] Because this can receive many restrictions, being a predicate becomes suitable. In this respect, saying "the animal is object" does not mean the quiddity of the animal equals the quiddity of the object. On the contrary, it means "the animal is qualified by being an object."[18]

2. When the object is taken as "*bi-sharṭ lā*" (i.e., only being itself in terms of matter), it becomes a part of animal. But when taken with the condition of *Ibhām* (i.e., when it becomes the object), the object becomes universal of the animal and animal becomes its particular. This is due to taking into consideration the definition of animal as "an object with sensitivity that acts according to its own will." The object becomes a part of the animal here because each meaning in the definition diverges from one another (*tabāyun*) and then is brought together; in this way it is taken as *bi-sharṭ lā*. The quiddity that takes *bi-sharṭ lā* is matter.[19]

The object becomes the animal's universal as a genus in this way; the object is absolute in terms of being the object itself and needs the animal to become reified (*taʿayyun*). When we say "the animal is object," we take the object with the condition of *Ibhām* in terms of not existing in the external world (*aʿyān*). It must become reified to exist in the *aʿyān*. This can only be achieved by adding differentia and forming another species. This clarification gradually occurs downward. The object cannot reify without animal but the differentia needs it for constituting the animal. Therefore, the differentia can be stated as a mediatory cause between genus and species.[20]

This difference between matter and genus can be explained through the substance-to-human scheme in Figure 1: Considering that matter as the causal link is established upward in the figure, what is above causes what is below. For example, when considering the animal, the object becomes the cause because it is part of the quiddity of the animal. However, when considering genus, the causal link is established downwards, so what is below causes what is above. Again when we think of the animal, the genus of rational becomes a cause because it causes the animal to come into existence through reification.

17 The quiddity taken with the condition of *ibhām* is an ambiguous quiddity that means it does not exist in *'aʿyān* but in itself (*nafs al-amr*). (Ayman al-Misrī, 1: 545)

18 Ayman al-Miṣrī, *Dustūr al-ʾulamāʾ fī sharh Burhān al-Shifāʾ*, 1: 540.

19 Ayman al-Miṣrī, 1: 541.

20 Ayman al-Miṣrī, 1: 540–41.

In this way, once the difference becomes clear we can briefly summarize the solution to the problems as follows: In the first problem, the whole relation between genus-differentia and quiddity occurs when the object is taken under the meaning of matter. When we think about the object in this case, the object that prioritizes animal as a part of it is the object taken as matter. Again, the animal that prioritizes human as a cause to make the human an object is the genus. So the problem of the same thing coming before and after is solved by saying that the same thing is taken into consideration from different angles.[21]

The second problem is solved in the same way. The object and animal that contain a whole-part relationship between them is the object and animal being taken as matter; the object that becomes a predicate to the animal is the object taken as the genus.[22]

Everything that is said here for matter and genus is true for form and differentia. Therefore, in order not to prolong the issue, we end the issue here and thus summarize the parallels that Ibn Sīnā established between genus-differentia and matter-form.

Al-Rāzī's Rejection of the Theory of Matter-Form and How He Established the Relationship between Genus and Differentia

Al-Rāzī offered a new way to understand the relationship between genus and differentia. His view, while differing from Ibn Sīnā's theory of matter-form, was surely based on his definition of genus and differentia as follows:

> *If two quiddities are common in some essentials and different in the rest, the point where they are common differentiates from the point where they are different. The first one is genus and the latter is differentia. As can be understood here, the quiddity of genus and differentia are external to each other. Genus is the perfect one of the common part (kamāl al-juz al-mushtarak) and the differentia is the perfect one of the discriminator (kamāl al-juz al-mumayyiz).*[23]

In his definition, al-Rāzī specifically states genus and differentia to be different from one another. He considers differentia as the attribute of genus, and an attribute of something is surely outside of itself.

21 Ayman al-Mişrī, 1: 543.

22 Ayman al-Mişrī, 1: 543.

23 Fakhr al-Dīn al-Rāzī, *Manţiq al-Mulakhkhaş* (Tehran: Intishārāt-i Dānishgāh-i Imām Ṣādiq, 1381), 58; See also Fakhr al-Dīn al-Rāzī, *Sharh ʿUyūn al-ḥikma*, vol. 1 (Tehran: Muʾassasa-i Ṣādiq, 1373), 77, 82.

Al-Rāzī states differentia to have three considerations and especially criticizes the necessity of the last consideration always being the cause of a genus coming into existence:[24]

1. Consider differentia in comparison to the nature of absolute genus. In this consideration, differentia divides genus. For example, the differentia of rational divides animal into rational animal and non-rational animal.

2. Differentia is considered in relation to the species and, in this respect, becomes the constitutive part of the species. Thus, the differentia of rational is the constitutive part of the species of human.

3. In relation to the existence of differentia's individuality in the genus, for instance, the species of human comes into existence by taking its share (*ḥiṣṣa*) from the differentia of rational. In this sense, although the differentia is not necessarily the constitutive part of the quiddity of genus, it causes genus to gain individuality by receiving its share in existence. That means rational is the cause of the animal when considering its share in being human; in a word, it is the cause of the existence of genus.

As mentioned above, the differentia that Ibn Sīnā uses in this third sense, being the most specific, is the cause of genus being realized as species. To give an example, when the differentia being the constitutive part of the species combines with the nature of the genus, it makes genus a species and allows the share of the species from genus to be realized. For example, when rational combines with the nature of animal, it is constituted as a species (i.e., human). This is what Ibn Sīnā means by differentia being a cause. According to Ibn Sīnā, rational within this direction is necessarily the cause of the share species takes from genus.

Al-Rāzī expresses two difficult problems, one of which is an extension of the other:[25]

1. At what moment does differentia give existence to the share of the species in the genus in question? Is it before or after the distinction of the species' individualization? In other words, when does rational, being the differentia, reveal the share of human in the animal? Is it a) after or b) before the distinction of being human?

24 Al-Rāzī, *Manṭiq al-Mulakhkhaṣ*, 73.

25 Fakhr al-Dīn al-Rāzī, *Sharh al-Ishārāt wa-l-tanbīhāt* (Tehran: Anjuman-i Athār wa Mafāhīr-i Farhangī, 2005), 100.

a. If its existence is provided after the appearance of human as a member of animal, a need to prioritize the differentia will exist to distinguish the cause that allows human to be separate from animal. Therefore, the differentia, which we consider to provide the species with individuality and to distinguish it through genus, will not function as a discriminator. Considering differentia essentially as a cause that separates the share of the human from the animal and that constitutes the species' individuality emerges as a contradiction.

b. If the differentia serves as a constitutive cause before the existence of human as an individual, then the rational will be the constitutive part of the animal that doesn't consider the individuality of the species. This means that no animal can exist without the differentia of rational that will turn genus into species by lifting it out of being a genus.

2. Al-Rāzī reveals the second difficult problem regarding the fact that differentia may sometimes emerge as an attribution. If the subdivision sometimes emerges as an attribution of the genus, how does the differentia, which is an attribution, turn into a cause that allows genus to be realized as a share of species?[26]

Al-Rāzī claims here that the cause for the species gaining individuality from genus is not necessarily differentia. This is because when considering animal as an example, whiteness is a differentia of animal. In other words, when distinguishing white animals from non-white animals, the differentia is the attribution of being white because white separates the white animal from the non-white ones. From this example, al-Rāzī can be said to be dealing with the issue in relative quiddities in particular. However, carrying out a similar process is possible for real quiddities. For example, the differentia of rational distinguishes animal from non-rational animals and makes species. In other words, the differentia makes animals rational and functions by individualizing a certain species of animal. This raises the question of how differentia as an attribution of genus also ensures species individualization (i.e., realization of genus). This is because if white or rational is expressed as an attribution of animal, the attribute of the subject being the cause of the attribution turns out to be impossible given that one thing that needs another thing cannot possibly be the cause of the other thing, as the attribution needs the subject of the attribution. If the attribute could have been the cause of its subject, the attribute would have had to prioritize itself in two levels because cause prioritizes effect. The

26 Al-Rāzī, 100.

basis of al-Rāzī's criticism is the principle of derivation (*farʿiyya*), which is a general principle on how to understand attribution-subject in relation to attribution. According to this principle, when something is asserted for something else, that asserted thing is an extension of the other's establishment. Therefore, the attribute cannot be the cause of its own subject.[27]

By doing so, al-Rāzī persistently rejected the idea of a cause and effect relationship existing between genus and differentia, which had been ascribed to Ibn Sīnā.[28] According to al-Rāzī, if differentia is an attribute of genus, differentia cannot be a cause because an attribute cannot be the cause of the subject of attribution (*mawṣūf*).[29] After all, al-Rāzī stated that there is an implication (*luzūm*) relationship between genus (the subject of attribution) and differentia (attributeé). Al-Rāzī examined the implicates (*lāzim*) in three groups: self-caused, implicant-caused (*malzūm*), and other-caused. He also emphasized differentia to be of the second type. Namely, the adherence relationship emerges because of being an adherent. Genus requires differentia to be reified, and therefore differentia adheres to it because of being genus.[30]

At first glance, al-Rāzī's texts have a problem. According to him, species signifies quiddity[31], and differentia is both a part of quiddity and an attribute;[32] meanwhile, he stated that a part of the quiddity cannot be its attribute[33] based on the fact that a part of something precedes that thing in both external and mental existence.[34]

27 Although al-Rāzī accepts that in some cases the differentia or attribute may be the cause of the genus without being taken as a differentia or as an attribute, this exception is already excluded due to the negative restriction in question. See. al-Rāzī, *Manṭiq al-Mulakhkhaṣ*, 73.

28 For this view of al-Rāzī, see İbrahim Halil Üçer, "Müteahhir Dönem Düşüncesinde Tanımın Birliği Sorunu: Molla Hüsrev'in *Nakdü'l-efkâr fi reddi'l-enzâr*'ı Bağlamında Bir Tahlil," *Uluslararası Molla Hüsrev Sempozyumu*, 2013.

29 Al-Rāzī, *Manṭiq al-Mulakhkhaṣ*, 73; In his article, İbrahim Halil Üçer stated that this view that Fakhr al-Dīn al-Rāzī attributed to Ibn Sīnā to be suspicious. (See Üçer, "Müteahhir Dönem Düşüncesinde Tanımın Birliği Sorunu," 127–28) However, aside from the similarity between the genus-differentia and the matter-form for coming into existence, we must say that this transfer Fakhr al-Dīn al-Rāzī made from İbn Sīnā is correct based on the statements Ibn Sīnā made in Burhân.

30 Al-Rāzī, *Manṭiq al-Mulakhkhaṣ*, 55.

31 Al-Rāzī, *Sharh ʿUyūn al-ḥikma*, 1: 87 Indeed, this is the reason why he argues that species is not essential (dhātī). Because species is the quiddity itself, it is not included in the essence. On the contrary, it is essence itself. Because he defines the essential as "what is included in the quiddity", the species not contained in quiddity ceases to be essential. (See al-Rāzī, 1: 64).

32 Al-Rāzī, *Manṭiq al-Mulakhkhaṣ*, 80, 82.

33 Al-Rāzī, 72, 73.

34 Al-Rāzī, *Sharh ʿUyūn al-ḥikma*, 1: 60, 61, 63.

Yet the subject of attribution precedes the attribute. In this case, how can both the attribute/subject-of-attribute and the part-whole relationships be established between quiddity and differentia? When examining the issue in more detail, al-Rāzī clearly treats differentia as an attribute of genus, not of quiddity. Therefore, genus obtains form when the differentia is added to it as a part of quiddity. Thus, differentia becomes a part of quiddity and also prioritizes it in its existence. On the other hand, genus prioritizes it as the subject of the differentia's attribution. Al-Rāzī considers the proprium (*khāṣṣa*) as the attribution of quiddity; though both are accidents, he distinguishes differentia and proprium from each other based on his idea that differentia is the attribute of genus whereas proprium is the attribute of quiddity.

The idea of atomism lies at the basis of Fakhr al-Dīn al-Rāzī's ability to characterize differentia as an attribute. Namely, all objects in atomism are common in terms of being composed of atoms. What distinguish them are accidents. This leads to all essences being equal on the basis of atoms being constituted by means of their attributes and again distinguished from each other by means of their attributes. Thus, the essentials of an essence appear as a search of the essential attributes that distinguish one essence from another, and the accidentals of essence appear as the search for secondary attributes using secondary qualifications. In logic, this means that the substance of being human is defined not by being animal and rational, which are still substances, but through the attributes the essences have that are equal on the basis of atoms. When we apply this approach to the definition of being human, the thought proceeds as follows: logic defines human as rational animal and animal is considered as the genus of human while rational is regarded as its differentia. In this system, rational refers to the rational soul which is a substance. In other words, the substances of animal and another substance (i.e., the soul) combine into the substance of the human. Yet, the soul here is meant as an abstract (*mujarrad*). However, theologians and therefore al-Rāzī prefer to constitute the quiddity of being human through attributes and do not accept the idea of the abstracted soul as a substance. On the contrary, al-Rāzī considers the soul to be a transparent (*laṭīf*) or corporeal (*jismānī*) substance that has attributes like sensation (*idrāk*), action (*fiʿl*), passivity (*infiʿāl*).[35]

35 Eşref Altaş, "Fahreddîn er-Râzî'ye Göre İnsanın Mâhiyeti ve Hakikati -Mücerred Nefs Görüşünün Eleştirisi-," in *İnsan Nedir? İslam Düşüncesinde İnsan Tasavvurları*, ed. Ömer Türker and İbrahim Halil Üçer, 1st ed. (İstanbul: İlem Yayınları, 2019), 195; Fakhr al-Dīn al-Rāzī, *Maʿālim uṣūl al-dīn* (Kuwait: Dār al-Ḍiyāʾ, 2012), 136.

To understand what al-Rāzī substitutes for the abstracted soul in his definition of human, one must first look briefly at al-Rāzī's distribution of existences. He divides created things (*muḥdathāt*) into three: (1) space-occupying, (2) space-subsisting, and (3) neither of these two (this third situation he declares to be impossible). Moreover, he divides space-occupying into two parts: (a) divisible (object) and (b) indivisible (atom). He also divides space-subsisting into two: that having the ability to be an attribute of the non-living and that which does not. He distinguishes that which has the ability of being an attribute of the non-living as that which is perceived by one of the five senses and beings (*akwān*). That which is unable to be the attributes of non-living are life (*ḥayā*), knowledge (*ʿilm*), power (*qudra*), will (*arāda*), aversion (*karāha*), the word of self (*kalām al-nafs*), and the sensations of pain and pleasure.[36]

According to theologians, everything but Allah is *muḥdath* (i.e., created), and these *muḥdethāt* are either substances or attributes. In this ontology, attributes take the place of the abstract soul. While abstract soul is a term from philosophy, attribute is from theology. In theology, attributes (i.e., accidents), being the substances the human accepts, have the same functionality the abstracted soul (i.e., rational) has in philosophy. Using Altaş's formulation, life is the most basic attribute for the human essence from which other attributes follow. Knowledge (*ʿilm*) replaces both the rational soul (*al-nafs al-nāṭiqa*) and perception; pleasure and pain replace the passivity (*infiʿāl*) of the human soul; sensations (*idrākāt*) replace the five senses (*al-ḥawāss al-khamsa*); the attribution of will (*Irāda*) and aversion (*karāha*) replace the power of will that arises from the faculties of appetite (*shahwa*), anger (*ghaḍab*), and intellect (*ʿaql*) of human soul; and power (*qudra*) replaces the forces of soul, which are the principle of movement (*ḥaraka*).[37]

When considering how al-Rāzī constructs genus and differentia, his views on what being means are as follows: Genus corresponds to the substance composed of human atoms, and differentia corresponds to the attributes pertaining to that substance. Therefore, the meaning of al-Rāzī's view that the differentia is an attribute of the genus, as mentioned in *al-Mulakhkhaṣ*, becomes apparent.[38]

36 Fakhr al-Dīn Rāzī, *al-Muḥaṣṣal*, trans. Eşref Altaş, 1st ed., İslam Felsefesi Dizisi (İstanbul: Klasik Yayınları, 2019), 81–92.

37 Altaş, "Fahreddîn Er-Râzî'ye Göre İnsanın Mâhiyeti ve Hakikati -Mücerred Nefs Görüşünün Eleştirisi-," 152–53.

38 Al-Rāzī, *Maʿālim uṣūl al-dīn*, 137; Altaş, "Fahreddîn er-Râzî'ye Göre İnsanın Mâhiyeti ve Hakikati -Mücerred Nefs Görüşünün Eleştirisi-," 173.

Conclusion

In conclusion, the parallelism between genus-differentia and matter-form in Avicennian philosophy provides clues about the relation of logic to metaphysics. On the contrary, the approach of Fakhr al-Dīn al-Rāzī's, one of the *mutaʾakhkhirūn* period theologians, eliminates this parallelism and purifies logic from the Avicennian metaphysical burden. Ibn Sīnā's metaphysical assumptions are diametrically opposed to the theological doctrines.

The relationship that Ibn Sīnā established between genus and differentia parallels the relationship between matter and form. According to Ibn Sīnā, every object exists from matter and form; matter represents potentiality, while form represents actuality. Ibn Sīnā discussed at length the ways matter and form relate to one another, stating matter and form to be the causes of a third principle; however, while form is a mediatory cause and closer to this third principle, matter becomes the effect of the form. Moreover, according to Ibn Sīnā, genus and differentia have a similar relationship. Due to its uncertainty, genus accordingly needs differentia to form species, being the third principle remaining outside of the two. Thus differentia, just like form, is the mediating cause nearer to this principle, and genus is located as an effect just like matter. Ibn Sīnā briefly described how to distinguish between genus and matter as well as between form and differentia. Accordingly, matter is the state in which something is taken free from all restrictions, whereas genus is received in itself (*nafs al-amr*), not in the external world. When considering the example of object as matter, object that is a quiddity of the underlying animal and effect of its existence is therefore a preceding element. On the other hand, object as a genus can exist only by adding the differentia of sensitive, thus having genus become animal. Therefore, being sensitive and being animal are the causes of the existence of the object and prioritize it in existence. Once more, when taking object to be matter, object cannot be a predicate to what is under it, but when taken as genus, object can be a predicate. In other words, a predication such as "animal is an object" is impossible if the object is taken to be matter; it is only possible when taken to be genus.

On the relationship between genus and differentia, al-Rāzī applied attribute and subject of attribution to the relationship. He made the essential part of quiddity an accident. Substances are composed of atoms that are separated from each other; they employ accidents. Al-Rāzī presented his definition of human as the most obvious example of this perception. He rejected Ibn Sīnā's understanding of the abstracted soul and asserted the soul to be a transparent corporeal substance.

According to al-Rāzī, what we call human is thus this substance. While Ibn Sīnā emphasized differentia, al-Rāzī underlined the human itself. On the other hand, al-Rāzī imposed functions on the soul's attributes, while Ibn Sīnā imposed them on the soul's powers. Al-Rāzī considered the attributes of the soul as corporeal substances and differentiated the human soul from other souls using these attributes, which thus become differentiae. Consequently, even though al-Rāzī seems to have used the same concepts, he actually changed the ontology on which genus and differentia are based.

Finally, this article has shown the genus-differentia relationship, which was once established based on the matter-form ontology, to have been disconnected from this ontology and made compatible with a different one. Thus, the transformation of the science of logic, which theologians in the *mutaʾakhkhirūn* period had accepted as a scientific tool and even considered it to be indispensable for Islamic sciences, was revealed through the example of genus-differentia.

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