

Pushing the Boundaries of the Universe: The Criticisms of Peripatetic Cosmology in *Hikmat al-ishrāq* and its Commentaries

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Abstract: In this article, focused on the criticism of Suhrawardi who is the founder of the Ishrāqī School, four cosmological problems pointed out in the *Hikmat al-Ishrāq* are analyzed. These problems, which allow for the comparative analyses of these two systems in terms of differences and similarities, are respectively, the limits and the order of the universe, the location and the function of the sphere of fixed stars, retrograde motion, and the state of the Sun and the Moon. Although both systems take as their basis jointly the emanation model, the indications, and criticisms posed by Suhrawardi in regards to the aforementioned problems and in addition, the interpretations of these criticisms by the commentators of the *Hikmat al-Ishrāq* will be discussed. Finally, the prospective effects and value of this discussion on modern cosmology are among the fundamental questions raised in this article.

Keywords: Illuminationist Cosmology, Peripatetic Cosmology, The Theory of Emanation, The Metaphysics of Nūr, All Encompassing Body/Barrier, Sphere of Fixed Stars, Retrograde Motion.

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Introduction

Even though there are works comparing Illuminationism and Peripatetic philosophy and generally investigate Suhrawardī (1154-1190) and his followers' critique of Ibn Sīnā (980-1037), there are almost no works analyzing the two systems based solely on the description of the arrangement of the heavens and the study of certain cosmological problems.¹ As is known, the classical cosmology systematized by Aristotle and mathematically perfected by Ptolemy, despite its serious problems and the changes it underwent, has remained operational for a long period of time in a wide geography. This great synthesis, which has also influenced the geography of Islamic thought has been discussed by Muslim philosophers and subjected to various objections and criticisms from different perspectives due to different reasons.² Although not causing a holistic and revolutionary transformation similar to the synthesis of Copernicus-Newton, various components of modern cosmology have been mentioned in various forms due to diversified factors in the geography of Islamic thought. One can observe within this broad literature including Suhrawardī and his commentaries certain subjects and problems that anticipate modern cosmology have been discussed within the boundaries and parameters of Islamic thought and the sensitivities of the period. Within this framework the basic question on which our study focuses, concerns the criticisms Suhrawardī directs at Peripatetic cosmology, or rather the cosmological principles and assumptions that are manifest in the texts of Ibn Sīnā, and the alternatives Suhrawardī suggests. Although the expression "Peripatetic cosmology" suffers from disagreements and imprecisions found in similar conceptualizations, it reflects to a great extent the understanding of the arrangement of heavens in the twelfth and thirteenth centuries known as the "classical period" of Islamic thought. Here what is intended by the expression "Peripatetic cosmology" without going into a detailed analysis is the description of the heavens (*samā'*) the boundaries of which are drawn in the texts of Ibn Sīnā. A factor that validates this choice is that the expression "Peripatetic philosophers and their followers," often mentioned in Suhrawardī's criticisms, refers to an obvious target.

Considered within the perimeters indicated above, it can be seen that although Illuminationist (*ishrāqī*) cosmology is based to a large extent on inheritance from

1 For examples of comparative works, see Nasr, *Three Muslim Sages*; Aminrazavi, "How Ibn Sīnā is Suhrawardī's Theory of Knowledge"; Uluç, *Sühreverdī'nin İbn Sīnā Eleştirisi*; Marcotte, *Suhrawardī and His Interpretation of Avicenna's Philosophical Anthropology*, Koroğlu, "İsrakī Filozof Şemseddin Muhammed İbn Mahmud eş-Şehrezuri'nin Felsefi Sistemi ve İslām Düşüncesi İçindeki Yeri". For a critique that focuses mostly on epistemology, see Fakhry, "Al-Suhrawardī's Critique of the Muslim Peripatetics (al-Mashshāyyūn)", 279-284.

2 For related discussions and criticisms, see Saliba, "Early Arabic Critique of Ptolemaic Cosmology."

the past, i.e. the Neoplatonist-Ibn Sinian reconciliation, in the critiques, interpretations, and suggestions of Illuminationism there are new and different elements. As regards principles, there are the following noteworthy elements of difference. First, the cosmology rests on the Illuminationist metaphysics with the concept of *nūr* (light) at its center. Second is the *principle of multiplicity* developed from the concepts of the perfection of light and its deficiency, its brightness and dimness, which explain the origination of multiplicity from the one, and the material celestial orbs/barriers (*barzakh*) and celestial objects from abstract entities (immaterial lights). Third is the traditional emanation model consisting of ten intellects and nine celestial orbs becomes flexible by being separated into “thousands” of layers. In other words, the monistic Illuminationist framework in which the classical emanation model is situated around the axis of the concepts of “*nūr* and *miqdār*” (light and magnitude).³

This article will study four issues differentiating the Illuminationist and Peripatetic systems. It will discuss in this context the observations, questions, criticisms, and suggestions of Suhrawardī, the founder of Illuminationist thought, concerning the problems of Peripatetic cosmology in *Hikmat al-ishrāq*, especially the second chapter in which he explains the hierarchy of existence, and the third chapter in which he describes the celestial order. Finally, the article will look at how two important commentators of *Hikmat al-ishrāq*, Shams al-Dīn Shahrāzūrī (d. 1288) and Qutb al-Dīn al-Shirāzī (1236-1311) interprets these observations and criticisms. With these aims, the subjects which will be discussed respectively in accordance with cosmological levels are (1) the boundary and order of the universe, (2) the position and function of the celestial orbs of fixed stars, (3) the retrograde motion, and (4) the position of the sun and the moon.

I. The Boundary of the Universe and Its Order

The classical view of the cosmos shared by the Peripatetic and Illuminationist systems consists of a gigantic sphere with the encompassing celestial orb at the outmost⁴ and with the world in its center. In Illuminationist literature this is called “an encompassing single object.”⁵ This single object, which corresponds to Ibn Sīnā’s

3 To understand the meaning and role of quantity in the Illuminationist system, cf. Arslan, “Fiziksel Evv renin Bütünleştirilmesi İçin Erken Bir Teşebbüs”.

4 This is the one concerning the existence and essence of which there is disagreement, known in Illuminationist cosmology as *al-barzakh al-muḥit* (the encompassing barrier), and in Peripatetic cosmology as *al-falak al-aqsā* (the most distant celestial orb) or the *falak al-aṭlas*.

5 Shahrāzūrī, *Sharh Hikmat al-ishrāq*, 337.

*samā*⁶, has been conceived of as a hierarchical, finite, and enclosed sphere having a continuous circular motion and consisting of nine celestial orbs and ten intellects. Classical astronomy, which forms the foundation of the four-level categorization of the sciences, consisting of mathematics, natural sciences, psychology, and metaphysics, has been summarized in the epistles of Ikhwān al-Şafā as follows:

The foundation of astronomy is to know three things. These are the stars, the celestial orbs, and the constellations. The stars are spherical, round, and bright objects. Of the 1029 great stars, seven that can be discerned through observation are called planets. These are Saturn, Jupiter, Mars, sun, Venus, Mercury and the moon. The remaining is called “the fixed stars.” Each one of the seven planets has their own spheres (*falak*). The spheres are transparent, hollow, and spherical objects. There are nine spheres and some of these are in the hollow space of the other just like onion rings. Of these, the nearest one to us is the lunar orb that surrounds the orb of air from all sides; just as the shell of the egg surround the egg white. Earth, like the yolk of the egg is in the hollow space of the orb of air. Above the lunar orb is the orb of Mercury. Above the orb of Mercury is the orb of Venus. Above the orb of Venus is the orb of the sun. Above the orb of the sun is the orb of Mars. Above the orb of Mars is the orb of Jupiter. Above the orb of Jupiter is the orb of Saturn. Above the orb of Saturn is the orb of fixed stars. Above the orb of fixed stars there is the encompassing sphere.⁷

The most prevalent and common belief concerning the structure of the universe before modern cosmology was that it was finite, enclosed, hierarchical, and harmonious. Even though the definitions and categorizations of the Illuminationist system based on the ontology of light (*nūr*) are different than Peripateticism, both systems agree on the spherical structure of the universe, the arrangement of celestial objects in accordance with the emanationist model and their hierarchical formation. The fact that Suhrawardī, especially in his work *Partawnāme*, repeats the peripatetic framework in Ibn Sinā’s texts almost word for word is significant in this respect.⁸ According to this common conceptualization, all the occurrences, links, forms, actions, and transformations related to existence take place within the encompassing celestial orb. The most substantial feature of this finite and external membrane (*al-barzakh al-muḥīt*), which separates the existent from the nonexistent and draws the borders of the physical universe is provides place for all things that it holds: “Place (*makān*) is the inside of its (the encompassing barrier’s) closest enclosing, and that which has no enclosing has no place.”⁹ The separation of existence

6 According to the Peripatetic definition, the *samā* is a simple, finite, spherical body that has a circular motion by nature and causes the rising and setting of stars and planets. For the meanings of the term, see Ibn Sinā, *al-Samā’ wa al-‘ālam*, 16, 18-19.

7 İhvān-ı Safā, *İhvan-ı Safa Risaleleri*, I, 83-84; cf. Ikhwān al-Şafā, *Rasā’il Ikhwān al-Şafā*, I, 115.

8 Sohrawardī, *The Book of Radiance*, 11-23.

9 Suhrawardī, *Ḥikmat al-ishrāq*, 93. (In this study, of the different printings of *Ḥikmat al-ishrāq*, the Ar-

from nothingness, the designation of directions, and finally the physical universe's acquisition of a material existence at which one can point becomes possible through the encompassing barrier/celestial orb. "Beyond" the encompassing celestial orb, where there is neither space nor matter, is the area of negations and inconceivable "things" that can be expressed only as the negation of modes of existence such as placelessness and motionlessness.

Know that in any direction you may point, there are limits. If there were no impenetrable barrier surrounding all other barriers, then movement and pointing would go on into nothingness once they passed this last sphere –though it has been clearly explained to you that ordered simultaneous classes, whether bodily or otherwise, are finite. Nonbeing cannot conceivably be pointed to.¹⁰

The first and critical step related to the boundary of the universe and its arrangement is the determination of the "directions" (*jihāt*) in general, and the direction of above (*'ulvī*) and below (*sufī*) in particular. Such a manifestation needs a finite reference point, which is another function of the encompassing barrier. Since the encompassing barrier by definition corresponds to a homogenous and indivisible totality, no direction that is contrary or opposite to above can be ascribed to it. Therefore, the direction below, just as it is in the relationship of light and shadow, does not indicate an opposite accidents of existence, but rather to the degree of distance from above. As soon as the direction above is designated, naturally the direction most distant from this point takes the name of below, which is at the same time the center point of the classical universe. In Suhrawardī's expression, "All that is near to it is high. Therefore, the low is simply the extremity of distance from it –that is, the center."¹¹ Once the directions above and below are designated, designating other directions and the hierarchical system based on these –the way it is perceived in the traditional emanation theory– is simply an issue of putting together a jigsaw puzzle.

In the Illuminationist system the universe as regards its source starts with the Light of Lights (*nūr al- anwār*), and comes to an end at an assumed point where emanations (*fayḍ*) or rather illuminations lose their influence and spread. The point where shadow (matter/body) becomes manifest is also this transition zone. As can be understood from the related passages in *Ḥikmat al-ishrāq*, the Illuminationist cosmology coincides with Peripateticism as regards general features of the universe

abic-English one prepared together by Ziai and Walbridge has been utilized. Other translations have been done by me by taking into consideration the English and Turkish translations).

10 Suhrawardī, *Ḥikmat al-ishrāq*, 92.

11 Suhrawardī, *Ḥikmat al-ishrāq*, 93.

such as being finite and regular, but differs from it concerning the foundational elements of the universe and the categorization of existence. Instead of the separated intellects (*mufāraqāt*) in the Peripatetic cosmology, there are incorporeal, immaterial lights (*anwār al-mujarrad*). Instead of the substances/elements, there are dusky substances (*ghāsiq/ghawāsiq*), and instead of accidents, there are dark states (*hay'a Zūlmāniya*), which is nonluminous accident. The common feature of these differences in the Illuminationist language is the strong sensitivity that all forms of existence without exception can be attribute to light:

(...) Since you know by demonstration that an ordered simultaneous series must be finite. Therefore, the self-subsistent and accidental lights, the barriers, and the states of each must end in a light beyond which there is no light. This is the Light of Lights, the All-Encompassing Light, the Eternal Light, the Holy Light, the All-Highest Almighty Light, the Dominating Light.¹²

Even though there are distinctions based on different aspects such as accidental/absolute, corporeal-luminous, etc., the Illuminationist universe essentially consists of pure light and the relationships of intermediate forms with different aspects as a result of the decrease and completeness of light, so that whether accidental or essential all forms of existence and essence can be ultimately reduced to light. Thus in the definition of objects and acquisition of knowledge there is no need for indicators that are hard to define such as prima matter (*hayūla*) and form (*Ṣūra*).¹³ This approach also provides new possibilities to resolve the problem of motion and causality. Because light overflows/shines¹⁴ with and without intermediaries simultaneously, the principle of causality and the teleological argument are preserved on the one hand, the danger that the chain of causality will render divine will/intervention unnecessary is eliminated on the other, so the system at the end is loyal to the monistic framework.

The main framework, which both systems have used to explain the emergence of different spheres of existence in a finite and homogenous totality, despite the serious differences between the two, is the traditional emanation theory.

As is known, the fundamental problem on which the emanation model focuses is how material forms of existence are different or opposite qualitatively, emerge from an abstract and transcendent source. In the solution of this problem in the Peripatetic system, categories of necessary-contingent and intermediary forms

12 Suhrawardī, *Ḥikmat al-ishrāq*, 87.

13 Suhrawardī, *Ḥikmat al-ishrāq*, 53-55.

14 Suhrawardī, *Ḥikmat al-ishrāq*, 113, 114.

such as intellect (*'aql*), celestial orb (*falak*), and soul (*nafs*) have been developed. Since motion was defined as a one-directional action taking objects to their natural place, the circular motion has been linked with *intellect* and will. The *soul* has been perceived as the internal natural force moving the object and ensuring the continuity of the movement, while the celestial orb was understood as the axis and base of the carrying/transferring movement.¹⁵ Ibn Sina's principle of the multiplicity of forms of existence (separate intellects, celestial orbs, elements, and compound objects) originating from an substantive and transcendent One is based basically upon the derivation of all later categories from the relationship of each form with the categories of necessary and contingent through the chain of causality and within the rules of logic. The first and most critical step of this process is the "division" of the First Intellect, which is considered to be the same as the necessary existent in terms of quality, based on the aspects of contingency and necessity. By this first and critical step opening the door to multiplicity the path is prepared for the proliferation of all other intellects and elements. The transition from the chain of abstract intellects of the same kind to the world of the contingent and compounds is through the celestial orb of the moon that separates the heavens from the earth in terms of quality. By the intellect of this celestial orb (the active intellect) the foundation is laid for the forms (*Ṣūra*) and functions physical objects need.¹⁶

As has been emphasized above, Illuminationism has tried through the possibilities provided by the ontology of light to bypass the intermediate forms, and the dualist distinctions, which the Peripatetic system had to internalize. In the Illuminationist metaphysics, the transition process of emanation from One to two and then to multiplicity is explained as follows:

The Light of Lights and the incorporeal lights have no dimension or direction at all. Thus, by that whereby [an incorporeal light] beholds the Light of Lights, it shadows and darkens itself in comparison to It, since the more perfect light rules the more deficient. By the manifestation to itself of its dependence and the darkening of its own essence in its contemplation of the glory of the Light of Lights in relation to itself, a shadow results from [the incorporeal light]. This is the loftiest barrier, greatest of the barriers, the all-encompassing barrier (*al-barzakh al-muḥīt*) of which we made mention.¹⁷

As can be understood from these sentences, the encompassing barrier, in a way similar to the Peripatetic system, comes into existence when the proximate light (*al-nūr al-aqrab*) witnesses the aspect of its own need. However, the origination of oth-

15 Ibn Sina, *al-Ishārāt*, 298-299; cf. İbn Sina, *İşaretler ve Tenbihler*, 146.

16 Ibn Sina, *al-Ishārāt*, 317-318; cf. İbn Sina, *İşaretler ve Tembihler*, 158, 159.

17 Suhrawardī, *Ḥikmat al-ishrāq*, 95.

er forms of existence is not through the “separation” of something from the original source, but rather through the decrease of the perfection of light, that is to say it is lessening. What is important for Suhrawardi is to show the flawlessness of the light of lights which cannot be linked with multiplicity or oppositeness and to ascribe the multiplicity and oppositeness witnessed in the physical world to the internal relationships of the different tones that emerge from the completeness and lessening of light. From the various forms of existence, all of which are just different degrees of light, through their interaction with each other with aspects such as dependency, independency, dominance, and love and through their contemplating (*mushāhada*) of the Light of Lights the universe becomes manifest as a totality.

This Illuminationist design is based on the dialectic of emanation necessitates a consistent explanation of the regularity that can be clearly seen in the universe. For this reason both traditions have linked the regularity that can be observed with the senses in the sub-lunar world directly with the regularity in the world above (the order of the intellects), that is to say with the “relationships” between separate intellects and pure lights, with mathematical ratios and symmetries. It was accepted that the visible order in the world “occurs through the perfect hierarchy of the incorporeal lights and the relationship of the incorporeal lights with themselves and their reflected lights,” and that the relationship that is obtained from the completion of the rotation of the sublime celestial orbs is reflected directly and descends upon the lower world.¹⁸ Qutb al-din al-Shirāzī, explains the small and great end of the world with the completion of the small and great rotations in the sublime world, displaying an eclectic approach that combines the thought of the infinite spiral in Indian thought with the thought of the hereafter in Islamic thought.¹⁹

To recapitulate, it is certain the Peripatetic and Illuminationist systems rely upon the emanationist model to explain the order of heavens. But whereas in the peripatetic system the heavens (*samāʿ*) are founded upon the harmonious combination of the necessary being (*wājib*), the intellects, the celestial orbs, and the souls respectively, in the Illuminationist system there is no separate category other than the light of lights and the scale of lights coming into being through its radiance. Since all forms of existence consist of the manifestation of light in the axis of perfection (*kamāl*) and deficiency (*naqs*), it has to be carefully shown that no independent entity that is separate in quality comes into existence. Based on this sensitivity, the levels of beings in the Illuminationist system becoming manifest depending on the completion and lessening of light can be ordered as follows: The light of lights,

18 Shirāzī, *Sharḥ Hikmat al-ishrāq*, 384.

19 Shirāzī, *Sharḥ Hikmat al-ishrāq*, 384.

the proximate light, the incorporeal lights, the accidental incorporeal lights, the most supreme celestial orb, (the encompassing celestial orb), the celestial orb of fixed stars, stars/planets, the twilight substances, and the dark forms. Based upon this categorization, leaving other categories aside, let us look closer at the celestial orb of the fixed stars, which is important for our study.

II. The Celestial Orb of Fixed Stars and *Beyond*

Even though the celestial orb of fixed stars are often mentioned in Peripatetic and Illuminationist texts with similar expressions, there are uncertainties concerning its essence, position, and role. One point that is unclear concerning the celestial orb of fixed stars is whether this great sphere that contains or carries thousands of celestial objects is the same as or different from the encompassing celestial orb that does not carry any celestial objects, that contains all the sub-lunar and supra-lunar layers, and provides a place for everything it contains. Is the number of intellects eight, nine, or ten, or more, and based on this, where is the exact position of the celestial orb of fixed stars? How is it that a gigantic celestial orb (*falak al-thawābit*) that carries numerous stars becomes manifest in an early phase of emanation, and why do so many stars come together in a single sphere while the other celestial orbs carry only one planet? These questions have not been consistently answered. Finally, what is *beyond* the celestial orb of the fixed stars, and if it exists, beyond the all-encompassing barrier (*al-barzakh al-muḥīt*), and whether there are other universes beyond the existing universe are important questions needing answers.

One of the first and significant questions concerning the boundary of the universe is from where and how this boundary is to be drawn. This problem, which figures among the differences between Illuminationist and Peripatetic cosmologies, has necessitated the edition of an imagined sphere bringing together the first intellect and the sphere of fixed stars. Although its existence and essence were disputed, the existence of the most outer encompassing celestial orb (*al-falak al-aqṣā*) was accepted by most Peripatetic philosophers and astronomers, Ibn Sinā being among them. Ibn Rushd (Averroes) who entered this debate later on expresses the view the existence of the ninth celestial orb is doubtful and this celestial orb, which contains no planets, arises from the unsound speculations of Ptolemy and his followers, in opposition to the explanations of Aristotle:

In sum, the existence of a ninth celestial orb that has no planets is unacceptable for me. This is because a celestial orb (orbit) exists only because of a planet, and a planet is the most superior of its parts. For this reason, the more planets it has, the more superior it becomes.

The one who explains this in this manner is Aristotle. The mover of the great motion is the most superior of the celestial orbs. For this reason, that this celestial orb should be without planets is not only unlikely, but also impossible.²⁰

Concerning the debate of whether the celestial orb of the fixed stars is the first celestial orb that has emerged in the process of emanation, Ibn Sinā expresses there are two opinions based on the pre- and post-Ptolemaic periods.

(Aristotle and eminent Peripatetic philosophers) consider the first special discrete intellect to be the mover of the first sphere. This (first layer) according to those prior to Ptolemy was the sphere of fixed stars, and according to those who studied the sciences Ptolemy taught it is outside it, being a sphere without planets that encompasses it. After that, according to the difference of opinion, comes the mover of the second sphere that comes after the first one, and likewise the one after, continuing in this fashion.²¹

Later on in the sections concerning the number of discrete intellects and layers, Ibn Sinā recaps the rule “after the first principle, the number of discrete intellects is the same as the movements” saying “their number after the first is ten,”²² he clarifies his attitude concerning the layers forming the scheme.

A problem that is more tortuous than the boundaries of the universe is the hierarchical arrangement and total number of the celestial orbs and spheres. Damien Janos, in an article in which he discusses Ibn Sinā’s cosmology and specifically the problem of “the movement of celestial objects” in the context of the general principles of Peripatetic cosmology, claims, despite the common impression to the contrary, that Ibn Sinā’s system is different from the nine-celestial orbs ten-intellect model that has been identified especially with al-Fārābī. Janos argues this system, which contains many more celestial objects than thought, is based upon the revised Aristotelian model, which he conceptualizes as “the second kinematic model.”²³ According to the assertion of Janos, in the revised second kinematic model, there are many more celestial orbs than ten, more celestial spheres, and as a result more intellects and souls. The numbers of celestial orbs and spheres that vary between 22 and 67 according to different approaches and interpretations in the Peripatetic system have been raised up to 77 by later interpreters.²⁴

20 Ibn Rushd, *Metafizik Şerhi*, 117-118.

21 Ibn Sinā, *al-Najāt*, 303.

22 Ibn Sinā, *al-Najāt*, 310.

23 Janos, “Moving the Orbs”, 165-214.

24 Janos, “Moving the Orbs”, 176, 199, 200. In Ibn Sinā’s texts there is not certain information concerning the number of celestial orbs and the spheres they carry. Later Peripatetic interpreters have mentioned various numbers. For example the model of Ṭūsī has raised the number of celestial spheres to 67. For criticisms concerning the model developed by Ṭūsī and the Ptolemaic model, see Ragep, *Naşir al-Dīn al-Ṭūsī’s Memoir on Astronomy*, 46-51.

As is known, the fundamental problem Ibn Sinâ's astronomy seeks to answer is to explain with consistency the movement of the celestial spheres with Peripatetic principles. At a later stage, this investigation by necessity widened to include the questions of the total numbers of discrete intellects, souls, and stars/planets, their relationships with each other, and finally how the movement that overflows from the first mover is transferred between celestial spheres. Ibn Sinâ's opinion, which referenced *Almagest* in solving critical astronomical questions, concerning the total numbers of celestial orbs comprising the fixed celestial order has remained ambiguous. According to Janos, Ibn Sinâ's cosmology, which seems to consist of the celestial orbs of the seven planets, the celestial orb of fixed stars, and the celestial orb of the all encompassing barrier, for a total of nine celestial orbs, actually contains many more celestial objects than what has been supposed. Ibn Sinâ's cosmology, which for the sake of simplification has been reduced to nine celestial orbs, consists of a complex system that has subordinate orbs besides each main orb and works with eccentrics, deferent, and epicycles. Therefore, "even though one can talk about the existence of nine main/great celestial orbs –like the main orbit of the moon, and the main orbit of Mars– it should be known that these main orbs, as a result of the complexity of planetary motions with which they interact, contain many subordinate orbs."²⁵ To strengthen his hypothesis, Janos in his footnote on this section cites Farâbî's expression "all celestial objects," adding that the approaches of philosophers such as Ījî, Ṭūsî, and 'Abd al-Laṭîf al-Baghdâdî corroborate this interpretation.²⁶ Probably, the thesis that Ibn Sinâ's cosmology contains numerous celestial objects is based, beyond the weak allusions in Ibn Sinâ's texts, on the following reasoning: (a) According to the traditional emanation theory, the number of discrete intellects, celestial objects, and celestial orbs has to be equal. (b) The number of celestial objects (and celestial orbs) –as has been clearly shown by astronomers like Ṭūsî– have to be more than ten in any case. (c) Then, the number of discrete intellects, celestial orbs, and celestial objects in Ibn Sinâ's cosmology has to be more than what has been supposed.

The claims of Janos that Ibn Sinâ's cosmology contains, despite the common impression to the contrary, more celestial orbs, objects, and movement are of a type that can be refuted with different justifications and counterarguments. From the point view of our discussion, even if the claims of Janos were true, they would not affect any change as regards criticisms coming from Illuminationist cosmology.

25 Janos, "Moving the Orbs", 174.

26 Janos, "Moving the Orbs", 174, n. 28.

Even if one accepts that in Ibn Sinā's cosmology the number of celestial objects is at the upper limit of 67 or 77 as in the cases of Ṭūsī and 'Abd al-Laṭīf al-Baghdādī, Suhrawardī's criticisms are still valid. The Illuminationist cosmology, in which the number of celestial orbs are in the hundreds of thousands and the movements of celestial objects are directly related to the light of lights, is qualitatively and categorically different from these partial revisions that are proposed and developed within the paradigm of the Peripatetic tradition. Whether there are 9 or 77 spheres/layers, from the perspective of Illuminationist cosmology it is impossible to explain with consistency the numerousness of the stars in the celestial orb of fixed stars and the diverse and multiple movements of the planets within the parameters of Peripatetic cosmology.

Another question left ambiguous in Ibn Sinā's cosmology is the transfer of motion between celestial orbs, specifically the anomalies perceived in the movement of individual planets. Ibn Sinā, who in the sixth section of *al-Samā' wa al-'ālam* discusses the movement of celestial objects according to three different theories and leans towards the last of these (that the stars move embedded in the body of the celestial orb), says in regards to the issue of whether the fixed stars are on one sphere or many spheres that are contiguous "has not become clear" for him, and there is no way to solve this problem other than persuasion.²⁷ Ibn Sinā's distanced attitude towards discussions about the celestial orb of fixed stars and movement of planets is meaningful, since it is quite difficult to explain such a complex and voluminous sphere which encompasses the other eight celestial orbs and contains thousands of stars within the Peripatetic system, that is to say the system of ten intellects and nine celestial orbs. Likewise the striking "imbalance" in the distribution of stars in the spheres carrying the fixed and moving stars also needs explanation. This problem, which contemporary cosmology explains with the concept of *isotropic universe*,²⁸ has also been discussed in classical cosmology. As regards the questions of "why is the celestial orb of the two lights (Sun and the moon) is less and the celestial orbs of other planets are more, and why does the celestial orb of fixed stars have numerous stars, whereas other spheres have only one star," Ibn Sinā has interpreted the probable options as follows:

27 Ibn Sinā, *al-Samā' wa al-'ālam*, 46.

28 According to the isotropic universe hypothesis, the universe has a uniform physical form. Under normal conditions, it has the same appearance from every angle and all matter has spread to the universe in a homogeneous manner. But in regions where there is strong gravity, based on the relationship between gravity and motion, various concentrations have come into being. Having undergone long cosmological states of development and processes, these have turned into galaxies and solar systems.

Some say for the first question that the most glorious and the virtuous (the sun and the moon) do not need an instrument in completing their action, and that even if they need it, this would be at a minimum level. As for the second question (the imbalance in the number of stars in the celestial orbs), they say that nature has become balanced. Thus, so that the total of the weights of many objects and the total of many movements do not come together and pile up, where there is a single movement objects have been made many (the celestial orbit of fixed stars), and when movements are many (the movement of the planets), the object has been made one. These two answers seem convincing, but the second is weaker and even quite bad.²⁹

On these issues, Ibn Sinā was content with listing various hypotheses that did not satisfy even him. Ultimately, ambiguities concerning the celestial orbit of fixed stars have remained among the issues not satisfactorily resolved within the Peripatetic system.

We see a different picture in the Illuminationist system, which inherited the ambiguities and problems pointed above concerning the celestial orb of fixed stars. According to this, the celestial orb of fixed stars cannot become directly manifest from the light of lights, to which no plurality can be ascribed. Therefore, to reach the celestial orb of fixed stars from the first and original source, there has to exist pure lights that are instrumental in the process of illumination and proliferation. Looking at it from this angle, the celestial orb of fixed stars becomes differentiated from the pure lights that are prior to and above it as the encompassing celestial orb, as well as from the celestial orb of moving stars below it. As has been mentioned before, whereas the encompassing celestial orb is the farthest and the outmost enclosure providing everything with a place but is itself placeless, the celestial orb of fixed stars is a lower, that is to say intermediate category containing numerous celestial objects and transfers its daily rotation to all other celestial orbs and celestial objects. In this regard, one of the important revisions the Illuminationist system makes in traditional emanation theory is a categorical differentiation between the “dominating lights of equal rank” and the “intermediate lights ranked vertically.”³⁰ In this construction, the incorporeal lights between the Light of Lights and the celestial orb of fixed stars are ordered on a vertical line, whereas the celestial objects in the sphere of fixed stars are ordered on a horizontal line.³¹

According to the alternative configuration in *Hikmat al-ishrāq*, the celestial orb of the fixed stars, which in the Peripatetic system is at the eighth position, does not emanate from the light of lights or the proximate light— even though the en-

29 Ibn Sinā, *al-Samā' wa al-'ālam*, 48, (the expressions in parentheses and italics are from the author).

30 Suhrawardī, *Hikmat al-ishrāq*, 102.

31 Suhrawardī, *Hikmat al-ishrāq*, 119; Shīrāzī, *Sharḥ Hikmat al-ishrāq*, 339.

compassing barrier emanated from the proximate light— because it does not have the number of aspects enabling the emanation of such a large quantity of celestial objects. The fixed stars do not originate from the lower intelligences either, because that which is higher cannot emanate from that which is lower in rank. This is because it is not possible for the Peripatetic system, which consists of ten intellects and two aspects (necessity and contingency), to explain the celestial orb of fixed stars, the numerousness of the stars and planets at this stratum, and the complexity of their relationships.³²

Thus, it is known that the sphere of fixed stars does not result from the Proximate Light (nūr aqrab), since the causal aspect thereof do not suffice for the fixed stars. If it is from one of the higher lights, that light cannot have many aspects, especially in the view of those who consider each intellect to have only the aspects of necessity and contingency. If it is from the lower lights, how, then, may this sphere be conceived to be greater and higher than the barriers of the higher intellects when its stars are more numerous than theirs? This leads to absurdities. Let us not, then, linger over this series that the Peripatetic talk of. Each star in the sphere of fixed stars has a particularity, requiring it to be necessitated and requiring something to necessitate it, by which it is particularized.³³

As can be understood from this and similar statements, Suhrawardī makes serious revisions to the Peripatetic model. To take care of the ambiguities concerning the celestial orb of fixed stars, he increases the number of celestial layers enough to enable the specification of the celestial objects in the celestial orb of fixed stars:

Therefore, the dominating lights (*al-anwār al-qāhira*) – that is, the incorporeal lights free of connections with barriers – are more than in number than ten, or twenty, or one hundred, or two hundred, or a thousand, or two thousand, or a hundred thousand.³⁴

Similar expressions concerning the pure lights are repeated in the commentary of Shahrazūrī:

The number of dominant pure lights and the celestial objects (*jirm*) that emanate from these is more than ten, hundreds, thousands, and hundreds of thousands. Independent barriers do not emanate from these lights as was the case concerning the celestial orbs. To the contrary, the planets are attached to the celestial orbs, and the numbers of independent barriers are less than the numbers of planets.³⁵

32 Suhrawardī, *Ḥikmat al-ishrāq*, 100.

33 Suhrawardī, *Ḥikmat al-ishrāq*, 99.

34 Suhrawardī, *Ḥikmat al-ishrāq*, 99.

35 Shahrazūrī, *Sharḥ Ḥikmat al-Ishrāq*, 363.

This interpretation, which extraordinarily increases the number of immaterial lights between the Light of Lights and the celestial orb of fixed stars, is a crucial element of difference facilitating the understanding the mechanism of emanation and the great number of fixed stars. Although the increase in the number of pure lights and the layers in which they are found provides some advantage by increasing the volume of the humble enclosed Peripatetic universe, it has not brought a satisfactory explanation for the great number of stars in the celestial orb of fixed stars. Suhrawardī in the next step while trying to answer this question makes use of the Illuminationist proliferation principle upon which we touched in the introduction. According to this, the thousands of incorporeal lights, which have overflowed from the Light of Lights and have been aligned on a vertical line, have been put into relationships according to the aspects of essential (*dhātī*) and accidental (*arādī*) in terms of ontology, independence (*ghanī*) and dependence (*faqr*) in terms of quality, and dominance (*qahr*) and love (*maḥabba*) in terms of influence. From these multifaceted relationships of illumination-beholding-movement (*Ishrāq-mushāhada-ḥaraka*) into which the pure lights enter, the celestial order is formed. As for the celestial orb of fixed stars, the position and essence of which were in debate, in Suhrawardī's expression it emanated in this dynamic process from "the interactions of all the weak and low lights with the aspect of dependency."³⁶

The fixed stars and their spheres, and the form of fixed stars have come into being through the rays entering one another, through the extraordinary relationships of aspects such as independence, dominance, glory, and weakness, through the relationship of perfect and dense rays.³⁷

Suhrawardī's technique of increasing the numbers of incorporeal lights to provide a foundation for the abundance of celestial objects in the celestial orb of fixed stars functions harmoniously with traditional emanation dialectic: The incorporeal/immaterial lights (*anwār al-mujarrad*), which correspond to separated intellects, just like in Peripateticism, emanate from the proximate light as the second, third, fourth, etc. until they reach a great quantity on a vertical axis. But the process of emanation, unlike in Peripateticism, which takes solely the categories of contingency and necessity as its basis, is sufficiently increased through the aspects of dependency, independency, love and dominance. Finally, all the variations that arise from

36 Suhrawardī, *Ḥikmat al-ishrāq*, 101. For detailed information, see Shirāzī, *Sharḥ Ḥikmat al-ishrāq*, section 8. Shahrazūrī, *Sharḥ Ḥikmat al-ishrāq*, 359-369.

37 Shahrazūrī, *Sharḥ Ḥikmat al-ishrāq*, 366.

the completion and lessening of light enter into mutual and diagonal relationships with these categories, so thousands of incorporeal lights are obtained.³⁸

Suhrawardī's revisions to the classical system do not change its totality, for example his replacement of the concept of discrete intellect with incorporeal light, or his extraordinary increase of the layers between the celestial orb of the moon and the light of lights, are not simple plays on words or secondary changes. To the contrary, these are critical steps towards resolving problems which the Peripatetic system has struggled to overcome, including the solution of the problem of knowledge, the material/intellect dichotomy, how intermediate beings which are needed in the determination of contingent and compound objects acquire their essence, and finally fundamental physical problems like motion and causality.

According to the Illuminationist system, while the incorporeal-commanding lights shine (*ishrāq*) on lower incorporeal lights and all other beings, the lower beings contemplate or behold the incorporeal commanding lights. The only condition that is sought in this relationship of illumination and beholding is that there should not be a curtain or barrier in between. In this way, epistemological difficulties that arise in Peripatetic theory of knowledge from concepts such as active intellect, prima matter, form, etc. are eliminated from the very beginning. In accordance with the hierarchical alignment of incorporeal lights, while higher lights shine on the lower layers, those below accept these rays according to their capacity. In this mutual relationship of illumination (from above to below) and beholding (from below to above), the lower being accepts the illumination through two aspects. For example, the second incorporeal light, which emerges from the proximate light, accepts illumination once from the light of lights without an intermediary and once from the proximate light as an intermediary. As one descends into lower layers, the number of the barriers and incorporeal lights increase exponentially.³⁹ The interpretation of the theory of emanation in this way and the distinction of with or without an intermediary in the relationship of illumination and beholding between the Light of Lights and other secondary forms play an important role in resolving the problem of causality. On the one hand he emphasize the indispensable distinction between the Creator and created, his direct effects on the process of creation, while at the same time does not entirely ignore the relative role of intermediaries:

38 Suhrawardī, *Hikmat al-ishrāq*, 100. While explaining this section, Shahrazūrī, taking again as his basis the Peripatetic system, links the Illuminationist emanation mechanism with the formation of the nine celestial orbs and elements: "From this pure light, a second pure light and another material barrier come into being. In this way, all the pure lights and material barriers are formed until the nine celestial orbs and the elemental worlds completely emerge." Shahrazūrī, *Sharḥ Hikmat al-ishrāq*, 362.

39 Shahrazūrī, *Sharḥ Hikmat al-ishrāq*, 363.

The Light of Lights is the ruling Agent despite all intermediaries, the Cause of their activity, the Origin of every emanation, the absolute Creator, with or without intermediary. There is no effect that does not contain Its effect, although It may allow the relation of activity to be shared with another (Qur'an 55:29).⁴⁰

Just as every boundary indicates a “beyond,” the celestial orb of fixed stars has given rise to the question of whether there are other beings or worlds beyond it. Ibn Sînâ, in the second article of *al-Najât* in the section on *al-Ṭabī‘iyyat*, considers speculations concerning what are beyond the universe and debates on whether the existing universe is the only one, and whether it can multiply. Ibn Sînâ reminds the rule based on classical physics and logic “the totality has to be a single sphere” and tries to invalidate possible scenarios of the existence of different universes with the principle “the vacuum (*khalā*) cannot be existent.”

If there is another universe, it also has to be spherical. Hence, there will necessarily be a vacuum between the two. In this way what is possible is considered existent. According to the nature of objects, this necessitates the impossible, which is the existence of vacuum. It is impossible for the impossible to necessitate the contingent. From this it emerges that it is not possible for there to be a universe other than this and that to the contrary only one universe exists.⁴¹

As for Illuminationist cosmology, it does not try to prove notably the existence of other universes, but the system, as a whole is not closed to the possibility of other universes. Approaching it from this angle, in *Hikmat al-ishrâq* there are statements which may be considered radical concerning what is beyond the sphere of fixed stars:

Since the arrangement of the fixed stars is not haphazard, it is the shadow of some intelligible order; but this order – may, even the pattern of the planets among the fixed stars – is beyond the knowledge of any man. The wonders of the ethereal world, the relations among the spheres and their precise and certain enumeration – all these are very difficult. And there is nothing to prevent there being other wonders imperceptible to us in and *beyond* the fixed stars.⁴²

At first sight, this approach, which seems consistent with the effort to increase the number of pure lights to hundreds of thousands to explain their relationship with the celestial orb of the fixed stars and other celestial objects, may not seem to offer something new. But it is quite important as an effort to extend and make infinite the closed universe of classical cosmology, which was cracked only in the sev-

40 Suhrawardî, *Hikmat al-ishrâq*, 114.

41 Ibn Sînâ, *al-Najât*, 174; cf. İbn Sînâ, *Felsefenin Temel Konuları*, 125-126.

42 Suhrawardî, *Hikmat al-ishrâq*, 104 (emphasis added).

enteenth century. By enlarging the area between the sphere of fixed stars and the light of lights, the Illuminationist cosmology conceived of a much larger universe. At the very least, it has opened classical cosmology to different constructions. It is striking, however, Shirāzī and Shahrazūrī repeat without any special interpretation Suhrawardī's expressions that beyond the sphere of fixed stars there may be many more celestial orbs and universes.⁴³ While Shahrazūrī states, "the number of celestial objects in the sphere of the fixed stars is more than the drops of the sea and grains of sand; it is not possible for them to be encompassed by us,"⁴⁴ agreeing with the opinion the celestial objects of the celestial orb of fixed stars are more than the human mind can imagine, he does not go further based on this assumption to questioning classical cosmology, or follow the probable consequences of this hypothesis.

III. The Retrograde Motion

In the Peripatetic system, the infinite and perfectly circular movements of bodies, which possess intelligence and soul, are simple (not made up of elements), and are not subject to existence and disturbance, have a very significant and extensive place in the general theory of motion. Ibn Sinā in the very beginning of *al-Samā' wa al-'ālam*, in accordance with the model of a finite and closed universe that is centered on earth, divides motion basically into three: motion from the center (*min al-wasat*), motion to the center (*ilā al-wasat*), and motion above the center (*alā al-wasat*).⁴⁵ Since in this classification, which is based on a categorical separation between the earth and the heavens, it is accepted that heavy objects move to the ground, light objects move to the sky, key concepts such as natural extent (*hayyiz*) and natural inclination (*mayl*) have been used to explain motion.⁴⁶ The movement of celestial objects, which is discussed in the third category and is important for our subject, is different from compound objects in terms of quality. Since "the heaven is simple, finite, its natural shape, therefore, being spherical," movements in heavens have to be in harmony with these features.

The existing shape of the celestial orb (*falak*) has to be (circular) in the form in which circular surfaces surround it. Due to its nature, an object that moves towards the celestial orb has to move with an inclination similar to that of the celestial orb. Therefore, it (the celestial orb) is simple, and its shape has to be simple and circular. It also finds that its place (*makān*) is circular.⁴⁷

43 Shirāzī, *Sharḥ Hikmet al-ishrāq*, 344, 345.

44 Shahrazūrī, *Sharḥ Hikmet al-ishrāq*, 362.

45 Ibn Sinā, *al-Samā' wa al-'ālam*, 6.

46 Ibn Sinā, *al-Ishārāt*, 217-222; cf. İbn Sinā, *İşaretler ve Tembihler*, 98-101.

47 Ibn Sinā, *al-Samā' wa al-'ālam*, 19.

Being loyal to the Peripatetic theory of motion, how can a celestial object be moved? In this investigation of an object that is continuously moving circularly, a standard mechanism has been developed that has three components at its foundation: an abstract *intellect* which becomes the subject of the longing of objects through starting the motion and the process of overflowing; a *soul* that forms the power source for the motion; a *will* to determine the direction of movement and to make the form (circular) of the movement permanent. In addition to this trivet, which has been used in explaining celestial movement, explaining the many movements of celestial objects such as Mars and the moon can be seen with the unaided eye has required an eccentric-deferential system and epicycles. Despite this closed mechanism which necessitates many components, the most serious problems related to the motion above the center (alâ al-wasaṭ) are anomalies not following the general principles of classical cosmology and can be seen with the unaided eye. The most important of these are the slowing down, speeding up, and even *turning back* that can be observed with the unaided eye in the movement of some planets. Ibn Sīnā, while explaining the movement of stars and planets takes “the existence of different movements in the sky” for granted. The lunar and solar eclipses comprise the clearest evidence for this.⁴⁸ But it is very difficult to explain the retrograde motion of planets within the boundaries of classical astronomy while being loyal to Peripatetic principles.

The Illuminationist cosmology’s most prominent criticism of the Peripatetic system becomes manifest exactly at this point, i.e. the retrograde movement of planets. Since pure intellects cannot have deterioration or inconsistency in their own movements and one cannot think of a shortcoming in their perfectly circular turns, the planets, which have to follow their beloveds exactly, have to maintain their uniform circular movements without change and variation. But that was not the case. Ibn Sīnā, who is aware of this contradiction, has to postpone this problem, which he cannot answer within the Peripatetic framework.

As is known concerning the situation of celestial bodies, stars/planets have to turn around their own souls (their own axis?). Despite this, stars and celestial orbs have movements that are inconsistent with the total movement. How can this (contradictory situation) be resolved or how can it be possible? This issue has to be postponed until acquiring the sciences of *Almagest*, in which these movements are described. In the future we will come back and explain how cleavage is prevented, the inclines on which the spheres are thought to turn and how these spheres go back before completing their turns.⁴⁹

48 Ibn Sīnā, *al-Samā’ wa al-‘ālam*, 37.

49 Ibn Sīnā, *al-Samā’ wa al-‘ālam*, 45-46.

But Ibn Sīnā, as far as we know, has never come back to this question so that the question of “why celestial spheres come back before completing their orbits” has remained ambiguous. In the following paragraphs of *al-Samā’ wa al-‘ālam* it is repeated the movements of stars sometimes speed up, sometimes slow down, and even go back. This time, in the resolution attempt, this contradictory situation is linked to “another center” ascribed to the center of the celestial orb of the epicycle, which indicates the equant point assumed by the eccentric/deferential system.⁵⁰ This important problem, which Peripatetic cosmology could not consistently explain and tried to overcome by adding epicycles to the system, drove Suhrawardī to new approaches:

It is not true, as the followers of Peripatetics have supposed it to be, that each of the spheres in its many movements resembles a single incorporeal intellect in all respects, for the spheres are many and their movements diverse. As they explain it, the goal [of the movement of the spheres] is the movements of the planets. But a planet’s motion is sometimes retrograde and sometimes rectilinear. Sometimes the planet is at the apex and sometimes at the perigee. How can the planet resemble a single entity if we accept the Peripatetic rejection of the illuminations caused by the multiplicity of luminous correspondence? Therefore, their movements with their diversity of states are due to the correspondence of the rays and intelligible lights in their beloveds.⁵¹

The increase in the number of the beloveds and the claim “while planets travel on their orbits, they go in different directions because they come under the influence of different beloveds” comprise an important initiative. Still the issue of why celestial objects have different movements that do not follow the principle of regular circular motion has not been resolved. This is because on the one hand the common movements of celestial objects and on the other hand the individual movements of celestial objects that are contrary to the general motion were observed. In trying to resolve this issue –in a way that is reminiscent of Newton’s separation of movement into absolute and relative– Suhrawardī uses the distinction of accidental (*‘arāḍī*) motion and essential (*dhatī*) motion. He tries to explain the situation using the example of a passenger that goes in different directions in a ship that goes one direction: “This person accepts one motion as an individual motion and the other through the thing in which he is in. Similarly, while the movement to which all the barriers join is due to the movement of the encompassing celestial orb, every celestial orb also has a different motion. The mover of each of these barriers (the souls of the celestial orbs) is alive by itself and is therefore an incorporeal light.”

50 Ibn Sīnā, *al-Samā’ wa al-‘ālam*, 48.

51 Suhrawardī, *Ḥikmat al-ishrāq*, 118.

Suhrawardī, who repeats the Peripatetic system as regards the subject of the movements of celestial objects, turns the souls which control the direction of the planets to *commanding incorporeal lights* and makes a small correction as regards the aim. According to this, the reason for the movement of celestial objects is “not certain desires pertaining to the barriers, but rather an aim that pertains to light.”⁵² This aim is reaching perfection, which corresponds to the concept of worship in human experience.

It is known that the seven planets move in different ways and this necessitates numerous barriers. None of these are independent. To the contrary, to actualize themselves and to become perfect they need incorporeal lights.⁵³

In light of this reminder concerning the aim, it is beneficial to remind the question related to the retrograde motion: How is it that celestial objects that share regular circular movements have become differentiated in terms of their speeds and directions? Suhrawardī answers this question, which the Peripatetic system has struggled to explain, as follows:

The movement of the planets share the circular motion to resemble only one beloved, which is the most sublime light, while their directions are different because their beloveds are different, which are the dominant lights.⁵⁴

As one can see, Suhrawardī tries to resolve the knot by using the opportunities provided by the metaphysics of *nūr*. Celestial bodies, which in the Peripatetic system have to uniformly move in one direction, “can move in any direction according to the degree of effect and influence of the beloveds, although in their general movement they are transformed into pure lights that follow the light of lights in their general movement.” Shirāzī interprets Suhrawardī’s expression “many movements” concerning the movements of the planets as different movements such as slow, fast, forward, and backward, cannot occur in a single orbit. He emphasizes for every movement there has to be a different barrier. But in a way similar to Suhrawardī, he does not go further than saying that the reason for the different movements is “the immaterial lights that exist by themselves.”⁵⁵

Shirāzī points at the effect of the different movements of the planets at the occurrence of objects in the lower world and their linear movement. He empha-

52 Suhrawardī, *Ḥikmat al-ishrāq*, 94.

53 Suhrawardī, *Ḥikmat al-ishrāq*, 94.

54 Shirāzī, *Sharḥ Ḥikmat al-ishrāq*, 387.

55 Shirāzī, *Sharḥ Ḥikmat al-ishrāq*, 385.

sizes the “differentiation” that can be observed in the movements of the celestial objects and in the example of retrograde movement is reflected in the lower world. Differentiation in both areas (in the world of the simple objects in the different movements of the celestial objects, in the world of compound objects in the individualization of the objects) results from the strengthening and weakening of light.⁵⁶ This is an important explanation, because the Illuminationist system, which excluded the concepts of *prime matter* and *form* (*hayūlā* and *şūra*).⁵⁷ From its literature entirely, can only explain how single objects (particulars) in the sub-lunar world take on different forms in this way. According to this, while objects are partners in being objects (the existence of the daily circular movement), they are different in forms (aspects, the plurality of the beloveds and movements). The determination of different forms at the end depends on the multi-aspect movements and internal relationships of strong and weak lights.

Ultimately, in the Illuminationist system the source and cause of celestial movements, whether these are accidental or essential, is the influence of incorporeal lights on the celestial orbs, while the linear motions, which are subject to occurrence and disturbance ultimately follow the circular motion of the celestial orbs. Since illumination is constant, the circular motion of the celestial orbs is also constant. Otherwise, the celestial object would reach its target and remain there in a constant position. If light were not an entity that had different degrees in itself in terms of its ontological characteristics, qualities, and influences, the existence of movement, which is the expression of change in space and time, would have been unthinkable. Looking at it from this angle, there is a relationship of *dominance* (*qahr*) between the high incorporeal lights and low accidental lights, and a relationship of *love* between the lower lights and the higher lights. The light of lights has dominance over all forms of existence whether they are essential or accidental, and only feels love and need for itself. All these processes of illumination, governance, love, and beholding comprise the original source for the uniform and circular movement of celestial objects. This mechanism operates according to the hierarchy of “illumination-beholding-movement, movement-beholding-illumination.”

Just as in Peripatetic cosmology, in the Illuminationist system the barriers/celestial orbs were considered alive, for “The lifeless barrier does not revolve of itself; for no lifeless thing can have a goal that it seeks, reaches, and then separates itself from.”⁵⁸ According to both systems, the fundamental reasoning for ascribing

56 Shirāzī, *Sharḥ Hikmat al-ishrāq*, 385-387.

57 Suhrawardī, *Hikmat al-ishrāq*, 53-55.

58 Suhrawardī, *Hikmat al-ishrāq*, 94.

life to celestial objects is, as has been mentioned above, to explain the simple circular motion according to fact. In the Illuminationist system the actual source of movement is, beyond ostensible causes, the continuous illumination of the light of lights. Just as the continuous illumination of the light of lights and the active illumination-beholding relationship between incorporeal lights cause movement in the higher world, this complex mechanism between celestial objects is directly reflected to the lower world in which light decreases to also cause the linear motion. In this infinite process of illumination and movement even a moment of interruption will end all forms of movement and consequently existence.

It can be observed that despite its expository power, Suhrawardī's objections and suggestions concerning the movement of celestial objects and especially the retrograde problem were not sufficiently taken into consideration by the commentators, and were passed by without a special attention.

IV. The Position of the Sun and the Moon

Even though different opinions were expressed before modern cosmology concerning celestial orbs, the sphere of fixed stars, the encompassing barrier, and the prime mover, there were not serious differences –other than mythological and cultural elements– concerning the position and function of the sun and the moon. In this sense, a feature that distinguishes Illuminationist cosmology from other interpretations is the noteworthy emphasis on the sun. In the tenth chapter of *Ḥikmat al-ishrāq*, in the short section entitled “the completion concerning fixed stars,” a parallel is established between the heavens and the human body to emphasize the central position and importance of the sun within the Illuminationist system. Based on the concept the power and will of the incorporeal lights is transferred to the celestial orbs through the planets, the position of the sun in the heavens is likened to the heart in the human body.

Suhrawardī in the section on the sun strikingly returns to ancient Iranian mythology instead of the Peripatetic tradition, using various Pahlawī concepts, such as his explanation *Hurakhsh* is the talisman of *Shahrir*, the most superior of the lights of the horizontal hierarchy. According to Ziai's footnote, *Hurakhsh* represents the sun, whereas *Shahrir* in Zoroastrianism corresponds to the angel responsible for the administration of the heavens and mines.⁵⁹ Because *Hurakhsh* is accepted as “the one with the strongest light among the lights that have a horizontal hierarchy,”

59 Suhrawardī, *Ḥikmat al-ishrāq*, 182.

Suhrawardī has called him “the head of the sky” (*raīs al-samā*) and “the doer of the day,” (*fā’l al-nahār*) emphasizing this because of these attributes “in the tradition of Illuminationism it is obligatory to glorify the sun.”⁶⁰ Commentators who interpret these expressions again have not answered the question of why Suhrawardī in this issue, abandoning Peripatetic notions, returns to Iranian mythology. One sees that Shahrazūrī turns the expression “the head of the sky” to “the center of the realm,”⁶¹ while Shirāzī tries to soften Suhrawardī’s emphases and his expression that glorifying the sun is the tradition of Illuminationism. According to him, the sun is the head of the heavens as well as the world of objects, illuminating it and heating it up. “This and similar virtues have led advocates of explorer of wisdom and the Illuminationists among the savants of the east to glorify the sun.”⁶²

It is significant that in contrast to the strong emphasis in Illuminationist texts on the centrality of the sun, the importance of the celestial orb of the moon and the moon is not mentioned. The celestial orb of the moon, which plays an extraordinary role in the Peripatetic system of ten intellects and nine celestial orbs, has lost its distinctive place/role in the extended space of the Illuminationist universe having become homogenized through the notion of light (*nūr*), comprising thousands of layers. Similarly, since the concept of prima matter and form are not needed in obtaining knowledge, the active intellect has become functionless. Although expressions such as *high* and *low* have been continued to be used as technical terms in a way that is similar to the Peripatetic system, these kinds of distinctions have been ascribed to the encompassing barrier and the light of light as opposed to taking the celestial orb of the moon as a point of reference. In sum, the qualitative distinction of the Peripatetic universe has the moon as its landmark has not been taken into consideration.

Conclusion

As has been related in the introduction, just as in Peripateticism, the most important cosmological problem which the Illuminationist system has tried to solve was to explain with consistency the simple, circular, but at the same time “different” movements of celestial objects within the closed and finite universe of the classical emanation theory. How the celestial orbs of fixed stars has emanated, why and how planets move, and the retrograde movement of the planets, the essence of which

60 Suhrawardī, *Hikmat al-ishrāq*, 104.

61 Shahrazūrī, *Sharḥ Hikmat al-ishrāq*, 376.

62 Shirāzī, *Sharḥ Hikmat al-ishrāq*, 345.

was not explainable until the adoption of the sun-centered model and the comprehension of the parallax effect, were among the astronomical problems the Peripatetic and Illuminationist models have discussed. According to Suhrawardî, who tries to interpret the celestial order as a whole according to emanation theory and Illuminationist principles, the Peripatetic cosmological system, which is generally deemed to consist of ten intellects and two aspects (necessity/possibility), was far from explaining the celestial orb of fixed stars, the plurality of stars and planets, their movements and their relationships. Looking at it from the equation of dualism/monism one can see the Peripatetic system could not completely eliminate inconsistencies due to dualist assumptions. Beginning with the distinction of necessary/contingent, in all the distinctions made between separate intelligences and bodily elements, the simple circular movement and the linear movement subject to occurrence and disturbance, form and matter etc. one can see traces of dualism. The Illuminationist system, despite it takes the emanation model as its basis and uses the logical framework of Peripateticism with few changes has remained loyal to the monistic framework. Through an ontology based on light (*nūr*) and a perception of natural philosophy based on magnitude (*miqdār*), differentiation of the universe in terms of sub-lunar supra-lunar based on quality has become meaningless. At the same time, epistemological problems of Peripatetic system such as *muqaranah*, *ta'aaqul*, and *ittiṣāl* have been eliminated from the very beginning. Through the proliferation principle based on the completion and decrease of light, the ontological unity of the universe has been preserved. The concept of magnitude has allowed for the positioning of accidents and essences necessary for the individualization of physical objects without causing any type of dualism.

One can see that Illuminationist cosmology in terms of Suhrawardî's design particularly, has made a great effort to overcome problems thought to originate from Peripatetic cosmology and that it has advanced proposals that can be considered radical for their time such as the claim that "beyond the celestial orb of fixed stars there can be different worlds and extraordinary things." However, one can see that the commentators have not approached the problems Suhrawardî has indicated with the same degree of courage. To the contrary, it is apparent they have tried to interpret the Illuminationist system in harmony with the contemporary Peripatetic worldview. Both commentators easily turn the special concepts of Illuminationist cosmology to Peripatetic terminology. For example, *the proximate light* is interpreted as the first intellect, *the barrier* as the celestial orb, and *the dominant light* as the soul. In the section on emanation, Shirāzî uses the Peripatetic equivalents of each layer in Illuminationist hierarchy, using the expression *the first intellect* for the proximate light, *the highest celestial orb* for the barrier that has first emanated, *the second intellect* for the following incorporeal light, *the third intellect* for the third in-

corporeal light that emanates from the second, and *the celestial orb of fixed stars* for its barrier. Regarding this reconciliatory writing effort, one can say the Peripatetic system in the thirteenth century has taken the position of the dominant paradigm answering fundamental questions with competency plays a big role. The questions of what other factors lie at the foundation of the moderate interpretations of the commentators that are in harmony with Peripateticism, to what extent the political, cultural, and social dynamics of the time played a role in this stance, and why Suhrawardī sought alternative approaches other than Peripateticism, which he first espoused deserve to be independently studied. One can add to this list the question of to what extent the criticisms and suggestions in *Hikmat al-ishraq* directed towards Peripatetic cosmology have influenced subsequent developments, at last modern cosmology. However, to say based on the topics mentioned above that Illuminationist cosmology completely separated itself from the Peripatetic framework, or that it had revolutionary aspects such as the extension of space, the removal of intermediary entities, and the emphasis on the central role of the sun would be a hasty interpretation disregarding the historical conditions of the twelfth and thirteenth centuries. But this qualification and sensitivity does not change that Illuminationist cosmology includes important elements of novelty going beyond what was accepted and expected in its era, and that if this potential is elucidated, the history of Islamic cosmology will take likely a different course. The basic motivation for the Illuminationist critics and proposals did not consist of modern factors such as reaching more distances, making more precise observations with the unaided eye or instruments and collecting data, to systematize the observations thus obtained by mathematical methods, and finally to reach certain cosmological principles, but rather to develop an alternative metaphysics to Peripateticism in line with the conditions, expectations and needs of the era. This great goal that is centered on the concept of *light* and promises the attainment of certain knowledge without intermediaries thus at the lowest cost has necessitated as a matter of course the construction of a whole cosmological model with which it is in harmony.

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