

On the Method of Interpreting Scientific Knowledge

Bilimsel Bilgiyi Yorumlama Metodu Üzerine

Zeki EKER

Prof. Dr., Akdeniz Üniversitesi Fen Fakültesi Uzay Bilimleri ve Teknolojileri Bölümü, Akdeniz University Faculty of Science Department of Space Sciences and Technologies, Antalya/Türkiye. eker@akdeniz.edu.tr, Orcid ID 0000-0003-1883-6255

Makale Bilgisi	Article Information
Makale Türü – Article Type	Translation / Çeviri
Geliş Tarihi – Date Received	8 Mart / March 2022
Kabul Tarihi – Date Accepted	12 Haziran / June 2022
Yayın Tarihi – Date Published	28 Haziran / Haziran 2022
Yayın Sezonu	Haziran - June
Issue - Sayı	13

Atıf / Cite as: Eker, Zeki. "On the Method of Interpreting Scientific Knowledge: Bilimsel Bilgiyi Yorumlama Metodu Üzerine". *Katre Uluslararası İnsan Arařtırmaları Dergisi – Katre International Human Studies Journal* 13 (June / Haziran 2022), 209-238.

<https://doi.org/10.53427/katre.1084761>

İntihal / Plagiarism: Bu makale, en az iki hakem tarafından incelenmiş ve intihal içermediği teyit edilmiştir. / This article has been reviewed by at least two referees and confirmed to include no plagiarism. <https://dergipark.org.tr/tr/pub/katre/policy>

Copyright © Published by İstanbul İlim ve Kültür Vakfı / Istanbul Foundation for Science and Culture, İstanbul, Turkey. All rights reserved.



On the Method of Interpreting Scientific Knowledge¹

Zeki EKER

Öz

Objektif bilimsel bilgi tekrarlanabilir deney veya gözlem sonucunda ortaya çıkan, bir başka deney veya gözlem ile yanlışılanamayan bilgi türü olarak tanımlanmıştır. Objektiflik bilimsel bilginin vazgeçilmez bir özelliğidir. Bu durumda evrenin kendisi başta olmak üzere, en küçük parçasından en büyük parçasına kadar evrendeki her şeyin görünüşü, boyutları, özellikleri, iç ve dış yapısı, hareketi, nasıl değiştiği (evrimi), yaşı, ömrü gibi bilgiler ile evrendeki olayların tanımları, fiziksel özellikleri, sınıflandırılmaları, ne zaman nasıl ortaya çıkıp nelere sebep oldukları gibi bilgilerin tümü objektif bilimsel bilgi türüne girmektedir. Kişiden kişiye, toplumdan topluma, medeniyetten medeniyete değişmez. Ancak bilim anlayışı, bilimsel bilginin kullanım tarzı, bilimsel bilgilere atfedilen değerler sistemi kişiden kişiye, bölgeden bölgeye, medeniyetten medeniyete değişiklik gösterebilir ve göstermektedir. Aynı bilimsel bilgi farklı şekillerde kullanılabilir gibi farklı şekillerde de yorumlanabilir.

Bu çalışmada objektif bilimsel bilgiler arasından itina ile seçilmiş iki örnek (su çevrimi ve evrenin büyük ölçekteki yapısı) ile Müslüman toplumlarda bilimsel bilgilere verilmekte olan tepkiler incelenmiştir. Birinci örnek genelde itiraz görmesi bakımından ikinci örnek ise hem pozitif hem negatif tepkilere sebep olması bakımından tercih edilmiştir. Birinci örnek Dünya’da hayatın sürdürülmesi; ikinci örnek ise hayatın ortaya çıkması ile ilgilidir. Yediden yetmişe herkesin az çok fikir sahibi olduğu birinci örnek ile birlikte sadece uzmanlarının ve öğrenen meraklılarının bildiği ikinci örneğin bu çalışma için seçilmesindeki amaç İslam’a göre bilimsel bilginin yorumlanmasının popülerlik, uzmanlık da dahil her çeşitten konuya uygulanabileceğini vurgulamak içindir.

Objektif bilimsel bilgi temelde “nasıl?” sorusunun cevabı olarak üretilmiş bilgilerdir. Birçok durumda “neden?” veya “niçin?” sorularına cevap veriyor gibi görünse de objektif bilimsel bilginin özü nasıl’ı ilgilendirir niteliktedir. Bilim adamları veya bilimsel bilgi üretenler sübjektif cevaplardan kaçarlar. “Zamanın Kısa Tarihi” adlı kitabın yazarı Stephan Hawking’in “*Bilimin klasik yaklaşımı böylesi bir evrenin neden niçin var olduğu sorusuna cevap veremez*” sözü bunu açıkça göstermektedir. Evrenin hangi gerekçe ile veya ne için yaratıldığı İlahi bir gücün amacını ve hedefini bilmek gibi yorumlara dayalı bilgi gerektirdiği için modern bilimin temsilcileri tarafından bilimsel sınırların dışına atılmıştır. Böylesi bilgiler bilimsel bilgi sınıfına girmez. Aslında bu durum sadece evrenin tamamı için değil küçük parçaları hatta evrende vuku bulan olaylar için de geçerlidir.

Ancak, varlığın hakikatini anlamak için “nasıl?” sorusuna verilen cevaplar kadar, “neden?” ve “niçin?” sorularına verilecek cevaplar da önemlidir. Çünkü “nasıl?” ile birlikte “neden?” ve “niçin?” sorularının da cevaplanması ile

¹ Bu makale müellifin bu sayıda yayımlanmış olan “Bilimsel Bilgiyi Yorumlama Metodu Üzerine” başlıklı (s. 146-176) makalenin İngilizce çevirisidir.

insanlar objektif bilimsel bilginin tatmin edici bir yorumuna ulaşabilirler. Yorumlarla üretilen bilginin sübjektif olması onun yanlış olmasını gerektirmediği gibi değerini de azaltmaz. Aksine, objektif bilginin İslam'a göre yorumlanmasının yolunu açar ki bu da İslam düşüncesinin, İslam Dünya görüşünün, İslam bilim anlayışının özgünlüğü ve diğer düşüncelerden, görüşlerden ve bilim anlayışlarında farkını ortaya koyar. Aksi takdirde, yani yorumlar da objektif olsaydı (ki bu imkânsızdır, varlığın doğasına aykırıdır), medeniyetler olmazdı, insanlar da aynı fabrikadan çıkmış aynı tip, aynı tepkiyi veren, ruhsuz robotlar gibi olurdu.

Saf objektif bilgi özünde kıymetli olmasına rağmen, bilgiden çok yorumu ön planda tutanlar açısından hayal kırıklığına sebep olabilir. Su çevrimi ilkököl müfredatına kadar girmiş anlaması kolay objektif bilimsel bilgilerden olmasına rağmen, yorumsuz anlatılması sebebiyle çok Müslüman tarafından tepkiyle karşılanmaktadır. Çünkü, ömrü boyunca ata ve babalarından “yağmur rahmettir” sözünü işiten Müslümanlara “yağmur neden yağar” sorusuna verilen cevap yağmur nasıl yağar anlamında anlatıldığından (bulut içindeki su buharı, atmosferde rüzgar ile gezerken soğuk bir yere rastlaması sonucunda, buhar yoğunlaşır yağmur, kar veya dolu olur), yani Kur'an'da olduğu gibi, başta insanlar olmak üzere bitki ve hayvanların ihtiyacı olan suyun su çevrimi mekanizması ile tuzlu okyanuslardan alınıp kıta içlerine ihtiyaç sahiplerine itina ile tatlı su olarak ulaştırılması sanki sebep-sonuç ilişkisi ile ortaya çıkmış sıradan bir olay şeklinde anlatıldığı için, yağmurun rahmet olduğu bilerek veya bilmeyerek gizlendiğinden Müslümanlar bu anlatımdan rahatsız olmaktadır.

Kur'an ve çağdaş tefsirinde de evren, evrendeki varlıklar ve olaylardan bahseder. Ancak dikkatle incelendiğinde görülecektir ki, ayetler ve ayetlerin açıklamaları (tefsirler) “nasıl?”dan ziyade “neden?” ve “niçin?” ile ilgilidir. “*Göğü kudretimizle biz kurduk ve biz onu genişletmekteyiz*”(ez-Zâriyât 51/47) ayetinde olduğu gibi, evrenin neden genişlediğine dair bir soru okuyucunun aklına takılmaz. Aksine, ayetlerde okuyucunun aklına takılan “nasıl?” sorusu olmaktadır. Bunun da gerekçesi, Kur'an Müslümanları bilimsel araştırmalara teşvik etmesidir ki, “nasıl?” sorusuna verilen cevaplar ile birlikte ayetler daha anlaşılır olmaktadır.

Sadece “nasıl?” sorusunun cevaplarını araştıran modern bilim ve objektif bilimsel bilgiler ile varlığın hakikatini anlamak mümkün değildir. Varlığın hakikatini anlamak, merakı gidermek, öğrenilen bilgi ile tatmin olmak için, sadece “nasıl?”a verilen cevaplar yetmez, “nasıl?” soruları ile elde edilen objektif bilgilerin “neden?” veya “niçin?” soruları ile yorumlarının da aranması gerekir ki, bir çıkış yolu bulamadığı için modern bilim anlayışı objektiflikten ödün vermemek adına bu yolu kapatmıştır (yorumlar kime göre neye göre olacak?). Bin dört yüz küsur yıldan beri yürürlükte olan İslam bilim anlayışına göre ise böyle bir problem yoktur. Çünkü objektif bilimsel bilgiler ortada bırakılmamış, onların “neden?” ve “niçin?” soruları ile nasıl yorumlanacağını örnekleri başta ilgili Kur'an ayetleri olmak üzere çağdaş tefsirleri de her çağda insanlara yol göstermiştir, göstermektedir ve gösterecektir.

Abstract

Objective scientific knowledge is a kind of knowledge extracted from one or more experiments or observations, which is not refutable by any other experiment or observation. Objectivity is an indispensable feature of the scientific knowledge. Therefore, any knowledge such as appearance, size, properties, internal and external motions, structures, and changes (evolution), current age and natural lifetime of the universe itself or about one or many of its parts regardless their sizes, including knowledge of events occurring in it; such that, definitions, physical properties, classifications, how, when and where they appear or disappear, and their influence etc, are considered objective scientific knowledge. It is obvious that these are kinds of knowledge which never changes from person to person, from one group to another and from one civilization to other. However, definition and understanding of science, style of using the scientific knowledge and value attributed to science could change from one civilization to other, from one region to another, even one person to other. The same scientific knowledge could be used for many different purposes and/or could be interpreted differently among the people, societies and civilizations.

Two specific examples of objective scientific knowledge (water cycle and the large scale structure of the universe) have been chosen to investigate responses of Muslims. The first one, "Water cycle" is a typical example that Muslim society refuses or rejects. The second is a kind of knowledge that both negative and positive responses could be observed. The former one is about the continuation of biological life on the Earth, while the latter is also about the life, but it is about the origin of life in the universe. The first one is very popular and easily known among the people of all ages. These examples are chosen intentionally for this study to emphasize how powerful the method of interpretation, which may work whether the subject is popular or not and valid among the different kinds of knowledge

In reality, the objective scientific knowledge is the knowledge produced from questions starting by "how". Knowledge related to "why" also exists. Despite answer of such questions start by a word "because", the essence of explanations always related to "how". This is because; the modern scientists escape subjective questions and subjective answers. This is obvious in the words of Stephan Hawking, who is the author of the book "Brief History of Time". He claims: *"The usual approach of science of constructing a mathematical model cannot answer the question why there should be a universe for the model to describe. Why does the universe go to all the bother of existing?"* Answer to such questions "why is the universe created?" requires knowledge about knowing the mind of God. A human mind is not eligible to give an answer to this question. If someone claims there is an answer; it is definitely not an objective but a subjective answer. Subjective answers, on the other hand, are not scientific according to modern definition of science. For us, the situation is not only true about the universe as a whole; the same situation is also true for its parts and natural events.

However, perception of reality or complete understanding of a situation requires not only information related to "how", but also "why". In such a way that answers related to "why" should be considered as interpretations of the scientific knowledge. That is only after proper interpretations which were

deduced from both “how” and “why”, a complete understanding of events could be achieved. Interpretations, however, are usually subjective. If a piece of knowledge is subjective, in another saying, if it is not scientific, the subjectivity does not reduce its value. On the contrary, it opens a road towards interpretation of scientific knowledge according to Islam (or any other civilization). Therefore, subjectivity is indispensable to distinguish Islamic thought, Islamic worldview, Islamic understanding of science from the other thoughts, worldviews and understandings. On the contrary; if interpretations were forced to be objective (this is impossible, unnatural), there would not be cultures, and civilizations; humans would be like spiritless robots all same, giving identical responses, boring and dull.

Water cycle is a typical example of un-interpreted (pure) scientific knowledge refused by Muslims, despite understanding it is very easy; thus it exists even in primary school curricula. This is not because Muslims are against science but because the pure knowledge is given without interpretation. Every Muslim heard from his father and mother, and from his ancestors that “the rain is mercy”. But, the teachers who teach it in the class room first ask the question “why does it rain?” but only explain how it rains even if the answer starts by the word “because” as if the rain is an ordinary event (if water vapor in a cloud runs in cool air in the atmosphere, it condenses and precipitate as rain, hail or snow) occurring as a result of cause and effect.

Qur’an and its contemporary commentator Risale-i Nur also give information about the universe or about its parts including natural events. With a careful look, one could see that, the verses and their explanations are more related to “why” contrary to science rejecting “why” thus confined only “how”. Consider the verse, “**And the heaven We constructed with strength, and indeed, We are [its] expander.**” (Adh-Dhariyat, 47); a reader would not interest in “why”, but wonders about “how?” The reason is clear: humans could achieve objective knowledge (experiments or observations), but not proper subjective answers according to Islam. Thus, Qur’an encourages humans to obtain observational and experimental knowledge, which is the essence of science.

Despite, modern science closed the way towards subjective interpretations (according to what?), proper subjective interpretations (according to Qur’an) originating from “why” are essential to humans for fulfilling curiosity, grasping the reality and to be satisfied with the knowledge. Actually, this is the essence of science according to Islam, which was established after the revelation of The Qur’an. According to Islam, observational and experimental knowledge (science) should not be left alone. Any objective scientific knowledge, which are related to “how?”, must be interpreted by the questions starting “why” according to Islamic worldview. Examples of interpretations could easily be found in Qur’an and its contemporary commentators such as Risale-I Nur.

Keywords: Astrophysics, Scientific knowledge, Islamic Science, Objective knowledge, Interpretation, Risale-i Nur.

Introduction

Scientific knowledge is claimed being absolute and truest information with respect to other kinds of knowledge such as art, intuition, astrology, prophesy and religious knowledge/authority etc. Such a claim does not occur only in western sources but could be found in the formal education of many Islamic nations of today. Being open to criticism or re-confirmation is defended as a guarantee for its trustworthiness. Continuous consistency tests repeated by skeptics are presented as a proof for this guarantee.

It is very important not to confuse meanings of science, scientific theory, scientific knowledge and understanding of science. For example, the word "science" is often means the body of knowledge collected over centuries of various scientific activities, but sometimes it is used to indicate practices of scientists. One of the 20th century philosophers, Paul Feyerabend² claimed "Every school, which is interested in philosophy of science, understands and explains what science is, how it works differently. Moreover, scientists, politicians and various officials, who stood for the society, have opinions. If one says that the nature of science is still not clear, it would be the truth." Even if we think there are no confusions about understanding scientific theory, or scientific knowledge, the understanding of science is not what one understands from the word "science". Actually, it is a style of understanding and a way of usage of the results from scientific activities or science in general, or it can be understood what primary purpose of scientists doing science, or the system of values attributed to scientists, scientific knowledge and activities. Moreover, despite the science is a single entity, in reality it is precious heritage gathered from one generation to other and because of that it is the most valuable treasure of mankind. Therefore, its value could be different at different places over the world or among different civitations; meanwhile purpose of using science may also alter.

It is expected that scientific knowledge must be true, consistent, and sufficiently accurate. But it is not always the case that a theory or a claim is true just because it contains a proven hypothesis. In another saying, usage of true scientific knowledge in a theory, in a claim, or in a scientific description does

² Paul Feyerabend, *Bilim Kilisesi*, çev. Cevdet Cerit (İstanbul: Pınar Yayınları, 1991), 107.

not make it correct, acceptable and consistent. Everyone, especially Muslims, must always be aware of such logical fallacies. Science or scientific claims cannot be exceptions.

Since about a few centuries, humanity, even some contemporary civilizations, are somehow directly or indirectly imposed to accept contradictory interpretations of modern scientific knowledge. It is generally said; this is science, by definition it is true and correct, thus you must accept it, otherwise you are against science. In most cases, however, scientific knowledge is not objected. What usually objected (or refused) are the interpretations, not the objective knowledge itself.

Definition of objective scientific knowledge is required at this point. Any knowledge coming from repeatable experiments and/or observations, which could not be refuted by another experiment or observation, are objective scientific knowledge. One important aspect of objective scientific knowledge is that it is usually about the universe or about part of it. Humanity entered the era of big data from experiments and observations. Scientists use data to produce objective knowledge about the universe as a whole as well as about its various parts. The branches of science are for specializing. Chemistry involves at molecular and atomic levels, and biology regards living plants and animals while physics follow the structure and motion of material bodies. As if all natural sciences appear working on a big jigsaw puzzle named the "universe".³ The world picture of the universe today is based on Einstein and his theories of special and general relativity, developed step by step after previous world picture by Newton. Newton's view in turn may be compared with the previous Aristotelian world-picture, which held for two thousand years. From micro to macro cosmos, some parts of our picture may be missing, even today. Scientists would be jobless otherwise. Nevertheless, such missing parts do not spoil the general appearance of the world picture which is about how the universe is structured and how the machinery of the universe works and evolves.

Such objective scientific knowledge is interpreted by unbelievers as if there is no creator, thus universe described as no man's land, ownerless, thus, it

³ Barbara Rayden, *Introduction to Cosmology* (Cambridge: Cambridge University Press, 2017), 27

is like a palace which is degrading in one side. It is created as an art and ordained miraculously like a book to be read, in the other side, especially in the minds of Muslims and believers. In this study I will not compare the sides and criticize according to one perspective by presenting evidence opposing the other side as was done by most classical thinkers. Any culture may have own way of interpretation, therefore, I will rather emphasize interpretation of objective scientific knowledge according Qur'an and Risale-i Nur Collection, the contemporary expounder, by a method of core examples, such as water cycle and large scale structure of universe, so these examples could be enlarged later for the other branches of science and perhaps down to a particular subject of a branch.

1. Uniqueness of Chosen Examples

The first place to start for searching for the main idea of how to evaluate objective science in a Muslim society is verses from Qur'an and pages of Risale-i Nur Collection, the contemporary expounder. The main idea is clearly expressed by the following words of Nursi,

*"In Kastamonu a group of high-school students came to me, saying: "Tell us about our Creator, our teachers do not speak of God." I said to them: All the sciences you study continuously speak of God and make known the Creator, each with its own particular tongue. Do not listen to your teachers; listen to them."*⁴

After these words, Nursi went on giving examples how branches of science such as medicine and pharmacology, engineering sciences, science of economics, military science, electricity (branch of physics), natural science and sciences of reading and writing (literal sciences) speak about the creator and then emphasized that there would be hundreds of other sciences and branches similarly talk about the God. These examples are well known examples given in the Risale-i Nur Collection which could be found as various books and in numerous subjects but here particularly counted are from "the Sixth Topic from the Fruits of Belief".

⁴ Nursi, Bediüzzaman Said, *The Words*, çev. Şükran Vahide (İstanbul: Sözler Neşriyat, 2013), 172.

Not only the branches or branches of the branches, every topic, any particular event or an object described by objective knowledge coming from observation (or experiment) could be seen as a letter, as a missive, as a message from the God or as an indication to glorify of all-Mighty, all-Knowing, masterful, caring, beloved, compassionate and merciful Creator. This is also clear in the following lines from Nursi.

“Yes, all flowers, all fruits, all grasses, and all animals even, and all trees are seals of divine oneness and stamps of divine unity, which, together with the places they are found, which take the form of missives, are like signatures showing the one who wrote the place. For example, a buttercup in a garden is like a seal of the garden’s inscriber. Whosever seal the flower is, all flowers of the same sort on the face of the earth indicate clearly that they are his words and that the garden too is his writing. This means that all things ascribe everything to the One who created them, pointing to a maximum affirmation of divine unity.”⁵

A unique difference of our examples in this study from the examples given in the Sixth Topic from the Fruits of Belief is intended. Purpose of choosing these examples are also unique. The first of the two specific examples is chosen because the event and scientific explanation is known almost by everyone who has a primary school education or more, while the other example is very specific to specialists of the field. Former one is about an event occurring on Earth, called “water cycle” which the life on Earth depends on it. However, latter one is about the large scale structure of universe still serving life, that is, once again the origin of life depends on it. Purpose of choosing such extreme examples are to show the method or the style of evaluation and the principle of interpretation is basically the same and effective. Departing from these extreme examples, there could be other spectrum of examples to be studied by Muslim scholars; then correct attitude towards objective scientific knowledge in general would be granted to ordinary Muslims.

⁵ Nursi, Bediüzzaman Said, *The Flashes*, 30th Flash, The Fourth Point, the Third Indication, p. 412.

2. Example One - Water Cycle

Rain has a very special respect among Muslim societies. It is recognized as a mercy from God; it is even called “mercy” among Muslims which is clearly declared by Nursi as “*Rain is even called ‘mercy’. Because, since it comprises numerous works of mercy and benefits, it is as if mercy has become embodied as rain, has been formed into drops, and arrives in that way*”.⁶ Now, let us think, what would happen if an event, which is called “mercy”, is trivialized in a class when water (or hydrological) cycle is described as a typical example of objective scientific knowledge existed in the official curriculum? A primary school student who used to hear “rain is mercy of Allah” from parents for many years would be disappointed first, and then his/her parents too if plain uninterpreted knowledge of how it rains reaches to them.

Indeed, “water cycle” is a very typical case in contemporary objective scientific knowledge which most Muslim societies react wrongly. By a careful attention, however, it can be understood that the reactions are actually not against the information contained in the lessons, but they are against the style of expressions, wording or plainness of objective knowledge or simply because of the answer given to the question “how it rains?” while the student and parents who would like to hear “why it rains?” The answer is generally known by all grownups including parents. If the clouds full of water vapor in the atmosphere run in to a cold region, the water vapor condenses and rain drops develop and fall down as a rain. How a condensation happens, how rain droplets are forming, may even be demonstrated in class. If a boiling pot is covered by a cold lid, water drops and droplets as condensations are seen on the lid. It is clear that the respond is not against how water droplets form, as rain droplets are forming in the air. Actually, it is not this objective knowledge, but nullifying the respect given to the rain is objected. Obviously, then a group of students, who are the children of religious parents, becomes very unhappy by listening such a lesson opposing their beliefs; as if the rain is not a gift or a mercy from Allah but it is just an ordinary natural event resulting from cause and effect. If students are kept informed in a similar manner in classes and people bombarded from televisions and media in the same way without giving

⁶ Bediüzzaman Said Nursi, *The Words*, 712.

an answer to the question “why it rains?” such unpleasant situations, even cultural clashes would be inevitable.

Today’s leading scientists seem to be agreed each other that modern science is only for answering questions starting by “how” but not “why.” This is very clear in the saying “*The usual approach of science of constructing a mathematical model cannot answer the question why there should be a universe for the model to describe. Why does the universe go to all the bother of existing?*” by Stephan W. Hawking⁷ who is the author of the famous book *A Brief History of Time*. For us, this rule must not only apply to the universe as a whole only, it should be applied to its parts and every events occurring in it. For example, science actually does not answer questions such: “why masses attract each other?”, “why the Sun shines since billions of years?” despite already given answers to such questions start by a word “because”.

Let us be more specific, a scientific answer to the first question would be “because there is universal law of gravitation” which is not an answer which could satisfy all persons who asked the question. After hearing this answer, immediately a person would ask again: “Why there is a universal law of gravitation?”, then chains of questions and answers would follow each other until infinity. It is obvious that an objective answer, satisfying everyone, does not exist according to the modern understanding of science. On the other hand, one may hear an answer such: “because masses are observed to attract each other proportional to each mass and inversely proportional to the squares of the distances between them”. Such an answer, however, does not really explain why, but explains how. So, although the question appears with “why?” and although the answers start with “because”, the description and wording indicates that the question “why?” is answered in the context of “how?” Similarly, the answer to “why it rains?” could be “because clouds carrying water vapor run into cold region in the atmosphere.” is not really an answer to the question “why?”, rather it is the answer explains how it rains.

Modern science which is not interested in the answers in the context of “why” or modern scientists and scientific methods which are staying away from

⁷ W. Stephen Hawking, *A Brief History of Time from the Big Bang to Black Holes* (London: Bantam Press, 1988), 174.

such kinds of answers, are collecting answers in the context of “how” as scientific knowledge. Therefore, since the true answers of question “why” are considered subjective, that is, there could be many true answers according to questioner and answerer, they are considered un-scientific. The difficulty associated with the subjective evaluation of the objective knowledge is obvious. Which off the answers would be accepted true, under what conditions, for whom and when? Because of such difficulties, or non-existence a unique answer, the scientific methods are designed to stay away from such perplexing conditions. On the other hand, if an answer is subjective and not scientific, it does not mean it’s wrong or unacceptable. Some subjective answers, which scientists would not be satisfied, could be the answers of many people if they are presented by acceptable evidences. Unfortunately, those people who are satisfied such subjective answers are considered un-educated low profile according to western minded cotemporary modern scientists.

However, it is obvious that the answers to the questions about the universe (or its parts or natural events) could be either under the context of both “how” or “why”. Both are equally expected and needs to be answered. Former one needs objective scientific knowledge thus it is usually considered to be answered by the educated. On the other hand, latter one is also needed and only the educated ones must answer them also. Despite they are labeled as unscientific; such subjective answers are needed according to “argument from sentience”.⁸ Imagine a world in which there were no creatures that have feelings, desires, appetites, and knowledge – in short, a world of no sentient beings. Would it be bad or good if the wind erodes away a rock; or a valley is filled by landslide? Since we are not in a part of such unconscious world, and we are sentient beings, the natural events could be evaluated as beneficial or not by us and by the other sentient creatures (humans and animals and even for living plants affected by natural events. Thus rain is one of those natural events which are considered to be mercy from God).

Therefore, accessing full reality, usually, it is not only one but both objective and subjective answers are needed. The subjective answers are interpretations of objective scientific knowledge or the answers given after

⁸ Richard H. Popkin & Avrum Stroll, *Philosophy Made Simple* (New York: Broadway Books, 1921), 66.

proper interpretations. The subjective answers is usually not expected to be completely hundred per cent subjective. For example, interpretations of science or scientific events by Muslims are expected to be suitable to Islamic belief. Thus, many of subjective answers accepted by other beliefs do not fit to Islamic society. A sentence in a textbook “water cycle is for transferring water from oceans to lands” would be a clue for starting an interpretation suitable to Islamic belief and to continue saying that there are living creatures everywhere on Earth, from the middle of deserts up to the top or on the steep sides of very high mountains, difficult places to be and to go, which all needs water to survive. Without water, living creatures cannot survive. Water cycle is thus important as a mechanism which is established by all-Knowing and all-Mighty Creator to carry drinkable water to animals and plants not only humans. Only after such interpretation was done, the importance of water for humans and for other water dependent life could be understood. Explaining it with simple cause and effect is not sufficient to understand how valuable it is especially among the Muslims. If one sees it as a mechanism established by the Creator, then instead of saying “it is a careless natural event”, a Muslim would prefer to say “the rain is mercy” in order to feel secure and respectful to other life on Earth.

On the line of this interpretation, a Muslim is able to say that “water cycle” is not a simple event which exists only because of simple cause and effect relations. It is an intentionally established mechanism by a caring God for carrying water from seas to every point on continents as much as it is needed and also on the exact time when it is needed. Parts of this critical duty are actually shared by wind, clouds and dust at the first look. Actually, “water cycle” is the name of this duty in the scientific language.

According to western scientists or western oriented people of the east, the subjective answers may not be as convincing as objective knowledge. Nevertheless, a Muslim could at least say for the sake of reality that if the rain, which itself has no ability of caring, is explained by a condensation alone as in the experiment in the class room, the central steps of Anatolia would not receive even a drop of a rain from the Mediterranean because all the water collected from the sea as a result of evaporation would be dropped on to the Taurus Mountains, nothing would be left to the central Anatolia. Un-doubtfully,

It is objectively known that it rains when air temperature drops below the condensation temperature. But, we also know, on muggy days, it is about to rain, all conditions seem to be right, but it does not rain. Obviously, not only condensation temperature, but also there are other causes such as, amount of humidity in the air, air pressure, the amount of dust content, dust sizes and shapes in the air etc. Thus, all-Wise Creator adjusts fine conditions of raining in a way that the rain goes up to where it supposed to go.

Dust particles in the air are needed for nucleation to form very tiny water droplets in a moist medium. Kinetic energy of a particle is proportional to the mass and the square of its velocity. Comparing relative speeds of a dust particle and a water molecule with a same kinetic energy, the dust particle, which is very massive compared to a water molecule, appear as if not moving. Fast water molecules hit dust particles time to time. These collisions are inevitable and inelastic. Thus, each water molecule hitting a dust particle sticks on to it (remember salt becomes moist). By the time water is accreted on the dust particle. The amount of water on the dust increases and by the time water dominates the dust particle that it looks as water droplets. If droplets become heavier than the other molecules in the air, then falling starts. Falling increases accretion of water further (remember if you run in the rain, you will get wet faster). Growing of droplets speed up and finally rain drops form and falling water drops are called rain. It is the air temperature during formation of drops plays a role to determine the kind of precipitation. If the air is cold enough that water collected on dust particles freezes, it rains hail. If only crystallizing occurs, then it rains snow. Big hail pieces, which is harmful, are seen, but it never seen rain droplets to be harmful unless they are gathered on the ground excessively which may cause flats. That is, drop sizes must be under control, irregular winds do not make the rain drops to collide in the air and combine them to form drops as big as oranges and water melons.

3. Example Two - Large Scale Structure of the Universe

Unlike “how it rains?”, which is known to almost everyone educated at any level from primary school diplomas to PhD holders, this second example “the large scale structure of the universe” is a very specific to known by contemporary astrophysicists and cosmologists and the ones who know it by

their personal interests. So it will be presented first as answers to the question “How?” like most of the objective scientific knowledge are presented.

Concept of a galaxy has not yet developed until the first quarter of the 20th Century. Galaxies observed by optical telescopes in the 17th Century and the following two Centuries were considered as clouds within the Milky Way. The Milky Way, which is our Galaxy, were seen by naked eyes since antiquity at every clear moonless nights in the middle of summer or winter as a bright band of starlight of about 10 degrees width rising from south passing through high in the sky, then appear ending at north but encircling the Earth. Elliptic galaxies seen after the invention of optical telescopes were recognized as nebulae. Spiral galaxies, however, were thought to be other solar systems, located in the Milky Way but not yet fully formed only with a central star, which is not yet fully formed, and a disk around it from which planets to be formed.⁹

It was in the year of 1924, when Edwin Hubble resolved six variable stars called Cepheid variable stars, which are known to obey period luminosity relation, in Andromeda galaxy. He used them as standard candles, that is, he knew their absolute brightness from the period luminosity relation, and calculated their distances as 930 000 light years.¹⁰ Because they are in Andromeda, indirectly this was the distance of Andromeda measured by Hubble in these years. By a similar method, using Cepheid variable stars again, Hubble measured a distance of another spiral galaxy called M33. Therefore, It was clear to Hubble that, these systems cannot be located in the Milky Way because the size of Milky Way in those years was estimated to be about 300 000 light years.¹¹ Therefore, they must be other independent islands of universe; called galaxies beyond the Milky Way.¹² Hubble continued searching Cepheid variables in other galaxies for measuring their distances. With a limited number of galaxies, which was about twenty, Hubble also worked on the spectrum of those galaxies observed by 100-inch (2.5 meter) Hooker Telescope

⁹ Theo Koupelis, “Gökadaların Çeşitliliği”, *Evreni Anlama Serüveni*, çev. Esin Soyduğan (İstanbul: Nobel Yayınları, 2017), 481.

¹⁰ Theo Koupelis, “Gökadaların Çeşitliliği”, *Evreni Anlama Serüveni*, çev. Esin Soyduğan, (İstanbul: Nobel Yayınları, 2017), 477.

¹¹ Theo Koupelis, “Samanyolu Gökadası”, *Evreni Anlama Serüveni*, çev. Serap Ak (İstanbul: Nobel Yayınları, 2017), 454.

¹² The period luminosity relation of Cepheid variables were not correct in later years. That is, in those early years, estimated distances were but about twice big.

(largest in the world at this time) in Mount Wilson Observatory, California. It was very interesting that the spectra of galaxies and the measured Doppler shifts were indicating that they were all receding from us. Soon Hubble discovered that the receding velocity was proportional to the distance of the galaxy. This is interpreted as the evidence of that we are living in a homogeneously expanding universe, and the Hubble law “the receding velocity of a galaxy is proportional to its distance” was published in 1929.¹³

Since then, distance and speed measuring techniques was improved. Soon galaxies were found to be bound gravitationally into the structures called galaxy clusters containing tens or hundreds of galaxies. Resembling moving bees in a hive, galaxies too are moving in a cluster, but not freely as the bees in the hive, but under their own gravitational forces. Unlike bees, which are not colliding, the colliding galaxies were observed. A gravitationally bound structure of galaxies is called a cluster, specifically a galaxy cluster. After recognizing the galaxy clusters, the super clusters, which were containing tens of clusters, were also observed. Being superior to ordinary clusters, those are called super clusters.

Stars are known not to be colliding in a galaxy. Unlike the stars in galaxies, where practically they do not touch each other, the galaxies may hit one another in clusters because typical distance between the galaxies in a cluster is about 20 times of their size. However, the typical distance between the stars in a galaxy is about 20 million times bigger than sizes of the stars. Therefore, when two galaxies are in a head to head collision, the stars belonging to each galaxy do not collide because the probability of star-star collision is practically zero. But the same is not true for the dust and gas in those galaxies. At the time of collision, temperature of the gas and dust increase. While gas and dust stay in the location of the collision, the stars of each galaxy continue on their way while the gas and dust are left behind. The hot gas and dust were said to cool down and new stars, thus a new galaxy is also formed. This mechanism was considered as formation of new galaxies from the older. However, the latest information about galaxy collisions do not confirm this, on the contrary, it

¹³ Edwin Hubble, *Communications from Mount Wilson Observatory to the National Academy of sciences*, (1929), No: 105.

is known today that colliding galaxies finally merge to form larger galaxies.¹⁴ After a collision, the bigger galaxy swallows the smaller galaxy. That is named galaxy cannibalism.

Colliding galaxies, therefore, in galaxy clusters are common, many examples are observed. Those events are not like car accidents, which may happen in a very short interval of time. The moment of collision for galaxies may continue millions of years, while in some cases few billion years. A human life time is not large enough to see a galaxy collision from the beginning to the end, collisions of galaxies, therefore, are recognized only on pictures. The collisions of clusters, however, were not discussed until very recently, when the four clusters in a super cluster (Abell 1758) are discovered in the process of a collision.¹⁵ However, collisions of super clusters never observed. This is obvious because they run away from each other due to expansion of universe, therefore, they have no chance to collide.

Final objective knowledge about the large scale structure of universe is that star formation continues in the spiral arms of spiral galaxies. Spiral galaxies, however, are found more in large clusters where more colliding galaxies are observed. Star formation stopped in elliptical galaxies. They are more in clusters with less number of galaxy collisions observed.

Compared to the un-interpreted plain information of the first example above, which made Muslim societies unhappy, this example, however, containing plain information about the “expansion of universe”, for sure, makes almost all Muslims proud and happy because there is verse in Qur’an “*And the heaven We constructed with strength, and indeed, We are [its] expander.*”¹⁶ Moreover, happiness of a Muslim would intensify by learning more about how large the universe is and how it was constructed. After grasping the size of the universe, a Muslim would feel astonished and feel admiring to All Mighty; how powerful, how all knowing the God is. Infinity mercy, infinite caring of the Creator appear to be felt after realizing the size of the humans relative to the

¹⁴ Theo Koupelis, “Gökadaların Çeşitliliği”, *Evreni Anlama Serüveni*, çev. Esin Soyduğan (İstanbul: Nobel Yayınları, 2017), 477.

¹⁵ G. Schellenberger, L. David, E. O’Sullivan, J. M. Vrtilik & , C. P. Haines, “Forming one of the most massive objects in the Universe: The quadruple merger in Abell 1758”, *Astrophysical Journal* 882 (2019), 59.

¹⁶ Qur’an, Adh-Dhariyat, 47.

planets, stars, galaxies etc. Despite that, there would be a small group of Muslims, who would still be unhappy, for not hearing a word from the science about God as Creator or Organizer. Those are the ones never happy if they do not hear “galaxies were created by God” by their own ears directly. They are the ones only interested in interpretations more than hearing the objective knowledge. For them, an Islamic interpretation is more important than the objective knowledge itself even if this knowledge is about the universe which they did not hear before.

Actually there are clues in objective knowledge about the realities from which true answers of both “how” and “why” questions. The background knowledge and interpretation experience is very important for a person to be able to catch the clues. Clues, however, are hidden behind questions such why universe is structure in this way? To be able to answer such a question, person at least must remember that “the star formation still continue in spiral galaxies which are found many in the clusters especially in the large clusters where collisions of galaxies occurring more”. To make interpretation easy there could be additional questions such; what would happen if galaxies did not exist?

The answer is obvious: the first generation stars containing only hydrogen and helium together with trace amount of lithium, beryllium and boron but no other elements, would be diminished after they become supernova because the star formation is continued only in galaxies, especially in the arms of spiral galaxies. Without early galaxies, the star formation would have been stopped. No continuation of star formation means no Sun, which means no Earth. Nevertheless, not only hydrogen and helium, the other elements in the periodic table are also required for the living organisms. Briefly speaking, there would be no life in such universe.

Nuclear reactions in the cores of stars form the other elements in the periodic table. Therefore, the next step, apparently, is the formation of galaxies in order to continue formation of second generation stars, then, formation of galaxy clusters from the galaxies; finally the super clusters were formed. Galaxies is to keep stars together like bee hive keeping bees together. It is obvious, that the divine being, who wanted to create life, first organized conditions for the star formation and then stellar energy generation by nuclear

reactions, which are known as stellar evolution, to form or create new elements first helium from hydrogen, then carbon from helium, and then the other elements up to iron in the cores of stars. Only after supernova, the newly created elements spill in to the interstellar medium and the elements heavier than iron is created. Therefore, new generation stars are always richer in containing newly created other elements. Thus, this way continuation of stellar formation by the time, in a suitable corner of universe, with a proper ratio of all elements needed for life, the Sun is created with a planet called Earth. A single Sun and a solar system seems to be sufficient for creating life, like a single seed is enough to grow a tree, why the whole universe, clusters of galaxies and other galaxies are needed? The answer is again obvious: because not all of the seeds grow and then becomes trees.

It is known that if some elements are deficient or in excess in someone's body, the body does not function properly. For example, iron deficiency is a disease called anemia. Doctors are often discussing which illness is caused deficiency or excess of which element or mineral. Deficiency of some elements is not only problem for living bodies, but also problem formation of planets in star planet system. For example, excess or deficiency of iron is a cause formation or not formation Earth like planets. There could be a planet or planets revolving around in any star. However, it is not right to assume, there should be life on all Earth like planets. Formation of a planet like Earth carrying live organisms is not common. Peter D. Ward and Donald Brownlee, who are the authors of the book "Rare Earth: Why Complex Life is uncommon in the Universe"¹⁷ claim the Earth is the only planet sustains life. Again, Anders Sandberg, Eric Drexler, ve Toby Ord¹⁸ from Oxford University evaluated the Drake Equation in today's conditions and concluded that probability of no other civilization in our Galaxy is 53-96.6%, and the probability of that we are alone in the Universe is 39-85% due to the fact that since about a century we did not hear a radio signal to indicate existence of extraterrestrial intelligence.

Obviously, All Mighty, All knowing, infinite Mercy and Caring of the Creator of the universe require such a large scale structuring to produce life on

¹⁷ Peter D. Ward & Donald Brownlee, *Rare Earth: Why Complex Life is Uncommon in the Universe*, New York: Copernicus Books, p. 1-287.

¹⁸ A. Sandberg, E. Drexler & T. Ord, Submitted to Proceedings of the Royal Society of London A (2018), <https://arxiv.org/abs/1806.02404> (August 18, 2021)

a proper corner of a proper Galaxy, apparently we know and we call it the Milky Way. Formation of the Sun and the solar system containing right amount of elements proper for sustaining life do not appear independent from the large scale structure of the Universe. Those large structures (galaxies, clusters and super clusters), however, is not able to know existence of Sun and the solar system. Concentric (large ones containing smaller ones) appearance of the large scale structure of the universe, if served life to exist at least in Earth, this is the case obvious to us, otherwise life would not exist and we would not ask such questions. So, there must be a divine being organize them such a way that ultimately they serve for the life by the order set up. Not seeing them this way, or not interpreting those objective scientific knowledge this way may mean not understanding the life and the reality behind the life.

4. Examples Qur'an

Qur'an is a divine book discussing about the universe, but not like a textbook or a research paper. Textbooks and research papers are prepared to describe the objective scientific knowledge mainly answering the questions "how?" On the contrary, attitude of Qur'an, when describing the universe as whole or telling about one of its parts, or discussing an event in it, is more on the side as if answering the question "why?" It is obvious from the verse "*And the heaven we constructed with strength, and indeed, we are [its] expander*"¹⁹ that a reader could easily see the answer why the universe is expanding. Similarly, from the verse "... *And We sent down iron with its great might, benefits for humanity*,"²⁰ a reader easily understands why the element iron is sent down from stars (or from sky) to Earth. Similarly, the verse "*And the Sun runs his course for a period determined for him: that is the decree of (Him), the Exalted in Might, the All-Knowing*"²¹ tells why the Sun is kept in running where the word running may imply either its apparent motion on the sky, or its real motion in the space or its internal motions, or its differential rotation, or continuing nuclear reactions as Eker²² states it. Apparently, Qur'an left the objective knowledge for humans to discover, study and grasp it either by

¹⁹ Qur'an, Adh-Dhariyat, 47.

²⁰ Qur'an, Al-Hadid, 25.

²¹ Qur'an, Yasin, 38.

²² Zeki Eker, "Ve Güneş Cereyan Eder Mealindeki Ayetin Astronomi Açısından Değerlendirilmesi", *Katre* 9 (2020), 81-110.

observation, or experimentation because an objective knowledge is a unique answer to the question “how?” and it is rather easier than the interpretations, especially suitable correct interpretations. Since interpretations are not unique, that is, might change culture to culture, or civilization to civilization, Qur’an teaches us how to interpret objective knowledge.

Now let us look at how water cycle (or hydrological cycle) is discussed in Qur’an: The translation by A. Yusuf Ali (<https://quranyusufali.com/22/>) , Surah 6: An’am, verse 99).

“ It is He who sendeth down rain from the skies: with it We produce vegetation of all kinds: from some We produce green (crops) out of which We produce grain heaped up (at harvest); out of the date-palm and its sheaths (or spathes) (come) clusters of dates hanging low and near: and (then there are) gardens of grapes and olives and pomegranates each similar (in kind) yet different (in variety): when they begin to bear fruit and the ripeness thereof. Behold! in these things there are signs for people who believe.”

According to this verse, the rain is not an ordinary event as a result of cause and effect relations. According to God’s will, continuation of human and animal life, also for them to enjoy life, growing, bushing out and bearing fruits of various plants from soil are just depends on rain. Therefore, it is mercy. If the rain itself is unable to think humans and if it is observed to be beneficial to animals and humans, it is not because of the rain itself, but Allah who orders it and controls it.

Now, let us see what Qur’an says about all changing, ever moving and colliding large scale structures of the universe, which is the second example in this study. Of course, the large scale structures such as galaxies, clusters of galaxies and clusters of clusters were unknown to the people to whom Qur’an revealed. Only very recently since about a century mankind started to access this kind of objective knowledge. Allah, by definition, knows what he created, but it was not proper to explain it plainly and openly to the people who have no idea about them or not yet ready to understand and absorb them. But, still there are clear indications, or examples of interpretations of such objective knowledge in Qur’an. One good example is in Surah 22: Hajj, verse 18:

“Seest thou not that To God bow down in worship All things that are In the heavens and on earth,— The sun, the moon, the stars ; The hills, the trees, the animals ; And a great number among Mankind ? But a great number Are (also) such as are Fit for Punishment : and such As God shall disgrace,— None can raise to honour : For God carries out All that He wills.”

Bowing down for worship occurs only if all things in the heavens and on Earth self-consciously know Allah, and then obey Allah. However, this kind of obeying is for conscious beings. Galaxies and stars have no such faculties. As it is seen in the examples of the Sun, the Moon and the stars, even if they have no ability to think, and to move wisely and to foresee the creation of life, there is no other choice but Allah makes them organize as they appear full of erudite (Turkish: hikmetli). One may include the bigger objects, which are omitted because they were not known to the people of that time, Galaxies; clusters of galaxies etc, the meaning of the verse do not change. It is clear that a reader could find answers of such questions why the universe is constructed this way, and why they are keep running etc.

By the order of Allah those unconscious structures move according to a preconceived plan; creation of life. The evidences are obvious. If the universe is not structured as described above, that is if galaxies and clusters of galaxies did not formed, the stellar formation would not have been continued, thus, elements would not be formed and there would not be any biological life forms. The large scale structure of the universe is there and their motions appear to be conscious. Observation of a conscious motion by insensible objects indicates that there must be a mind using them this way. Therefore, an educated, healthy minded observer, who sees conscious behavior from unconscious objects, has no other choice to say that God must exist to maneuver them. Wisdom, rationality and free will are given to humans, therefore, they put in various examinations if they use of these faculties for the good or the bad. Only those, who know and trust Allah obey and behave according to the ordained order in the universe. The ones who prefer not to obey are worthless and inferior.

Briefly speaking, Qur'an is not for describing objective scientific knowledge, but by referring to objective scientific knowledge like water cycle and large scale structure of universe, Qur'an gives answers to questions “why?”

It is the Book which teaches humanity how to interpret objective knowledge which is about the universe, or parts of it, or natural events occurring in it.

5. Examples from Risale-i Nur

Being contemporary interpretation (tafseer) of Qur'an, Risale-i Nur also follows the same method of interpretations of objective scientific knowledge. A good example related to water cycle and/or rain:

“ The inanimate, lifeless cloud that resembles carded cotton has of course no knowledge of us; when it comes to our aid, it is not because it takes pity on us. It cannot appear and disappear without receiving orders. Rather it acts in accordance with the orders of a most powerful and compassionate commander. First it disappears without leaving a trace, then suddenly reappears in order to begin its work. By the command and power of a most active and exalted, a most magnificent and splendid, monarch, it fills and then empties the atmosphere. Inscribing the sky with wisdom and erasing the pattern, it makes of the sky a tablet of effacement and affirmation, a depiction of the gathering and the resurrection. By the contriving of a most generous and bountiful, a most munificent and solicitous sustainer, a ruler who regulates and disposes, it mounts the wind and taking with it treasuries of rain each as heavy as a mountain, hastens to the aid of the needy. It is as if it were weeping over them in pity, with its tears causing the flowers to smile, tempering the heat of the sun, spraying gardens with water, and washing and cleansing the face of the earth.”²³

Briefly stating, this paragraph is all about why it rains, and why there is water cycle. In other words, how it rains and how the water cycle works are not the prime subjects. Since a cloud does not have ability to think, to move by itself, to be able care, there must be someone all powerful, all-knowing, all-caring, who established the water cycle for serving life on Earth. Since the rain is good for all plants and animal and plants and animals are there also to serve the mankind, it is for sure one can see an explanation why it rains and why Muslims say the rain is mercy. About the large scale structure of the Universe, however, the same book from the Risale-i Nur, called Supreme Sign, which is

²³ Nursi, *The Rays*, The seventh Ray, The Supreme Sign, page 134.

about observations of a traveler questioning the universe concerning its creator, clearly declares: (from the eyes of the traveler)

“it holds aloft in the heavens, without any supporting pillar, hundreds of thousands of heavenly bodies, some of which are a thousand times heavier than the earth and revolve seventy times faster than a cannon-ball; it causes them to move in harmony and swiftly without colliding with each other; it causes innumerable lamps to burn constantly, without the use of any oil; it disposes of these great masses without any disturbance or disorder; it sets sun and moon to work at their respective tasks, without those great bodies ever rebelling; it administers within infinite space—the magnitude of which cannot be measured in figures should they stretch from pole to pole— all that exists, at the same time, with the same strength, in the same fashion, manner and mould, without the least deficiency; it reduces to submissive obedience to its law all the aggressive powers inherent in those bodies; it cleanses and lustrates the face of the heavens, removing all the sweepings and refuse of that vast assembly; it causes those bodies to manoeuvre like a disciplined army; and then, making the earth revolve, it shows the heavens each night and each year in a different form, like a cinema screen displaying true and imaginative scenes to the audience of creation.”²⁴

Similarly, without repeating questions such “why it is like that?”, with a minimal amount of information, for the ones who need to know “how?”, the paragraph above discusses the large scale structure of the universe and explains the reality of their existence. It is like in Qur’an, omitting the large and the boring parts of objective scientific knowledge, and leaving out the details which are difficult for most of the people to understand, the paragraph concentrates on wondrous information related to “why?”.

Existence of more words related to “how?” in the Risale-i Nur in comparison to Qur’an must be origination from its position with respect Qur’an. It is a contemporary “tafseer” of Qur’an, that is, it is one of the modern time expounders of Qur’an. Since the book of Supreme Sign was written in the middle of thirties, a reader would remember that concept of a galaxy is just

²⁴ Nursi, *The Rays*, The seventh Ray, The Supreme Sign, page 132.

established by Hubble very short time ago. In these years Nursi was very busy defending himself and his students against irrational accusations from many official courts. He was also busy writing books the Fruits of Belief, The Supreme Sign in addition to the manuscripts, which he wrote, for official defense. It is normal that if he did not hear the new improvements in astrophysics in these years. Even if he heard, he was not in the condition to study them. However, the paragraph above indicates that he knew the large scale of the universe as if he traveled the observable universe and closely observed what was happening in the clusters without even saying a word cluster. It is not clear in above paragraph which is just a translation, but It is in the original Turkish version of the book, Nursi says “moving them altogether quickly without colliding”, which is translated above as “... them to move in harmony and swiftly without colliding with each other”.

Nursi talks about stars and the stars in the galaxies without mentioning the word “galaxy”. This is understood because he would not use the phrase “the heavenly bodies” but would prefer to say stars only. It is estimated today that there are about four hundred billion stars in the Milky Way. Head to head collisions among the stars never observed. Stars do not collide. But, Nursi says “moving them altogether quickly without colliding”. Now, let us assume galaxies are like floating ships carrying people. First, the people on the deck of each ship move but not collide or hit each other. This is like stars in galaxies which are not colliding. However, unlike ships directed by captains thus avoid collisions, galaxies collide each other. Indeed, colliding galaxies are observed. During these collisions, however, stars again do not touch each other. Why is this? Because stars are given a duty produce elements on the periodical table and thus should not be disturbed. Therefore, they must stay without collision even during a galaxy collision. On the other hand continuation of the duty, produce new elements, depends on collisions of galaxies in a cluster of galaxies. It is observed that stellar formation is slowed down or stopped in the clusters with less number of collisions.

It is also said above paragraph that “...it sets sun and moon to work at their respective tasks, without those great bodies ever rebelling;...”. Also says “it cleanses and lustrates the face of the heavens, removing all the sweepings

and refuse of that vast assembly; it causes those bodies to maneuver like a disciplined army”.

The subject how to treat objecting scientific knowledge by Muslim scholars is explained by an analogy in a book of Risale-i Nur Collection named “The Eleventh Word” where the universe is resembled a palace built by a wise powerful king, who is very wealthy, possessing numerous treasuries with all sorts of jewelries, and all sorts of fine arts and abilities “*Besides these he had other, hidden, wondrous treasuries. By way of attainment he had consummate skill in strange arts, and encompassing knowledge of innumerable wondrous sciences, and great erudition in endless branches of abstruse learning*”.²⁵ This all wise and powerful king invited a group of scientists and artists as inspectors. Then, he wanted from them to observe the palace, which was built by him for a service to his valuable guests, full of guests and then to write a report about it. The inspectors were divided into two groups.

One group studied the palace and concentrated only how it was build, what kind of material used in its construction, how many room it has, how large, how tall, what shape it has etc as if this place existed eternally and no one built it without discussing how valuable it is with fine arts and beauty, its functionality for the purpose its existence. In short, there was no extra in this report other than objective scientific facts. No interpretations no evaluations. However, the All-wise and All-powerful King was interested in its fine arts and science used on it, its efficiency and functionality should be discussed in this report. It is like a report which is discussing the size, the shape and the material used in the construction of the Selimiye Mosque, the masterpiece of Ottoman imperial architect Mimar Sinan, without saying a word about its art and the artist.

It is only if required valuable interpretations are added to the basic observational facts (objective scientific knowledge), such a report may achieve its purpose; it could be accepted by the ruler who asked for it, and it could be properly understood or valued by the other people who read it. On the contrary, un-interpreted objective scientific knowledge and improper interpretations have no value at al. The objective knowledge collected as the

²⁵ Nursi, *The Words*, 136.

answers of the questions “how?” achieve its top value only after proper interpretations.

3. Conclusions

Objective scientific knowledge is plain, basic knowledge, which is ready to be used and interpreted. Every culture or civilization has own right to decide how to use it or how to interpret it according own style and consent for the benefit of the community. Dictating or imposing a single way of usage and atheist style of interpretation benefiting to one civilization but not to all other civilizations are not right and acceptable. Although interactions between civilizations, between scholars of different cultures are inevitable, such interactions are valuable if they stayed within the freedom of thought or freedom of speech. Only with equal right democratic discussions associated with free will, mankind would benefit from the science best. Otherwise, the benefits would be lost, and mankind would run into greatest danger; e.g. nuclear weapons or scientific knowledge could be used as tools for egoist strong nations to steal natural wealth of innocent poor nations. Science and scientific knowledge is the most valuable heritage of mankind, thus it must be used only for the benefit of everyone.

According to a hadith narrated by Enes b. Malik and in similar hadiths, the Prophet Muhammad (PBUH) resorted to Allah from useless knowledge.²⁶ It is obvious for applied sciences (medical sciences, engineering sciences, agricultural sciences, etc) that knowledge is useful and beneficial to humanity. How about pure science? For example what is the usefulness of knowing how the Sun is structured, or how a galaxy, a cluster of galaxies or the universe itself organized. What is the use of knowing “universe is expanding”? What kind of benefit is expected for a person to know how hydrological cycle works? Is there any other kind of usefulness for pure science, which only appears satisfying curiosity?

As it was seen in the examples of water cycle and large scale structure of the universe, usefulness of pure knowledge becomes apparent after proper interpretations were done by answering the key question “why?” from which an ordinary man may understand how merciful Allah is, how all-Mighty, how

²⁶ Tirmizî, “Daavât”, 68.

All-Powerful, how all-knowing, how all-Caring etc. Therefore, right way of interpretation is very important; otherwise pure science could be considered non-useful, even harmful (attenuation of trust if it is contradicting someone's belief) other than satisfying someone's curiosity. The same is also true for the applied sciences. If they are not used for benefiting humanity, they can become tools for endangering the innocent.

Another hadith to emphasize importance of the interpretations is "wise reason (Hikmet) is a missing property for Muslims"²⁷. Here, the word "Hikmet" is equivalent to the Arabic word *حكمة*, which is a word equivalent to say "philosophy" in the Islamic civilization, literally means "reasoning". It may also be used in the meaning of interpreted knowledge. On the other hand, it may mean evaluation and interpretation of a case study and extracting most beneficial lesson from it. So, this hadith tells us how valuable the interpretations are, not just ordinary interpretation but proper interpretations related to how the machinery of this world (universe or a part of universe) is working properly and consistently. This is the hadith directly ordering the collection of proper interpretations suitable to Islamic belief, rather than objective scientific knowledge which sometimes may appear useless or against the Islamic belief. If it was done properly, already interpreted knowledge appears more important than original un-interpreted plain knowledge. Does this mean original objective scientific knowledge, or not yet properly interpreted knowledge or wrongly interpreted knowledge are refused, banned or discredited?

The true position of objective scientific knowledge and its respect among the Muslims could not be understood if the effect of another hadith "Seek knowledge even if you have to go as far as China"²⁸ was not studied. One must first notice that the word "knowledge" is preferred rather than "wisdom", or "reasoning" here. Therefore, whether it is interpreted or not-interpreted, importance of an objective knowledge of any kind is emphasized in this hadith. On the other hand, it is too naïve for one to assume Prophet Mohammed (PBUH) would not know the difference between interpreted and non-

²⁷ Tirmizî, "İlim" 19; İbn Mâce, "Zühd", 17.

²⁸ Celaledin es-Suyutî, *el-Câmi'u's-Sağîr*; çev. Hüseyin Yıldız, Hasan Yıldız, Zekeriya Yıldız (İstanbul: Ocak Yayıncılık, 2017),1/310.

interpreted knowledge or between a pure objective information and information polluted with Chinese beliefs and cultures. Consequently, this hadith may be understood in two ways. First meaning is that considering the difficulty and dangers of travelling in these years, fourteen centuries ago, when the Prophet (PBUH) was walking on the Earth, it would tell us that no matter how difficult accessing a piece of knowledge, a Muslim must try it best to get it, even if the difficulty is equal to traveling to China from Mekka, the hometown of the Prophet. Second meaning is that: knowledge from the other cultures could be polluted (or interpreted) by beliefs foreign to Islam, but still it is useful and Muslims should not refuse it. I think it must be because of this hadith; Early Muslims who meet Greek science in the 8th Century and forth, did not hesitate in translating classical books of Greek science. Here the privilege is given first accessing to the knowledge. Only after knowing it, a way of interpreting it, according to Islamic belief and cultures, would be opened. Obviously, Early Muslims were not being doubted about their foresight and perception, dignity, and trustworthiness on their belief. The Prophet (PBUH) trusted them regarding how to translate and accept objective scientific knowledge, even if polluted by a different culture.

A similar thrusting is seen in this century between the high school students mentioned above and Bediuzzaman Said Nursi who advised them “*All the sciences you study continuously speak of God and make known the Creator, each with its own particular tongue. Do not listen to your teachers; listen to them*”, which does not mean “*do not go in class room*” to prevent unsuitable interpretations, but on the contrary it must be understood “*go in for listening lessons*” but interpret them properly. The examples how to interpret is given in the 6th Topic from the fruits of Beief.²⁹ Actually, books of Risale-i Nur Collection are full of such interpretations. Earlier Muslims had only examples from Qur’an. But, today, including Risale-i Nur and similar Tafseer, also experience of earlier Muslims which could be found in the Islamic literature may exist to help how to interpret co-temporary objective science.

It was obvious to Prophet Mohammed (PBUH) and early Muslims that without objective scientific knowledge, interpretation are not possible; therefore, even if it is polluted by foreign beliefs it is very valuable treasure for

²⁹ Nursi, *The Words*, 172.

Muslims. This interpretation, however, does not contradict the hadith favoring wisdom or wise words in Arabic *حكمة* and hikmet in Turkish. Both hadiths support one another, and together form a more complete understanding of Islamic science.

References

- Eker, Zeki. "Ve Güneş Cereyan Eder Mealindeki Ayetin Astronomi Açısından Değerlendirilmesi". *Katre* 9 (2020), 81-110.
- Feyarabend, Paul. *Bilim Kilisesi*. çev. Cevdet Cerit. İstanbul: Pınar Yayınları, 1991.
- Hawkings, W. Stephen. *A Brief History of Time from the Big Bang to Black Holes*. London: Bantam Press, 1988.
- Hubble, Edwin. *Communications from Mount Wilson Observatory to the National Academy of sciences* (1929), No: 105,
- İbn Mâce, Ebû Abdullah Muhammed b. Yezîd. *es-Sünen*. İstanbul: Çağrı Yayınları, 1992.
- Koupelis, Theo. "Kütleçekim Yasası ve Modern Astronominin Yükselişi". *Evreni Anlama Serüveni*. çev. Zeki Eker. İstanbul: Nobel Yayınları, 2017, 69 – 94.
- Koupelis, Theo. "Gökadaların Çeşitliliği". *Evreni Anlama Serüveni*. çev. Esin Soydoğan. İstanbul: Nobel Yayınları, 2017, 473 – 511.
- Koupelis, Theo. "Samanyolu Gökadası". *Evreni Anlama Serüveni*. çev. Serap Ak. İstanbul: Nobel Yayınları, 2017, 447 – 472.
- Nursî, Bediüzzaman Said. *Ayet-ül Kübrâ*. İstanbul: Envâr Neşriyat, 1992.
- Nursî, Bediüzzaman Said. *Lem'alar*. İstanbul: RNK Neşriyat, 2013.
- Nursî, Bediüzzaman Said. *Sözler*. Ankara: Türkiye Diyanet Vakfı Yayınları, 2016.
- Nursî, Bediüzzaman Said. *Şualar*. İstanbul: RNK Neşriyat, 2013.
- Ward, Peter D. & Brownlee, Donald. *Rare Earth: Why Complex Life is Uncommon in the Universe*. New York: Copernicus Books, 2003.
- Popkin, Richard H. & Stroll, Avrum. *Philosophy Made Simple*. New York: Broadway Books, 1921.
- Rayden, Barbara. *Introduction to Cosmology*. Cambridge: Cambridge University Press, 2017.

Sandberg, A. vd. "Dissolving the Fermi Paradox". *Submitted to Proceedings of the Royal Society of London A; 4 supplements* (2018), 1-19.
<https://arxiv.org/abs/1806.02404> (August 18. 2021)

Schellenberger, G vd. "Forming one of the most massive objects in the Universe: The quadruple merger in Abell 1758", *Astrophysical Journal* 882 (2019), 59-78.

Suyutî, Celaleddin. *el-Câmi'u's-Sağîr*. çev. Hüseyin Yıldız, Hasan Yıldız, Zekeriya Yıldız. İstanbul: Ocak Yayıncılık, 2017.

Tirmizî, Ebû İsa Muhammed b. İsa. *es-Sünen*. İstanbul: Çağrı Yayınları, 1992.