

Islam and Science

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Let me start by uttering the traditional formula “In the Name of God the Compassionate the All-Merciful”. With this sentence, Muslims begin all the ritual actions of their lives, as well as the actions of their everyday lives that get the value of ritual actions. This formula opens every chapter, or sura, of the Holy Koran, the sacred book of Islam, as a key for the reading of the text, and for subsequent action inspired from this reading. The whole revelation of the Koran comes from God the One, through His names of love and mercy.

It sounds quite simple indeed. Unfortunately, one must admit that what actually happens is far from these principles. Of course, everybody would agree that there is a gap between principles and realities, between what religion should be and what the members of this religion make of it, between the realm of spiritual tenets and the vicissitudes of history.

But is there a specific issue with Islam? Many voices are heard that put the Islamic faith on trial. It is a fact that, in contrast with other cultural zones, the Islamic world seems to participate very little in the scientific pursuit of today, and to be struck by recurrent social and political disorders. Several authors have attributed these two facts to the same cause: the presumed inability of the Islamic faith to establish a sound relationship with the practice of reason, and consequently to enforce reasonable behaviours in societies. Islam is blamed for the following crime: it seemingly includes in its very principles the germs of its own, violent deviation.

Here comes the point I would like to address, with your permission, in this lecture, from the specific viewpoint of a Western Muslim, who happens to be a professional scientist. Does Islam, because of its very principles, face an insuperable difficulty with the methods and results of science? Has it a specific problem with the practice of reason that would entail the impossibility for Muslims to adopt reasonable behaviours in modern societies? In a single sentence, is it possible to be a coherent Muslim and to participate

constructively in the endeavours of our common world, and, first of all, in science? I would like to hereafter argue that, although ignorance, hate and violence unfortunately exist in the Islamic world, the spiritual tenets and intellectual resources of the Islamic faith actually prompt Muslims to search for knowledge, love and peace.

My lecture will be divided into three parts: First I will summarize the basic principles of the Islamic faith that appear relevant to understanding the nature of knowledge in the Islamic perspective. Second, I will briefly review a few historical and contemporary positions about the relation between faith and reason, and between religion and science. Third, I will try to defend a viewpoint in which faith although it does not say anything about the specific content of science, offers a broad metaphysical background that helps me, as a scientist, find purpose and meaning in its discoveries. Finally, I will conclude by a new examination of the above-mentioned issue: the organization of societies and the dialogue of faiths and cultures. It turns out that this metaphysical background also helps us find purpose and meaning in the diversity of faiths, as well as it gives us guidelines for a peaceful coexistence in this world.

The principles of Islamic faith

The presumed difficulty that Islam faces in its relationship with reason, was recently summarized, with great talent and large impact, by the famous lecture given by Pope Benedict XVI in Regensburg, on September the 18th, 2006, in front of an audience of “representatives of science” — the detail has its importance for the issue we are addressing here. In an attempt to propose a new vision to secularized Europe, the Holy Father explained what he considered the specific feature of Christianity. For him, it is not surprising that modern science and reasonable behaviours developed in countries where Christianity was predominant. As a matter of fact, this lecture triggered strong reactions in the Islamic world because Islam was used as a sort of counter-example, a religion in which the absence of reason and the presence of violence are interwoven.

According to the Pope, “For Muslim teaching, God is absolutely transcendent. His will is not bound up with any of our categories, even that of rationality.” After this Regensburg lecture, there were exchanges between the Islamic world and the Holy See, requests for apologies on one side, and statements that the lecture was misunderstood on the other side. Here, I would like to address the issue raised by the Holy Father very much where

he left it, and to answer positively to the calls for dialogue that were eventually heard on both sides.

As a matter of fact, I think the issue stems from the idea we have about God. When the Pope writes, after many other authors, “for Muslim teaching, God is absolutely transcendent”, he understands this sentence in the following way: “For Muslims, God is only transcendent”. Is the God of Islam different from the God of Christianity? It is not the Muslims’ opinion. For them, Allah, a word that etymologically means “The God”, is not the name of the Muslims’ God. It is the Arabic name of the One God, the God of all humanity, worshipped by Jews, Christians, and Muslims.

For Islam, as much as for Judaism and Christianity, God is absolutely transcendent and He is perfectly immanent too. It means that He cannot be known by any of our categories, and simultaneously, He is close to us, He acts in the world, He knows and loves us, He lets Him be known and be loved by us. As the Koran says, “Nothing is similar to Him, and He is the One who perfectly hears and knows.” God gathers aspects that are contradictory: “He is the First and the Last, the Apparent and the Hidden.” And “He is closer to us than our jugular vein.” This coexistence of these two aspects is necessary, in a monotheistic religion, to prevent our idea about God from becoming an idol. In Islamic terms, one would say that the tawhid, the statement of the Oneness of God, simultaneously requires the tanzih, the statement that God is like nothing else, and the tansbih, the comparison of names, attributes and actions of God with those of the world. A God who is only transcendent is an abstract concept, and a God who is only immanent is nothing else than a form of cosmic energy.

One can readily understand that the issue of the intelligibility of God’s attributes and actions, and the extension of the domain where reason can apply to know religion and to know science, strongly depend on the balance between transcendence and immanence. It is true that extreme standpoints did exist in the Islamic thinking, in one direction or another. However, the main stream defended the simultaneous existence of these two aspects, and the fact that, immanence is possible because God is so transcendent that His transcendence is unaffected by His presence in the world, close to us.

God created the world. This sentence means that the world is not self-sufficient. The world may not have been there. But it actually is there, and the explanation provided by

religions is that the being of the world is given by another Being, who is not “a being” like the others, but rather the action of being itself. God also revealed Himself in the world through specific moments in which infinity gets in contact with the finite, eternity with the temporal. These moments give birth to new religions that, in the Islamic perspective, are only new adaptations of the same universal truth to new peoples (and to the “languages” of these peoples). And God has a specific contact with each of the human beings, whom he cares after, and inspires.

Islam is the third come of the monotheistic religions in the wake of the promise made to Abraham by God, after Judaism and Christianity. Remember this story of the Book of Genesis, when Abraham obeys God’s order and leaves his wife Hagar and his son Ishmael in the desert. For Muslims, the place where Hagar and Ishmael were left is the valley of Bakka, where a temple that was given by God to Adam after the Fall from Eden, used to be located before the Deluge. Later, Abraham and Ishmael rebuilt the temple, a small cubic building covered by a black veil, now in the great mosque of Makka. This building is empty, and only inhabited by the sakina, a mysterious and sacred presence of God, which is quite paradoxical, because God is everywhere, and still he specifically manifests in some places.

Islam brings the renewal of this Abrahamic faith, through a new revelation, that is, an initial miracle that founds a new relation of a part of the human kind with God. This initial miracle is the revelation of a text, the Holy Koran, to a human being, Prophet Muhammad, who was born in Makka at the end of the 6th century. The revelation started during the Night of Destiny, and lasted twenty years till the Prophet’s death in 632. What exactly is this miracle? For Muslims, the miracle is the fact that not only the meanings of the Holy Koran come from God, but also the choice of the words, sentences, and chapters, in a given human language, the Arabic language, in such a way that the divine speech can be heard, pronounced, and understood by the human. As a faithful messenger, Muhammad did not add nor cut a single word of the Holy Reading or Proclamation (the meaning of the word Koran) that subsequently became a Book, and acquired its final appearance under Uthman’s caliphate (644—656). Of course, the Arabic language almost breaks down under the weight of the divine speech. There are subtleties, the use of an uncommon vocabulary, separated letters that may convey mysterious information. The Arabic words frequently have several meanings, and the

task of the commentators is to highlight the richness of the teachings that a single verse can bring forth. The Prophet himself mentioned the multiplicity of the meanings of the Koran by saying that “each verse has an outer meaning and an inner meaning, a juridical meaning and a place of ascension”, that is, a direct spiritual influence on the reader. This plurality of meanings makes the task of the translator quite uneasy, because this plurality does not transfer directly into other languages, and especially into European languages. Another fascinating aspect of the Koran is the fact that it gathers messages about the divine names, attributes and actions, prescriptions and prohibitions from God, stories of the prophets, descriptions of this lower world and of the hereafter, ethical advice, and chronicles of the life of the first Islamic community around the Prophet. But all these chains are more or less mixed up, or interlaced, in each of the 114 chapters, in such a way that the internal coherence can be found only after reading and re-reading the text, which progressively sheds light on itself.

The miracle of the descent of the Koran reproduces the miracle of creation. God creates things through His speech, with His order: “Be! (kun)” The creatures receive their existence from God through this ontological order. God subsequently unveils hidden knowledge, again through His speech, with another of His orders: “Read! (iqra’)”, the first word of the Koran given to Prophet Muhammad. This instruction speaks to the reader, the human being who uses its intelligence to understand the Holy Text. As a consequence, the Koran is like a second creation, a book where God shows his signs or verses (âyat), very much as we contemplate God’s signs (âyat) in the entities and phenomena of the first creation. God unveiled the Book of Religion (kitâb at-tadwîn) very much as He created the Book of Existence (kitâb at-takwîn). The issue of the relationship of faith with science specifically deals with the coherence between the first and the second book. This topic of the Liber Scripturae and the Liber mundi is expressed in similar terms in other faiths.

Islam manifests itself as the renewal of the faith of Abraham, as a new adaptation of the same universal truth that was given to Adam, first human being, first sinner, first repentant, first forgiven human, and first prophet. Muhammad comes as the last prophet, after a long chain that includes many prophets of the Bible, Noah, Abraham, Isaac, Ishmael, Jacob, Moses, David and Solomon, as well as John the Baptist and Jesus. The Koran also includes stories about other prophets that are not known by the biblical

tradition, and were sent to the Arabs, or maybe to other peoples in Asia. Hence the fundamental formula of Islam, the so-called profession of faith, or shahada that is the first of the five pillars of Islam: “There is no god but God, and Muhammad is God’s messenger”. The message is the Koran, a message from God that prompts the Muslims to be faithful to their own spiritual vocation. The second pillar of Islam is the canonical prayer performed five times a day, at specific moments linked to cosmic events: before sunrise, after noon, in the middle of the afternoon, after sunset and when night is dark. The third pillar is alms-giving on accumulated wealth. The fourth pillar is ritual fasting during the month of Ramadan (the month during which the first verses of the Koran were revealed), from the first light of the day to sunset. And finally, the fifth and last pillar is the pilgrimage to the House of God, the kaaba, and some places around Makka. These five pillars constitute reference points for the actions of worship. This is the most important part of the religious law, or sharī’a. The sharī’a also includes a description of many aspects of the social life. There are only few Koranic verses that actually deal with social organization, but, in the time of the first Islamic community, the presence of the Prophet allowed it to solve all issues. Later, when Islam became the religion of a vast empire, it became necessary to have a more complete codification of the religious law, and the so-called classical sharī’a was slowly constituted. Muslims now need to re-examine this issue in a context that is much more complex, in societies which are shaped by science and technology, globalization, exchanges of people and information, and the presence of many minorities. It is a great challenge, and a strong “effort of interpretation” or ijtihād, is necessary.

Jews and Christians were present in Arabia during the time of the Koranic revelation, and the Koran alludes to the exchanges that they had with Prophet Muhammad. It turned out that these exchanges had the following outcome: The majority of the Jews and Christians did not acknowledge Prophet Muhammad, and Islam became a religion clearly and completely separated from Judaism and Christianity. The main difference with Judaism is the fact that Islam, like Christianity, is a religion that is explicitly universal. Its message speaks to all the human kind, whereas Judaism is linked to a given people. The main difference with Christianity is the disagreement about the nature of Jesus. Jesus is present in the Koran as an “Islamic prophet” who came to bring the message on the Oneness of God. But he is a very unusual Prophet. He was born miraculously from Maria the Virgin, who herself was protected against any sin. The

angel Gabriel announced Jesus' birth to Maria. For Muslims, Jesus is the Christ, al-Masîh, the anointed by the Lord. He spoke out with wisdom just after his birth, and made miracles with God's permission. He miraculously escaped from death and he is still alive, beside God. Muslims say that Jesus is a Spirit of God (Ruh Allah) and a Word from God (Kalimat Allah), but they do not say that Jesus is God's son. If they were to say so, they would be Christians, and Islam would be only one more Christian church. As a consequence, for Islam, there is no incarnation, no Trinity, no crucifixion and no redemption (and in any case, no primeval sin that would make redemption of the human kind necessary). It is true that Jews differ from Christians also about the figure of Jesus. Apart from this central figure, the three monotheistic religions have a lot in common: the One God, the creation of the world, the creation of the human being "according to God's image and likeness" (we Muslims say: "according to the form of the Merciful"), the call for spiritual life, for helping the poor, and the belief that the human being, despite his sins, can improve and be saved. Finally, it is fair to say that, even if Jesus currently separates Jews, Christians and Muslims, he will eventually reunite them, in a horizon that is at the end of times. Muslims consider that Jesus is "the sign of the ultimate hour", and that he will come to gather the believers of all religions. As a matter of fact, Christians say the same thing about Jesus, and Jews wait for the Messiah. It is a great mystery that these believers who say things that are so different about the Messiah will eventually recognize and follow him.

According to the constant teaching of the Islamic tradition, and because of the specific status of the Holy Text of Islam as the fundamental axis of revelation, faith is intimately linked to knowledge. A famous Koranic verse¹ prescribes: "worship your Lord till certainty", and many Prophetic sayings strongly recommend the pursuit of knowledge as a religious duty "incumbent to all Muslims". The Prophet himself used to say: "My Lord, increase my knowledge". Of course, this knowledge consists in knowing God through revelation. But it is clear too that all sorts of knowledge that can be in some way connected to God, and that help the religious and mundane life of society, are good and have to be pursued. Clearly, when the Prophet recommended that his companions

¹ Koran 15:99

search for knowledge as far as China, he did not allude primarily to religious knowledge.

Human beings have a “faculty of knowing” that is described in the Koran according to a three-fold aspect: “And it is God who brought you forth from your mothers’ wombs, and He appointed you for hearing, sight, and inner vision”.² Hearing is our faculty of accepting and obeying the textual indication, that is the Koran and the Prophetic tradition which are the two primary sources of religious knowledge; sight is our ability to ponder and reflect upon the phenomena, and is closely related to the rational pursuit of knowledge; and the inner vision symbolically located in the heart is the possibility of receiving knowledge directly from God, through spiritual unveiling. As a consequence of these three facets, the nature of knowledge is also three-fold: It is religious through the study of the Holy Scriptures and the submission to their prescriptions and prohibitions, rational through the investigation of the world and reflection upon it, and mystical through inner enlightenment directly granted by God to whom ever He wishes among His servants.

Moreover, there is a well-known story about the independence of natural rules with respect to religious teaching. Farmers who used to grow date palms asked the Prophet whether it was necessary to graft these date palms. The Prophet answered “no”, and they followed his advice. They then complained that the date crops were very bad. The Prophet answered that he was only a human like them. He said “You are more knowledgeable than I in the best interests of this world of yours”. This is a very important story. There is a domain in which religion simply has nothing to say, a domain that is neutral with respect to the ritual and ethical teachings of revelation. However, because Islam does not separate the intellectual aspects of life from ethical concerns, the only knowledge that should be avoided is useless knowledge, which, in this Islamic prospect, is this type of knowledge that closes our eyes to the treasures of our own spiritual vocation.

To summarize, the descent of the Koran, in which God unveils His transcendence and His immanence, provides the Muslims with a way to celebrate God’s mystery as well as to

² Koran 16:78

approach His intelligibility. This intelligibility requires the use of reason encapsulated in a broader perspective of knowledge. Through His explanations and promises, God chooses to be partly bound by the categories of reason, out of His Mercy and Love for the world. But reason itself is unable to approach all the Truth, because Truth is not only conceptual. It also involves all the being. In the Islamic perspective, the “intellect” precisely includes the practice of reason, and the lucidity to understand where reason ceases to be efficient in this quest. The question of the exact extension of the domain of reason has been debated, and I will now try to illustrate the type of debates that took place in Islamic thinking.

Islamic perspectives on faith and reason

After the extension of the Islamic empire, during the Umayyad and Abbasid caliphates, the Islamic thought met Greek science and philosophy. At that time, it became necessary to define more accurately the place of rational knowledge in the religious pursuit, by marking the field that we can validly explore with our own reason. The great thinker al-Ghazali (1058—1111), known in the West as Algazel, examined the relation between science and philosophy on the one hand, religion on the other. As all his predecessors, he had the strong belief that there is only one truth, and that well-guided reason cannot be in contradiction with textual indications given by the Koran and Prophetic tradition. In his intellectual and spiritual autobiography “The Deliverer from Error” (al-Munqidh min al-dalâl), he enumerated the list of sciences practiced by Islamic philosophers (al-falâsafah) in the wake of Plato's and Aristotle's works. Among these sciences, “arithmetic, geometry and astronomy have no relationship whatsoever, positive or negative, with religious matters. They rather deal with issues submitted to proof, which cannot be refuted once they are known and understood.” However, al-Ghazali writes, there is a “double risk” in their practice. On the one hand, because these scientists are too proud with themselves, they often adventure beyond the field where reason can validly apply, and they make metaphysical or theological statements about God and religious issues that happen to contradict textual indications. On the other hand, the common believers, after seeing the excesses of these scientists, are led to reject all sciences indiscriminately. Al-Ghazali condemned “those who believe they defend Islam by rejecting the philosophical sciences”, and “actually cause much damage to it.” Now, providing there is only one Truth, how to deal with possible contradictions between

science and Koranic verses? The situation is clear: Wherever science apparently contradicts textual indications, it is the fault of the scientists who surely have made errors in their scientific works, as far as they have been led to conclusions which are at odd with revealed truth. In his book “The Incoherence of the Philosophers” (Tahâfut al-falâsafah), al-Ghazali attempted to revisit the proofs given by philosophers, and to demonstrate logically and scientifically where their errors come from.

In his book “The Decisive Treatise which establishes the Connection between Religion and Wisdom” (Kitâb fasli-l-maqâl wa taqrîr ma bayna-sh-shar’ah wa-l-hikmah mina-l-ittisâl), Ibn Rushd (1026--1098), known in the West as Averroes, examines again the issue addressed by al-Ghazali. Ibn Rushd was a judge (qâdî) and his text is indeed a juridical pronouncement (fatwa) to establish “whether the study of Philosophy and Logic is allowed by the revealed Law, or condemned by it, or prescribed, either as recommended or as mandatory.” Ibn Rushd quoted some of the many Koranic verses that prompt the reader to ponder upon Creation: “Will they not ponder upon the kingdom of the heavens and the earth, and all that God created?” As the enforcement of the revealed Law requires the use of the juridical syllogism (qiyâs shar’î) in Islamic jurisprudence, knowing Creation and meditating upon it require the use of the rational syllogism (qiyâs ‘aqlî), that is, the philosophers’ works. Now, Ibn Rushd wrote, “since this revelation [i.e. the Koran] is true and prompts to practicing rational examination (nazhar) which leads to the knowledge of truth, we Muslims know with certainty that rational examination will never contradict the teachings of the revealed text: because truth cannot contradict truth, but agrees with it and supports it.” As a consequence, Ibn Rushd explains that wherever the results of rational examination contradict the textual indications, this contradiction is only apparent and the text has to be submitted to allegorical interpretation (ta’wîl).

The Islamic world met modern science during the 19th century, as a double challenge, a material one and an intellectual one. The defense of the Ottoman empire in front of the military invasion brought by Western countries, and the success of colonization, have made the acquisition of Western technology necessary, and also of Western science which is the foundation of the latter. The West appears as the model of progress that has to be reached, or at least followed, by a constant effort of training engineers and technicians, and by transferring the technology that is required to develop third-world

countries. But the encounter between Islam and modern science also gave birth to a reflection, and even a controversy, the nature of which is philosophical and doctrinal.

To cut a long story short, the Islamic world now has a great interest for science, but a lot of disagreement about what science is, or has to be, to be fully incorporated in Islamic societies by being made “Islamic”. For the modernist stream, “Islamic science” is only universal science practiced by scientists who happen to be Muslims. For the reconstruction stream, “Islamic science” has to be “rebuilt” from Islamic principles, in the prospect of the needs of Islamic societies. For the traditional stream, “Islamic science” is the ancient, symbolic science that has to be recovered, in a prospect that is more respectful of nature and of the spiritual pursuit of the scientists. The various streams of the contemporary Islamic thought show an intense activity on the relationship between science and religion. All of them have to identify pitfalls on their path. The main issue is that they are conceptions that are elaborated a priori, as mental representations of the activity of Muslim scientists, and may have little to do with the actual practice in laboratories. If I were to comment on these streams, I would say that each of them seizes, and emphasizes, a part of the situation. Yes, it is true that science, in its methods and philosophy, is largely universal, and the common property of the human kind. Yes, it is true that science cannot be decoupled from the society in which it develops, and that the way it is organized, the topics that are highlighted, the ethic that is practiced, are influenced by the worldview of the scientists. Yes, it is true that, even if science describes the material cosmos, the issue of meaning and purpose, and the inclusion of the scientific pursuit in a broader quest for knowledge, have to be considered by scientists who are believers.

As a matter of fact, most of the debates between science and religion in the Islamic perspective simply forget a fundamental starting point, that is, the nature of the knowledge brought forth by the Koranic revelation. As it is explained already in the first verses that descended on Prophet Muhammad during the Night of Destiny, God speaks to the human to teach it what it does not know: “Read in the name of your Lord who created. He created the human from a clot of blood. Read, and your Lord is the most Bountiful, who taught the use of the pen, and taught the human that which he knew not.” The teachings of the Koran primarily consist in highlighting the spiritual vocation of the human being, the purpose of creation, and the mysteries of the hereafter. They speak

mostly of what to do to act righteously, and to hope to be saved. These teachings are proposed under the veils of myths and symbols. Here, we must give these words a strong meaning. Myths and symbols in holy texts are not simple allegories. The language of the muthos conveys meanings that cannot be expressed otherwise, that is, in the language of the logos, the language of articulated and clear demonstration. Myths, and symbols are just like fingers that point to realities that would be otherwise beyond our attention. They just call for the meaning they allude to, to knowledge that is obtained by an intuition in relationship and resonance with the contemplation of the symbols. In some sense, all ritual actions are like “symbols” that bring spiritual influence. With this view, it is possible to avoid a literalistic reading of the text, and to focus on spiritual realities. The verses on heavens do not speak of astronomy, but of the upper levels of being inhabited by intellectual realities, as much as the chronicles on the wars and struggles that the first Muslims had with the pagans do not speak of general rules for the relation of Muslims with non-Muslims, but of the symbols of the “greatest effort”, which is the struggle against our own passions that darken our souls.

Faith as a matrix for purpose

Let me now propose a view on how the articulation between modern science and religion can be addressed in the Islamic tradition. I would like to suggest that the theological and metaphysical corpus of the Islamic thought is rich enough to help the Muslim scientist find a meaning in the world as it is described by the current scientific inquiry. Of course, I am not going to propose a new form of parallelism. I will rather speak in terms of convergence. Reality uncovered by modern science can fit in a broader metaphysical stage. I will only give four examples on how this convergence can take place.

(1) The intelligibility of the world

The fundamental mystery that subtends physics and cosmology is the fact that the world is intelligible. For the Islamic tradition, this intelligibility is part of the divine plans for the world, since God, who knows everything, created both the world and the human from His Intelligence. Then He put intelligence in the human. By looking at the cosmos, our intelligence constantly meets His Intelligence. The fact that God is One, guarantees

the unity of the human and the cosmos, and the adequacy of our intelligence to understanding at least part of the world.

The Koran mentions the regularities that are present in the world: “you will find no change in God's custom”. Therefore “there is no change in God's creation.” Clearly this does not mean that Creation is immutable, since in many verses the Koran emphasizes the changes we see in the sky and on earth. These verses mean that there is “stability” in Creation reflecting God's immutability. Moreover, these regularities that are a consequence of God's Will can be qualified as “mathematical regularities”. Several verses draw the reader's attention to the numerical order that is present in the cosmos: “The Sun and the Moon [are ordered] according to an exact computation (husbân).”

(2) God's action in creation

How does God act in His Creation? According to the mainstream Islamic theology, God does not act by fixing the laws of physics and the initial conditions and letting the world evolve mechanistically. As a matter of fact, the “secondary causes” simply vanish, because God, as the “primary Cause”, does not cease to create the world again and again. “Each day some task engages Him.” In this continuous renewal of creation (tajdîd al-khalq), the atoms and their accidents are created anew at each time. This is the reason why “the accident does not remain for two moments.” The regularities that are observed in the world are not due to causal connection, but to a constant conjunction between the phenomena, which is a habit or custom established by God's Will.

The examination of causality by the Islamic tradition emphasizes the metaphysical mystery of the continuous validity of the laws. “All that dwells upon the earth is evanescent”, and should fall back into nothingness. But the (relative) permanence of cosmic phenomena is rooted in God's (absolute) immutability (samadiyyah). This is the reason why “you will not see a flaw in the Merciful's creation. Turn up your eyes: can you detect a single fissure?”

In any case, the metaphysical criticism of causality by Islam did not hamper the development of the Islamic science at the same epoch. On the contrary, the criticism of the Aristotelian conception of the causes as mere conditions for effects to occur necessarily and immediately opened the way to a deeper examination of the world to determine what the “habit” or “custom” proposed by God actually was. Deductive

thinking that goes from causes to effects cannot be used a priori in the realm of nature. One has to observe what is actually happening. The development of science in Islam during the great classical period was closely linked to the will to look at phenomena.

(3) God praises and loves diversity

One fundamental element of the Islamic doctrine is the fact the God praises and loves diversity: “Among his signs: the diversity of your languages and of your colors.” As a matter of fact, God never ceases to create, because of His love, or rahma, a word that etymologically alludes to the maternal womb. The mother’s love for her children is the best symbol of this divine love on earth, according to a Prophetic teaching which says that God created one hundred parts of this rahma, and He kept ninety-nine parts of it with Him, while letting one part descend on earth. It is with this part on earth that all mothers care after their children. This divine love reaches the diversity of creatures, physical phenomena, plants and animals, as well as the human diversity of ethnical types, languages and cultures, and extends to the diversity of religions, according to this well-known verse: “And if God had wanted, He could surely have made you all one single community. But He willed otherwise in order to test you by means of what He has given to you. Vie, then, with one another in doing good works. Unto God you all must return; and then He will make you truly understand all that on which you are differing.”

A Muslim scientist can easily appreciate this love of diversity in the meditation on the results of modern science. Thanks to the technical means of exploration, modern cosmology has discovered a spectacular view of the universe of galaxies, one hundred billions galaxies in the observable universe. Each galaxy consists in typically one to one thousand billion stars. And it is very likely that each of these stars is surrounded by several planets, which themselves may have satellites. This makes an incredible number of planets, to which one must connect the fact that differential evolution gives each planet a specific identity that does not resemble to the others. Of course, we do not know how much of these planets actually harbor life forms, but astrophysicists cannot contemplate these large numbers without thinking that life probably exists elsewhere in the universe. Only on earth, there are millions of living species. Can one imagine what the observable universe is? And the patch of the universe where it is expected that the laws of physics (and galaxies, stars and planets) are similar to the ones we know, is probably much larger than the observable universe, by a factor of many billions. And

this patch of the universe may be encapsulated in an infinite multiverse in which the laws of physics and the properties of the outcomes greatly vary from patch to patch. What is the meaning of that all? A believer can read the creativity and love of God in this landscape. Love is the explanation of creation, according to the tradition where God says, “I was a hidden treasure. I loved to be known, so I created the creatures to be known by them.”

(4) Science cannot be separated from ethic

According to the Islamic doctrine, the human being is created from clay and from God’s spirit, to become “God’s vice-regent of earth”. The human being is the only creature that is able to know God through all His names and attributes, and it is put on earth as a garden-keeper in the garden. Our relationship with other living creatures on earth is not that from the upper to the lower level, with the concomitant possibility to exploit all “inferior” beings”, but that from the central to the peripheral. The “central” position of the garden-keeper on earth is the position of the watchman who equally cares after all the inhabitants of the garden. This implies a sense of accountability for all creation, and should lead to humility, not to arrogance. As a consequence, we can eat the fruits of the garden, but we have no right to uproot the trees, which do not belong to us. The power that science has given to us must be accompanied by a greater sense of the ethic that is necessary to use this power with discrimination and intelligence. To say the things in a few words, we must not do all what we can do, very much as Adam was not allowed to touch one specific tree in the garden. This prohibition makes us free, because freedom requires the possibility of a choice. This symbol of the garden keeper in the garden has a strong echo today, with the current debates on how to deal with global warming, the share of natural resources in a sustainable way, or the preservation of biodiversity.

Unity and diversity: a key for the century to come

The Islamic tradition has a considerable spiritual and intellectual legacy that should make it contribute to the building of the 21st century. We do hope that the human kind will find a paradigm for its diversity within a strong sense of its unity. Unfortunately, there are also forces of darkness and ignorance that operate in our world. Instead of diversity, we see fragmentation. Instead of unity, we see uniformity. The believers have

their share of responsibility in this tragedy, because they do not promote a genuine sense of the religious truth.

What has the debate between science and religion to do with that? I think that the idea that God wrote two books, the Book of Creation and the Book of Scriptures, with the certainty that these books are in fundamental agreement in spite of apparent discrepancies, can prepare us to the idea that God has written, or revealed “many Books of Scriptures”, that are also in fundamental agreement in spite of apparent discrepancies. As far as the solution of these discrepancies is concerned, we must leave with some tension, while praising the Lord for the marvelous diversity He created and revealed.

In conclusion, let me address this issue of ultimate truth, and tell you a brief and profound story that illustrates the mystery of the human condition. We have to go back to the past, and look again at Ibn Rushd. Around 1180, Ibn Rushd was informed that a young man, called Muhyî-d-dîn Ibn ‘Arabî, aged about 15, was granted spiritual openings during his retreats. Ibn Rush, who was the greater philosopher of his time, invited this youngster to meet with him. Later, Ibn ‘Arabi, who then was considered the Greater Master of Islamic mysticism, wrote about the story of the meeting in the introduction of his major book, *The Meccan Openings*, a 4000-page treatise that unveils the content of his spiritual intuitions. I just let Ibn ‘Arabi speak. “When I entered in upon [Ibn Rushd], he stood up out of love and respect. He embraced me and said, “Yes”. I said, “Yes.” His joy increased because I had understood him. Then I realized why he had rejoiced at that, so I said, “No.” His joy disappeared and his color changed, and he doubted what he possessed in himself.” Then Ibn Arabi gives us the key of these strange exchanges, in which answers come before questions. Ibn Rushd addresses the central topic of our lecture of this evening: “How did you find the situation in unveiling and divine effusion? Is it what rational consideration gives to us?” Ibn ‘Arabi replied, “Yes no. Between the yes and the no spirits fly from their matter and heads from their bodies.” Ibn ‘Arabi reports Ibn Rushd’s reaction to these words: “His color turned pale and he began to tremble. He sat reciting, ‘There is no power and no strength but in God, since he has understood my allusion.’”

As a matter of fact, Ibn ‘Arabi alluded to eschatology, by recalling that even if reason can go very far to capture reality, no one has been intimately changed by scientific

knowledge. Knowing Gödel's theorem, quantum physics of the Standard Hot Big Bang Model changes our worldview, and maybe the way our minds work, but it does not change our hearts. Of course, these discoveries are fundamental milestones in intellectual history. They can produce strong feelings in those who dedicate their lives to such studies. But revelation speaks of another degree, or intensity, of Truth that changes our very being, and prepares it for the mystery of the afterlife. The teaching of religions is that we shall have to leave this world and enter another level of being to pursue our quest for knowledge in a broader locus more fitted to contemplating God than our narrow, physical world. Our reason fails to conceive how it is possible. It is a matter of faith in the promises of our Holy Scriptures. At that time, it is better to stop speaking, because, as the poet and mystic Jalal-ad-Din Rumi used to say, "the pen, when it reaches this point, just breaks."