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ZOROASTRIANISM AND IQBAL

ABADULLAH FAROOQI

Before we tackle the problem of Zoroastrian Religion and its resemblence with Iqbal's thought, it seems necessary at the very outset to give a brief survey of the development of this system, which became a state religion of Persia during the days of Darius the Great (521-485 B. C.)

Tradition has it that Darius caused all the sacred scriptures of Zoroastrianism to be collected after he was firmly established on the throne. He had them inscribed on parchment in letters of gold. The whole collection was divided according to the subject matter into 21 books, called the "Nasks."

Thus, Darius and Cyrus the Great (558-529 B. C.) were both stalwart champions of their religion and their inscriptions prove their humble faith in and devotion to Ahura Mozda. Though they are both to be reckoned among the greatest of the Rulers of the ancient world, still in their inscriptions they ascribe all their greatness to the grace of Ahura Mozda. In his great inscription at Behistun, Darius says:

"What I have done, that did I all by the grace of Ahura Mozda. Ahura Mozda vouchsafed me help till I completed the work. May Ahura Mozda protect me, and likewise my house and these lands! For this do I pray Ahura Mozda may vouchsafe me this!

"O man! This is Ahura Mozda's command to thee, Think no evil, abandon not the right path, Sin not!"

The later Achaemenian inscriptions show markedly different spirit. The pure ethical worship of Ahura Mozda recedes somewhat into the background and though his name is mentioned, others like Mitra and Anahita (Venus) are also invoked side by side with Him.

This was doubtless a sign of weakening of the ancient faith. Of this period, Browne says "that the language itself has degenerated and consequently with this decay of language appear signs of degeneration in creed; Ahura Mozda no longer stands alone, but is associated with other gods, Mitra (The Sun) and Anahita (Venus)"[1].

Side by side with this change, there appears a marked change in the outlook of the kings who out of sheer arrogance assumed the title of "The King of Kings". These inscriptions which are the only relics of ancient Persia eloquently indicate the pride that goeth before destruction. Thus, the true spirit of Zoroastrianism had departed and the imperial family was torn to pieces by internal factions. So when Alexander led the armies of Greece against Persia, the whole Achaemenian power collapsed. This happened in 330 B. C.

Alexander not only destroyed the Achaemenian power but also destroyed the holy scriptures of Zoro-Aster. In a drunken fit he set fire to the palace at Persipolis and the whole of the Library perished in the conflagration.

For nearly two centuries after Alexandar's death, we have no record whatever of the Zoroastrian religion. The priests, who had survived the invasion, had kept the faith alive in the hearts of the people and very likely they had also preserved in their memory the greater part of the scriptures which had been destroyed. The religion was by no means dead; but it had ceased to be the State religion for the time being.

Alexander's successors were quite tolerant in religious matters, consequently in the days immediately following Alexander's conquest there appeared various streams of religious thought in Iran, with the result that the main stream of Zoroastrianism was driven underground. There was in the first place, the Greek religion, itself influenced on the one hand by Mitraism (which had been rising as a mystic school in Persia during the last days of the Achaemenians) and on the other hand by the hoary religion of Egypt. Then again there were Budhist missionaries who had spread all over Western Asia during the two centuries succeeding Alexander. Asoka (272-232 B. C.) was responsible for the spread of Budhism.

1. Literary History of Persia Vol I. P.P.

Judaism was also a great force in the world of thought. And by the time the revival of Zoroastrianism took place in Iran, Christianity had also arrived.

With the advent of the Parthians (249 B. C.) a new era dawned in the history of Persia. The Parthians were not Zoroastrians in the beginning and were probably not even Aryans. It is curious to note that Firdausi does not mention the Parthians as rulers at all, but as "Knights" at the Courts of Kings of Iran. In fact, the name used for these heroic knights is "Pahlwan," which is identical phonetically with Parthava (Parthian). The founder of the Parthian dynasty came to power with the help of the Bactrian rulers, who had accepted the religion of Zarthushtra. The Bactrian Zoroastrians transmitted their religion to the Parthians and when the Parthians power had reached its zenith, Zoroastrianism also began to regain its lost dominion in Iran. At one epoch, we find three great Iranian (Zoroastrian) powers dominating the whole of Western Asia. These were Pontus, Armenia and Parthia. Out of these rivalries, the power of Parthia ultimately emerged victorious. The later Parthian rulers were Zoroastrian and they did much to bring together the scattered remnants of the older scriptures. The work of recompiling the Avesta text was definitely begun by the Parthian Valkhash (Vologeses) I (A. D. 51-77); but the work was finally completed under the Sasanian Shapur II (A. D. 309-379).

In the province of Pars; which earlier had given birth to the Achaemenian, there arose the family of Sasan. This family is traditionally believed to have been descended from a prince of the Achaemenian line, who had taken refuge in India after Alexander's conquest. Ardashir was a mighty ruler of Sasanian dynasty who overthrew the last Parthian ruler (A. D. 226) and established himself upon the throne. Ardashir was an ardent devotee of Zoroaster, and he carried forward, with great zeal, the work already begun by later Parthian monarch of recompiling the Avesta scriptures and of having them translated into Pahlavi. The work was not finished during his reign and was carried on by his son and successor Shapur I (A. D. 240-271). Zealous, as were the early Sasanians about the ancient religion of Zoroaster, they were tolerant of members of other faiths. Of course, Zoroastrianism being the religion of the King of Kings, was dominant in the land. Unfortunately this policy of toleration could not last long. In the reign of Shapur, Mani appeared on the religious horizon of Iran.

Christianity had already established there. Mani propagated his religion. His views were far in advance of his age. He held very advanced views upon toleration and the brotherhood of man. His views about the organisation of the State and Society were democratic in the extreme and as such were not particularly acceptable to the aristocratic Aryan polity of his age. His uncompromising asceticism as well as his views regarding life as an unmixed evil also revolted the Zoroastrian priesthood. At last his democratic teaching was represented as undermining the Aryan and Iranian polity and so he was beheaded by Beharam I (A. D. 272-275).

After the end of Mani, the Roman Empire adopted Christianity as the State religion. Consequently the Persian Christians began to regard it as their spiritual centre. Naturally therefore the Persian Christians owing to their spiritual allegiance to the Emperor of Rome, became political suspects. Shapur II definitely took up the view that Christians were disloyal to Persia and to the House of Sasan. So from that time onward, the Christians were subjected to many disabilities and they had to suffer heavily from time to time.

Another sect founded by Mozdak rose about A. D. 487 and spread with wonderful rapidity all over Persia and Armenia. On the spiritual side Mozdak taught devotion and the sacredness of animal life; but on the social side his views were more radical than that of a modern communist. He maintained a perfect equality of all men, not merely at birth but throughout life, and so he taught that property as well as wives should be held in common. The extreme rapidity with which these revolutionary doctrines spread indicate clearly that something was fundamentally wrong at the very heart of Sasanian polity. Ultimately the Mozdakites were put down with relentless cruelty and there were wholesale massacres of these people which began in A. D. 523.

In the time of Noshirwan the Just (A. D. 531-578) the Sasanian empire attained the zenith of its power and glory. It was in his time that the great Prophet of Arabia (Peace be on Him) was born (A. D. 570). It was really a miracle that the Sasanian empire crumbled away within less than three quarters of a century after the passing away of the greatest of the Sasanians. The august incident of the birth of the Prophet of Islam is related in Shah Nama as follows:

Noshirwan saw in a vision the crumbling of the turrets of his palace

and the burning out of the Holy Fire. Messengers were despatched to "Sateeh", a hundred and twenty years old hermit, who informed them that there was born at that time in Arabia, a Prophet whose followers would conquer Persia and establish their faith instead of Fire Worship. Firdausi beautifully illustrates this incident in Shah Nama and his verses about it are worthy of quotation:

چنان دید روشن روانش بخواب — که در شب برآمد یکے آفتاب
چهل پایهٔ نردبان از برش — که میرفت تا اوج کیوان سرش
برآمد بریں نرد بان از حجاز — خراماں خراماں بکشی و ناز
جهاں قاف تا قاف پر نور کرد — بهر جا که بد ماتمی سور کرد
در آفاق هر جاز نزدیک و دور — بندکاں نه از فر او یافت نور
بهر جا که بد نور نزدیک راند — جز ایوان کسری که تاریک ماند

Buzer Jamehr, his Vazir, gave his interpretation of the dream in the following terms:

ازیں روز در تا چهل سال و بیش — نهد مردے از تازیان پائے پیش
که درپیش گیرد ره راستی — به پیچد ز هر کژی و کاستی...
بهم برزند دین زردشت را — بمه چو نماید سر انگشت را
جهود و مسیحی نماند بجائے — در آرد همی دیں پیش ز پائے
به تخت سه پایه بر آید بلند — دهد مر جهاں را بگفتار پند
چو او بگذرد زیں سرائے سپنج — از باز ماند بگفتار گنج...
شود زد جهان قرن تا قرن شاد — جز ایوان شد کاں برآئید بباد
پس ازوے ز تو یك بنیره بود — که با پیل و کوس و تبیره بود
سپاهے بتازد برد از حجاز — اگرچه ندارد سلیح و جهاز
زتخت اندر آرد مر او را بخاك — ز گرداں کند مر جهاں جمله پاك
بیفتد همه رسم جشن سده — شود خاکداں جمله آتش کده
نه آتش پرستند و نے آفتاب — سر بخت گردان در آید بخواب
(شاهنامه)

Thereafter, one night, the royal palace actually crumbled and the King realised the significance of his dream. Firdausi describes this horrible scene in a vivid and graphic manner.

چناں شد کہ از شب گذشتہ سہ پاس یك آواز آمد چناں پر هراس
کہ گفتی جہاں سربسر گشت پست پس آنگہ یکے گفت کایواں شکست
برآمد همی شاہ را دل ز جاے ندانست آں کار را سر ز پاے
بہ بو زر جمہر آنگہ آواز کرد ز طاق شکستہ پس آغاز کرد
چو آں دید دانا هم اندر زماں چنیں گفت کای شاہ نوشیروان
بخواب اندروں هرچہ دیدی تو دوش از مہر امشب برآمد خروش
چناں داں کہ ایوانت آواز داد کہ آں ماہ پیکر ز مادر بزاد
سوارے رسد هم کنوں با دو اسپ کہ برباد شد کار آذر گشپ
دریں بود کامد سوارے چو گرد کہ آذر گشپ اس زماں گشت سرد

(شاهنامہ)

When Islam appeared, the general condition of the people was not good. They were not satisfied with their lot either spiritual or political. And consequently, at the very first shock with fresh and vigorous Islam the power of old Iran simply melted away. There were practically only two hard fought battles, Qadisiya (A. D. 636) and Nahavand (A. D. 642).

As soon as the Arabs had established their power over the country, the masses flocked to their side and embraced the new religion of Islam. Thus the religion of Zoroaster was replaced in the land of its birth by the new gospel from Arabia. Though zealous and eager to spread their own faith, the Arab leaders did possess a great deal of toleration and their inborn spirit of democracy undoubtedly helped them to accord to others the same religious liberty they themselves wished to enjoy.

At the time of the Arab conquest, though the masses were ready to embrace Islam, still there did exist a small body of Zoroastrians who were strong in their adherence to the ancient faith of Iran. They took refuge among the hills of Kohistan in the province of Khorasan.

For they defied the Arab conquerors, and at last they were hunted out of their mountain retreats and took refuge in the Island of Ormuz at the mouth of the Persian Gulf. Hard-pressed even here, they ultimately migrated to India and settled in South Gujrat, on the western coast of India.

II

In order to understand properly the religion of Zoroaster it is necessary to know something about the background of that religion which appeared in Iran, according to Iqbal, in the age of Solon and Thales.[1] The message that he gave to the people, was based upon what they had inherited from dim and distant past. In fact, all great Prophets have built upon the past traditions of the race they have come to lead. They adapt the eternal ancient wisdom to the peculiar needs of the people. So Zoroaster found a certain mass of traditions in Iran and the message he gave to the people was based upon those traditions. It is an established fact that both the Indians and the Iranians who belong to the Aryan race, have lived together for long ages and have followed one religion. In other words, before the advent of Zoroastrianism both the Indians and the Persians followed the same religion. When Zoroaster appeared, he inherited the fundamental principles of religion from the Aryan ancestry:—

(a) There is Law in nature and also (b) there is conflict in nature. "It is the observation of law and conflict in the vast panorma of being that constitutes the philosophical foundation of his system. The problem before him was to reconcile the existence of evil with the eternal goodness of god. His predecessors worshipped a plurality of good spirits, all of which he reduced to a unity and called Ahura Mozda—on the other hand, he reduced all powers of evils to a similar unity and called it Daruj Aheriman. Thus, by a process of unification he arrived at two fundamental principles, which, as though shows, he looked upon, not as two independent activities, but as two parts or rather aspect of the same primary being".

This evidently leads one to the conclusion that the religious traditions inherited by the Indians and Persians were the common Aryan traditions. This is further borne out by the fact that many names are common between the Avesta and Veda and what is really remarkable, several of these names are used in diametrically opposite senses. This later fact may point to religious troubles between the two sections of Aryan race. But still, a more remarkable fact is that the agreements are far greater in number than the oppositions.

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1. "Development of Metaphysics in Persia" by Dr. Iqbal, pp. 4, 5.

Further, the Aryans are said in the Avesta, to have had their original home in the fair land created by Mozda. It was far to the North, and a most remarkable point about this ancient home was that there "the year seemed as a day".

The Hindus also say, that a day of the gods equals a year of us mortals. Both these branches of the Aryans divided the universe into seven regions called Kishwar (کشور).

It is further interesting to note that many sages belong to the common traditions of Vedas and Avestas. For instance, take the case of Yima (Yama,—later King Jamshed of the Persian Herocycle). In the Avesta he is the great ruler and teacher of the golden age. He was warned by Mozda about the impending destruction of the wicked world by snow and ice and he was commanded to build an underground enclosure and to take there a set of specially chosen people, together with the seeds of the finest trees, the best fruits and the most fragrant flowers, and also a pair of each best and most useful animals. All these details do not exactly correspond with those given in the Vedas about Yama, though there also, he is "the King" but other details given above are associated in the later Puranas (Traditional Lore) with Manu—brother of Yama.

Another sage, belonging to this common tradition may also be mentioned. He is "Kava-Ushan", who is one of the royal sages of Avesta. He overcame the forces of evil by his prayers, and he was specially favoured for the glorious halo that surrounded him. He is also said to have ascended the sky with the help of a heavenly bird. He is also said to have established the sacred fire.

A third royal sage may be mentioned. He is "Thraetaona" (later "Faridun", in the Herocycle of Persia). He seems to be specially associated with the curing of diseases with the help of "Spells" (Mantras) and is the great physician and the healer. These points are also associated with him in the Atherva Veda, where he is called Trita. He is also associated with "Sama" and the preparation of the drink of Immortality. In the Yajur-Veda he is mentioned as granting immortality. The Vedic traditions also mention that he had slain three-headed monster who had for ages oppressed the world. The same tradition, in almost the same words, is found in the Avesta and in the later Persian "Epic of the Kings" (the Shah Nama); this three-headed

demon became the semetic tyrant 'Zohak", from whose oppression Iran was freed by the Royal "Faridun".

Coming to the Deities, worshipped by the Aryans we get a really formidable list of names, which are the common property of both the branches. These Deities may be divided into two classes, the first containing those names which came to signify diametrically opposed powers among the two communities and second, which contains names regarded sacred by both of them. The older scholars seemed to think that Zoroaster came as a reformer, and that out of a host of gods, he put forward only Ahura (Asura) as the one supreme god. This, they said, caused a schism and a religious conflict which led to the inversion of some of the ancient deities into "Demons" among the Iranians, and that the Hindus also repaid the compliment. Apparently there was a religious conflict, but the origin of it could by no means be ascribed to Zoroaster with any degree of certainty. And moreover this view fails to explain how the older Deities came to regain their sway in Iran during the later ages.

The first name is the name of the Supreme Lord Himself—Ahura—which in the Sanskrit form "Asura" signifies a "demon". The name originally signified 'the Lord of life'. The Sanskrit 'Asura' also signified originally "the one eternal life" and in the Rig Veda it is not used in its latter degraded signification. In the early Vedas the epithet Asura is used especially for Varuna—all-pervading life which ensouls the creation. He is the ruler of the universe, the Lord of the Righteousness, the one Being, who has laid down the law and order of Nature. The one important point to note in this conception of the Vedic Varuna is the great emphasis laid therein on the moral and ethical aspect of this god. "VARUNA" is pre-eminently the Lord of Righteousness. This concept of Asura-Varuna agrees closely with that of Ahura Mozda and of the earlier Avesta, and very probably in the Brahmanas and in the Epics of the Hindus about the conflicts between "The gods and the demons" are but the echoes of some religious and national strifes between the two branches of the Aryans on the Pre-Historic days.

The Avestic "Deva" is the natural complements of Ahura. Originally "the shining one", this word retains its pristine purity practically throughout the history of Indian languages. But in Avesta it is never used in the signification of Deity; rather it invariably means "Demon" or individual deities, there are but few that have suffered this inversion.

The most notable of these is Indira, one of the greatest Deities in the Vedic Pantheon. In the Avesta she is the chief helpmate of the evil one. It is very remarkable that of the two of the most important gods of the Vedas—Varuna and Indira—one should have become in Iran the Supreme Being, Ahura, while the other became the most important helpmate of evil.

But the most important of the ancient Indo-Iranian Deities in many ways is "Mithra", who represents the Sun. In the Veda he is very intimately associated with Asura Varuna. In the Avesta, however, he is associated more with the two guardian-judges of departed souls than with Ahura Mozda. In later days the cult of Mithra attained great importance in Iran and grew into an important esoteric school of occultism, which in its turn profoundly influenced the later Roman thought as well as earlier Christianity.

It is significant to note that though the object of worship among the ancient Hindus and the Persians were the elements—Fire, Water, Earth and Air—and the Light of Heaven—the Sun, the Moon and the Stars which were invoked as heavenly beings—yet above and beyond them all, was the idea of Supreme God, which is seen in the Vedas and which was far more strongly emphasised by Zoroaster. This emphasis which he laid upon the supremacy of Ahura has coloured the whole of the subsequent development of Iranian religious thought.

Such are some of the ancient Aryan traditions which the Iranians and the Indians had inherited. In Iran, however, the dominating influence of Zoroaster has completely over-shadowed all later developments. His Philosophy and his solution of the riddle of life has been at the root of all Iranian, and particularly, Zoroastrian thought, ever since. He made use of these traditions, but he laid the greatest emphasis upon the moral concept of Ahura and of Asha (Vedic Rita) *i.e.* the right path, and made the latter the key-stone of his religion.

III

The Indo-Iranian people had, besides the traditions mentioned above, one fundamental doctrine of Faith, which they held in common, the conception of Asha or Rita. Even in the earliest of the Gathas of the Avesta, as also in the oldest of the Vedic Hymns, we find the idea fully developed. The words purity or righteousness is the accurate translation of the word Asha as used in the later Avestic and in the

Pahlavi works. Zoroaster revived this idea of the ancient wisdom which was the joint heritage of both Iran and India.

The Parsis of today name it 'Ashoi' which is practically the same word, though to most of them the idea predominating is that of material or earthly purity. The implication of the higher degree of "Spiritual purity" is at best vague in this word "Ashoi". Exactly, the same has been the history in India of the word "Dharma", which had replaced the ancient vedic word "Rita". Thus all these words have fallen from their original "high estate". Asha was, however, restored to its original meanings during the days of Sasan. From the later Sasanian days onward, however, it seems that the idea of spiritual purity receded slowly into the background, with the masses, at any rate.

This decay of spiritual ideals in the nation as a whole, combined with the fierce intolerance of the priesthood, who resorted to unceasing persecutions of all religious beliefs other than their own, and who had gone to extremes of ferocity in putting down the followers of Mani and Mozdak, led to the sure and rapid downfall of Zoroastrian faith during the later days of the House of Sasan. And when the new and generous gospel of Islam was arrayed against the old faith, the later withered up practically without any forcing on the part of Islam. Naturally people turned to the doctrine of Islam, with its more practical effort at brotherhood and with its native urge towards democratic ideals. Islam was, indeed, distinctly adapted to be acceptable to the masses and to inspire them with the sense of equality and neighbourly love, while the order of faith of Zoroastrians in those days of its degeneration had become so overlaid with outward ceremonial and mere bodily purification, that people ceased to care for such mere outer forms of purity, which neither inspired them nor satisfied their spiritual thirst.

Asha or righteousness means the eternal truth, the only reality of all manifestations and of all evolutions. It also means the great Law, the faculty of divine knowledge, the Plan of God, according to which He fashioned the universe.

One aspect of Asha's working is the Law of action and re-action, known as the Law of Karma, another aspect is the eternal conflict between good and evil. Both these aspects of Asha are dealt with pretty clearly in Zoroastrian Philosophy. A full comprehension of Asha must inevitably lead the human soul to help in the great plan of God.

In the Veda the word Rita has exactly the same signification as the word Asha in the Avesta. The later word Dharm has also had the same signification originally, but in later times it also lost much of its original spiritual signification, and now it means merely ceremonial observance of religion.

Iqbal seems to have some parallels to Zoroastrian thoughts. His conception of Intuition bears some resemblance with Zoroastrian conception of Asha, which implies not only the law of God, but also spiritual experiences or a faculty of divine knowledge. It is through intuition that we apprehend and associate directly with reality in its wholeness. Both Zoroaster and Iqbal combine materialism and piritualism in their system of philosophy and vigorously maintain that intellectual and intuitive experiences are not opposite. They are fused together in one dynamic unity of ex perience.

According to Iqbal, intuition is similar to other objective faculties of knowledge. It is as objective as perception. But, it is through intuition that we enter into and grasp the nature and meaning of reality as an Indivisible whole.

A similar idea is expressed by Zoroaster who maintains that it is through spiritual inspiration (Asha) that the vision of God, proximity and final absorption in Him are accomplished. He further points out that good or noble mind is the mind of the Lord Himself and the gift from Him are the 'Insight' or inspiration (Intuition) that comes to human being who is striving upward to realise the highest.

But, Iqbal believes neither in autocracy nor in priesthood for, he maintains that human nature is originally good.

He agrees with Zoroaster in holding that the highest virtue is Righteousness or Asha to use the Zoroastrian phrase, which is defined in the Holy Quran in the following terms:

"It is not righteousness that you turn your faces in prayer towards East and West; but it is this that one should believe in Allah, the last Day, the Angels and the scriptures of the Prophet, and give away wealth, for His sake to the Kith and Kins and Orphans, the needy and the way-farers and the beggars and for the redemption of Captives and keep up prayer and pay to poor-rate and who perform their covenant when

they have covenanted and are patient in destruction and affliction" (Al-Quran).

As pointed out above, Asha is the Law of God or the path to God and as such it implies a regular and ordered progress in all manifestations. According to Zoroaster, all beings tend God-ward and human beings are expected to work out their own salvation by their own efforts. God has endowed men with a faculty, known as reason, that enables them to choose for themselves between good and evil.

Zoroaser postulates freedom of thought and originalty of action in his Philosophy.

Iqbal gives expression to his ideas in the following verses:-

تراش از شیشهٔ خود جادهٔ خویش
براه دیگراں رفتن عذاب است

گر از دست تو کار نادر آید
گناهے هم اگر باشد ثواب است

"Cut your path with an axe of your own, it is sin to tread the beaten path of others. If you achieve someting unique and original, even sin becomes virture. Again he says.

ندرت فکر و عمل کیا شے ہے ؟ ذوق انقلاب
ندرت فکر و عمل کیا شے ہے ؟ ملت کا شباب

ندرت فکر و عمل سے معجزات زندگی
ندرت فکر و عمل سے سنگ خار لعل ناب

What is originality of thought and action? An urge to revolution.

What is originality of thought and action? Bloom of the millat.

The miracles of life are from the originality of thought and Action.

Hard stone trensforms into mere pearl by originality of thought and action.

(Bal-e-Jibreel)

Both Zoroaster and Iqbal are unanimous in holding that the achievement of goal demands intense and manifold activities on the part of Individuol, which must be carried on in vital contact with the totality of the material and cultural environment. Both hold vigorously that life is meant not for mere contemplation and dreaming about the metaphysical problems, but for an active pursuit of the goog. We have to become good through action, that is, by fighting against the rigid and static world.

Iqbal very aptly points out that:-

"It is the lot of man to show the deeper aspirations of the universe around him and to shape his own destiny as well as that of the universe, now adjusting himself to its forces and now by putting the whole of energy to mould its forces to his own end and purpose. And in this process of progressive change, God becomes co-worker with him, provided man takes initiative."

"If he does not take the initiative, if he does not evolve the inner richness of his being, if he ceases to feel the inward push of advancing life, then the spirit within him turns into stone and he is reduced to the level of dead matter".[1]

IV

Iqbal in his "*Development of Metaphysics in Persia*" points out, "that the problem before Zoroaster was to reconcile the existence of evil with the eternal goodness of God. His predecessors worshipped a plurality of good spirit, all of which he reduced to a unity and called it Ahura Mozda. On the other hand, he reduced all the powers of evil to a similar unity and called it Daruj-Ahriman. Thus by a process of unification, he arrived at two fundamental principles which as Haug shows, he looked upon not as two Independent activities, but as two parts or rather aspects of the same primary being" (P. 4,5). Haug comes to the conclusion that Zoroaster was theologically a monotheist but philosophically a dualist.

Iqbal points out that there is an inherent weakness in the attempt of Zoroaster to reconcile theological monotheism with philosophical

1. Reconstruction of Religious Thought in Islam P. 12

dualism, in as much as he says, that the two states United in the Supreme Being, virtually means that the principle of evil constitutes a part of the very essence of God; and the conflict between good and evil is nothing more than the struggle of God against Himself.

He further points out that the original conflict of the two spirits is manifested in the opposing forces of nature, which presents a continual struggle between the powers of good and the powers of evil.

Although Zoroaster preached about the two spirits, his philosophy is by no means dualistic. Haug has misunderstood Zoroastrian thought and has thus failed to find out the actual position.

Zoroaster, no doubt, preached about the two spirits; but his philosophy is by no means dualistic. This idea of dualism did creep into the religion during the later stages of its development, but in Zoroaster's own days, and from his own words, dualism cannot be confirmed. Zoroaster's position is not dualistic in the sense of conceiving two co-eternal and two co-equal powers, one good and one evil, who are for ever at war with each other. The concept of Zoroaster is essentially different. He tells us that there are two spirits—the good and the evil—at war with each other. They form the antithesis of each other in every respect. His teachings differ from the popularly conceived idea of dualism in the following two respects:

(1) In the first place the conflict is bound to have an end. Even the later books which were responsible for all this later confusion of thought, speak of the ultimate triumph of the good spirit and the hidings of the evil one underground. Zoroaster himself categorically declares in the Gatha (Yasna xxx 10): "Then indeed shall the support of falsehood come down and broken shall be its power; that evil shall ultimately perish". If, therefore, one of the two powers, in the so-called "Dualistic" system, is ultimately to perish, we cannot in reason say that the system teaches that these two powers are either co-equal or co-eternal.

(2) Secondly, the two spirits are not "self created", as may be expected in a truly "Dualistic" system. For, both these emanate from and are the creation of Ahura Mozda. These twin spirits first emanate from Him, the eternal lord of all life, and these twins working together create and maintain the whole of the universe. Jackson has very well expressed it, "These two spirits do not exist independently, but each

in relation to the other; they meet in the higher unity of Ahura Mazda. They exist before the beginning of the world; but their opposition only comes to its expression in the world that we see".*

In Yasna, xix, 9, Ahura Mozda speaks of the two spirits as His own, implying that they both emanated from Him. Thus we may conclude that the two spirits represent the double emanation from the Eternal, when the Eternal "breathes out into manifestation". They may be compared to the two-fold powers, spirit and matter, which have been postulated in the Yoga Philosophy of India, as emanating from the supreme lord, Ishvara. It is for the purposes of manifestation, according to Zoroaster that the twin spirits (good and evil) created by Mozda. The twin spirit of good and evil represent the two poles upon which the whole of manifestation and evolution revolves. Apparently, opposed to each other in every respect they are both necessary to create and to sustain the manifested universe. Their opposition is clearly and forcibly declared in the Gathas (Yasna xxx 4).

"And now when these two spirits together come, they in the beginning created life and not life".

And in another place Zoroaster declares (Yasna xiv, 2) "I will speak of the spirit twin at the first beginning of life, of whom the holier spoke thus to the wicked one: never shall our minds harmonise, nor our doctrines; neither our aspiration, nor yet our beliefs; neither our words nor yet our action; neither our hearts nor yet our soul". The first quotation given above is very significant—"they created life and not life". This quotation is in fact the clearest expression of the fundamental difference between the two spirits that is to be found in the Zoroastrian scripture. If we look upon them, as in a sense representting the two phases of the eternal activity of God, namely, creation and dissolution, we may better understand their true importance. The later Zoroastrian theologians seem to have forgotten the important fact that destruction is also part of God's work, that one side of His activity, as shown in the progress of the Universe, consists in renovation and renewal, which is impossible without the destruction of what has ceased to help in the forward march of creation and has thus become evil. This attitude led, in later times, to a marked divorce between the function of Matter or Not-life aspect of God, and those of the spirit or life aspect of God. The result

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*

was that while good spirit became more and more identified with Ahura Mozda, the spirit of evil got estranged from being his creation. At last in Sasanian times, we find, instead of the good and evil spirits. Ahura and Ahriman forming the fundamental pair. This was probably due to the influence of Judaism, Christianity and Budhism, with hosts of demons and evil spirits, that Zoroastrianism lost its natural form and true spirit. As a result of these influences "Angro-Mainyu" and evil spirit, far from being "creation of God," became the arch opponent of the Almighty, very much as "Satan" did after "he fell from the Heaven". This later idea of "Ahriman" is decidedly unphilosophical and inconsistent with the other dogmas, simultaneously put forward of the omnipotence of God. And it is certainly opposed to the original teachnings of Zoroaster, which as we have seen admitted no other at God's level. This latter conception was due to a misunderstanding of Zoroaster's teachings, very possibly under the influence of Semetic theology. Thus, this conception of Ahriman is responsible both for the philosophic confusion and the superstition that crept into Sasanian Zoroastrianism and also for the belief among the foreigners that Zoroaster's religion was "dualistic."

The purest and the most philosophical explanation of the existence and the origin of evil, "Life and Not life" is embodied in the "Gathas." They are the two poles of the same Eternal source of life. In other words they are the first creation of His will. The Absolute willed to manifest and from 'unity' He became 'duality.' Zoroaster vigorously maintains that the spirit of evil is as essential for creation and manifestation as the spirit of good. This point is beautifully brought out by Iqbal in the following verse.

مزی اندر جہانے کور ذوقے
کہ یزداں دارد شیطاں ندارد

(اقبال)

What is pleasure in a world of bad taste.
That it has god, but lacks satan.

This idea is also contained in "Sarosha Yasht". In that Hymn, Sarosha[1] is described as paying His homage to all the Beings, who have helped to create the Universe:

"Among the creatures of the great Ahura, He was the

first to worship the eternal; He first did worship the immortal holy. The Six that stand around the throne of Mazda;
He also worshipped first the twin Maintainers.
The Twin creators—who create together
The manifold creation all around us" 1. *Yasna I vii.*

Thus, evil is necessary in the world in order that good may ultimately triumph. Zoroaster exhorts the people to follow the Eternal Laws or Asha which impels all creation to progress Godwards. To him, life upon this earth meant a constant endeavour to tread this path. It is an unceasing endeavour, a continuous activity—what the Hindus have named, Karma Yoga, or the Religion through action. Zoroaster expected all his followers to be active partisans on the side of Asha; consequently all that helps the forward progress of humanity is good, all that tends to hinder it is evil. Spirit, he says, must unite itself with Matter, in order to realise completely the fullness of its stature. That good shall come out triumphant in the end has been maintained by Zoroastrian theology throughout its long history.

(b) A second implication is with regard to human conduct. Evil is found in the world, in order that we may strengthen ourselves by learning to overcome it. For life, according to Zoroaster, is a constant and strenuous effort; not merely in being good but also in fighting and overpowering evil. Evil has to be regarded, so to say, as a whet-stone for a Zoroastraian to sharpen his determination upon. Evil is like Mephistopheles in Goethe's "Faust"

"Part of that power which still produceth good whilst ever scheming ill".

(c) Another, and perhaps a more remote implication from these ideas is that complete freedom is left to the individual to choose his own side in the eternal battle. According to Zoroastrian theology each human being has a principle within himself called "Urvan" which is often translated as soul or reason; but its literal meaning is "the chooser"; for it is that which enables human beings to choose between the right and wrong, between the temporary and eternal. Zoroaster,

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[1] سروش — جبرائیل علیه السلام دهر فرشته که پیغام خیر آرد (صفحه ۳۹۷ غیاث اللغات)

even while he proclaimed his first message, said:

> "Hear with your ears the great truths, consider them with clear thought, deciding between the two and choosing—man by man—each one for himself".

Thus, according to Zoroaster evil is but a negative aspect of the Divine life, only "the shadow of the eternal" does not exist; but it is relative, depending upon the distance from God at which the Individual stands upon the path of Asha. Angro-Mainyu (Spirit of evil) is terrible indeed as long as he has power to tempt people with material and temporary happiness, or to confound their intellect and soul. He has tempted sages always and often quite successfully.

'Action' is the pivot of Iqbal's philosophy. Like Zoroaster, he believes that man grows to his full stature and realises his destiny through a life of strenuous activity, not one of renunciation and soft self-centred contemplation.

میارا بزم ساحل کہ آنجا نوائے زندگانی نرم خیز است
بدریا غلط و باموجش در آویز حیات جاوداں اندر ستیز است

> "Feast not on the shore, for there
> softly breathes the tune of life
> grapple with the waves and dare!
> Immortality is strife".

Life, therefore, demands strenuous and constant efforts. True joy, according to Zoroaster and Iqbal, is to be found, not in watching the performances from the spectator's gallery, as it were, but in throwing oneself into the midst of the storm and tasting every experience painful or pleasant.

گفتش کہ سود خویش ز جیب زیاں برآر گل از شگاف سینہ زر ناب آفرید
درماں ز درد ساز اگر خستہ تن شوی خو گر بہ خار شو کہ سراپا چمن شوی

> "Get the profit out of Loss;
> The rose has created pure gold by rendering the breast!
> If thou art wounded, make the pain thy remedy!
> Accustom thy self to the thorns that thou mayst
> become entirely one with the gardens.
> (Pyame-e-Mashriq P.225).

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DATE OF IQBAL'S BIRTH

S. A. VAHID

The daily "*Inqilab*" of Lahore published the following note in its issue of 7th May, 1938:—

> "In the brief account of Allama Iqbal, which was published in a previous issue of the '*Inqilab*', the date of Allama's birth was given as December, 1876, according to a statement of Shaikh Ata Muhammad, Allama's elder brother. But it has been ascertained now that the date of Allama's birth was 22nd February, 1873, which corresponds to 23rd—24th Zilhij, 1289, according to the Hijri Calendar".

But in spite of this announcement there were still people who had grave doubts about the authenticity of the date of birth as announced by the *Inqilab*. Then in 1955 appeared Abdul Majid Salik's "*Zikr-i-Iqbal*" in which it was stated that the birth of Iqbal on 22nd February 1873 was confirmed by the Deputy Commissioner, Sialkot, after referring to the records of the Municipal Committee of that town.[1] Now the Municipal records of births and deaths on the subcontinent are generally authentic, and it is not possible to question their accuracy unless there is some clear evidence to the contrary. Prima facie there are two improbabilities against the date of Iqbal's birth as given by the *Inqilab* and Salik, and these are detailed below:—

1. In the first instance if we accept the date of Iqbal's birth as given by the '*Inqilab*' and Salik, his age when he passed Matriculation examination would be 21. The average age of a student passing Matriculation on the subcontinent is generally 16, and clever students have been known to pass this examination at a much earlier age.

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1. Abdul Majid Salik : *Zikr-i-Iqbal*, p. 10, Bazmi Iqbal, Lahore.

2. In January 1938, when Iqbal Day was celebrated in Lahore by the Muslim Students' Brotherhood in the poet's life-time, his age was announced as 60. This rules out 1873 as the year of Iqbal's birth.

These improbabilities are enough to shake our faith in the authenticity of 22nd Feb: 1873 as the date of birth and to justify our investigating the subject further. To do this, we have to start with the records of the Municipal Committee, Sialkot.

The statement relating to the birth of Iqbal as given in the register of births maintained by the Municipal Committee is reproduced *vide* Exhibit A. When we examine it carefully the following facts emerge:—

1. The birth certificate mentions that it relates to a male child of Shaikh Nathoo (which is the pet-name of Shaikh Noor Muhammad, father of Iqbal). But the certificate does not mention the name of the child. There is nothing strange in this, as in many cases a child is named several days after the birth, which is generally reported to the Municipal Committee the same day or the day after.

2. The date of birth is given as 22nd February 1873.

3. The Municipal records do not mention the birth of any other son to Shaikh Noor Muhammad after 1873.

On the other hand we have the following evidence against accepting the above entry in the register as the date of Iqbal's birth.:-

1. There is the evidence of Iqbal's sister that a son was born to Shaikh Noor Muhammad few years before Iqbal's birth.[2] Thus the entry in the Municipal register probably relates to this son who died in infancy.

2. We have the evidence of another sister of Iqbal that he was born early in the morning on a Friday. As 22nd February 1873 was not a Friday there is strong evidence against our accepting that date as the date of Iqbal's birth. [3]

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2. Syed Wahiduddin: *Rozgari Faqir*, p. 231.
3. *Ibid* p. 231.

After the date as given in the Municipal records several dates and years were suggested by various writers and journals, but as these are not based on any definite evidence we can disregard them straightaway. For example the year of birth as inscribed on the lapis lazuli tomb stone as supplied by the Government of Afghanistan is 1875. As there is hardly any evidence in support of this we can straightaway disregard it as, based on a mere guess. Another well-known writer on Kashmiri families Mr. Muhammad Deen Fauq, has mentioned the year of Iqbal's birth as 1875, although he corrected it later on as 1876.[4] Mr. Fauq was a friend of Iqbal, and had carried out detailed researches about the Kashmiri families living on the sub-continent still we need not attach much weight to the years as given by him in view of the fact that he has not mentioned any evidence in support of his statements. Similarly *Oxford History of India* gives the year of Iqbal's birth as 1876.[5] This is perhaps based on the year as given by Iqbal in *Lebenslauf*. In view of these improbabilities against accepting the date as given in the Municipal records as the date of Iqbal's birth several writers have devoted their time and energy to the examination of this question. The first man to express serious doubts about the correctness of the date of birth as given in the Sialkot Municipal records was Mr. T. C. Roy who used to teach Urdu in Bonn (Germany). In 1957 Mr. Roy wrote a letter to the Cultural Attache of the Pakistan Embassy in Bad Godesberg pointing out that there was a good deal of confusion about the date of Iqbal's birth and actually three different dates were mentioned by different writers and authors. So he suggested a thorough investigation of this matter.

In 1958 Professor John Marek of Prague University wrote a detailed article in *Archiv Orientalni*, 1958, 26/4, published by Nakladatelstvi Ceskoslovenske Akademie Ved, Praha, in which he arrives at the conclusion that the date of Iqbal's birth was 9th Nov: 1877. Since then Faqir Syed Wahiduddin has given a good deal of time and thought to the consideration of this question in his beautifully printed "*Rozgar-i-Faqir*" (1963). The conclusion at which Syed Wahiduddin has arrived confirms the findings of Professor John Marek. But it must be noted that whereas Professor Marek has relied mostly on the evidence of European scholars, Fakir Syed Wahiduddin has been able to collect the evidence of members of Iqbal's family, which he could obtain through Iqbal's nephew Mr. Ijaz Ahmad. It must be recorded here that we

4. Muhammad Deen Fauq: *Tarikh Aqwami Kashmir* Vol. II, p. 325
5. *The Oxford History of India*, Third Edition, 1961 p. 805

are lucky to have living amongst us today Shaikh Ijaz Ahmad, nephew of Iqbal, and one of his sisters whose evidence is of great importance.

We have already referred to the fact that several writers have given 9th November, 1877, as the date of Iqbal's birth, and in view of the confusion and uncertainty that surround the whole question it will be worthwhile to examine this date.

1. According to Allama's statement in the *Lebenslauf* the date of his birth is 3 Ziqidh 1294 A. H. (*vide* Exhibit B). This date corresponds to 9th November 1877, of the Christian Era.

2. In the Calendar of the Punjab University for 1896-97, page 348, the result of Iqbal's examination is announced as per statement *vide* Exhibit C. According to this statement the age of Iqbal when applying for permission to appear at the examination was 19, so it must be 20 or so when he actually passed the examination. This points to the year of his birth being 1877 rather than 1873.

3. According to a statement of Iqbal's sister, based on the authority of their mother, he was born early in the morning on a Friday.[6] Now 3rd Ziqidh 1294 A. H. was on a Friday.

4. V. Kubickova states in her *Novopeskon Literatura XX stoleti* that Iqbal was born in 1877.[7]

5. Professor J. W. Fluck gives the year of Iqbal's birth as 1877 *vide Muhammad Iqbal under indomuslimische Modernismus Westostliche Abhadblungen.* Rudolf Tschwdi Zum 70 Geburstag, Wiesbaden 1954, p. 357.[8]

6. Gottfied Simon in his "*Reformbeweguvgen in Islam*" gives the year of Iqbal's birth as 1877.[9]

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6. Syed Wahiduddin: *Rozgari Faqir* p. 232
7. Jan Rypka and collaborators: "*Dejiny perske a tadzicke literatury.*" (History of Persian & Tajik Literature), Praha, 1956, p. 305.
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9. According to the review of the book in *The Muslim World* XXVII, 1937 p. 437, as mentioned by John Marek.

It must be mentioned here that too much reliance cannot be placed on the dates as given by the European scholars. They have evidently relied on information as furnished by Pakistani writers or in the *Lebenslauf*. Still the statements of these scholars assume importance when they support the other available evidence.

7. *The Civil & Military Gazette* of Lahore when publishing an Obituary Note about Iqbal mentioned the year of his birth as 1877.

While there is overwhelming evidence in support of the fact that Iqbal was born on Friday, 9th November, 1877, there are also certain facts which tend to throw some doubts. These are mentioned below:—

1. There is no mention in the Municipal records of this date, or of the birth of Iqbal, if that birth happened to be on any date other than 22nd February 1873.

2. In the International Passport issued to Iqbal in 1931 (vide Exhibit D) and also in *Lebenslauf* the year of birth is given as 1876.

3. G. Taffarel in his *Notizie biographie sur Mohammad Iqbal* gives the year of Iqbal's birth as 1876.[10]

4. Helmuth von Glasenapp also gives the year of Iqbal's birth as 1876. [11]

As regards there being no entry in the Municipal records of Sialkot about the birth of Iqbal it may be pointed out that this was a common occurrence on the subcontinent. Regarding the entry in the Passport it must be pointed out that converting Hijri dates into Christian dates or *vice versa* is a very difficult process and involves complicated mathematical calculation. But luckily for us this process is today rendered easy by the accurate and laboriously prepared tables that we possess today. Unfortunately no such tables of conversion were easily available fifty years ago. Hence probably Iqbal had to carry out the conversion without the help of any tables and so he converted 1294 A.H. into 1876 C.E. more or less approximately.

10. *Oriente Moderno* XVIII, 1938, p. 322.
11. *Die Leteraturen Indiens*, Potsdam, 1929, p. 227-

An indication of the difficulty Iqbal felt is given by the fact that he did not mention any date along with the year. Thus the discrepancy is easily explained.

As regards the two European Orientalists their statements only serve to emphasise that even as early as 1929 there was a strong feeling against accepting 1873 as the year of Iqbal's birth.

When considering the degree of reliance that can be placed on their statements it may be pointed out that they have evidently based their statements on the information given by Iqbal in *Lebenslauf*. It must be noted that G. Tafferel is not a very reliable author as he says that Iqbal died in Bombay, which, as we all know, is not correct.

In addition to the evidence we have mentioned above there is a certain amount of secondary evidence which is also worth consideration:—

(a) Shaikh Ijaz Ahmad's mother told him that at the time of her wedding Iqbal was reading in V class, and his age was between 10-12 years. This makes him 16 or 17 at the time of Matriculation in 1893. So the year of his birth must be 1876 or 1877. In any case this evidence rules out 1873 as the year of Iqbal's birth.[12]

(b) In July 1938 Shaikh Ata Muhammad, elder brother of Iqbal, wrote to his son, Shaikh Ijaz Ahmad, that Iqbal's first wife was about 3 years older than Iqbal and at the time of writing the letter her age was about 65. This letter also tends to prove that the year of Iqbal's birth could not be 1873.[13]

Before concluding it must be recorded that the writer owes a debt of gratitude to Professor John Marek of Prague University and Faqir Syed Wahiduddin of Karachi for their patient, painstaking and thorough work in collecting evidence about the date of Iqbal's birth. The writer was always interested in this question and had collected considerable evidence but his task was rendered considerably easy by the work of these two scholars.

12. Information supplied by Shaikh Ijaz Ahmad in a letter.
13. *Ibid*

It must be put on record that whenever the question of the date of Iqbal's birth arose his great friend Choudhry Muhammad Husain used to say that it was impossible for him not to believe any information supplied by Iqbal himself. And we would be quite safe in following Choudhry Mohammad Husain in this matter.

In dealing with this subject we have relied to a very great extent on evidence supplied by Iqbal himself. So we must also say something about the source of Iqbal's information. In most families important dates are recorded in family journals, but even if there was no such journal in Shaikh Noor Muhammad's family the old father must have informed the young son about the date of his birth before the memory blurred. The elders in every family remembered the dates of birth of various younger members and also transmitted the information to younger members. This system of oral transmission of the dates of birth is maintained in every family in the sub-continent even to this day. In the case of Iqbal this method of oral transmission was to a certain extent natural as in his family Iqbal was the only child who had adopted a scholarly career. Thus the date of his birth must have been frequently mentioned in family circles as a date of great significance. To sum up we come to the following conclusions:—

1. There is absolutely no reason for us to disregard the date of Iqbal's birth as given by him, that is *3rd Ziqidh 1294 A. H.* corresponding to 9th November 1877 [14] although the Municipal records of Sialkot town make no mention of this date.

2. There is no doubt that a son was born to Shaikh Noor Muhammad on 22nd February 1873 as shown in the Municipal records, but this child died in infancy.

In order to avoid all confusion in future, Iqbal Academy and other Societies as well as the Government of Pakistan may be requested to accept 9th November, 1877 as the correct date of Iqbal's birth.

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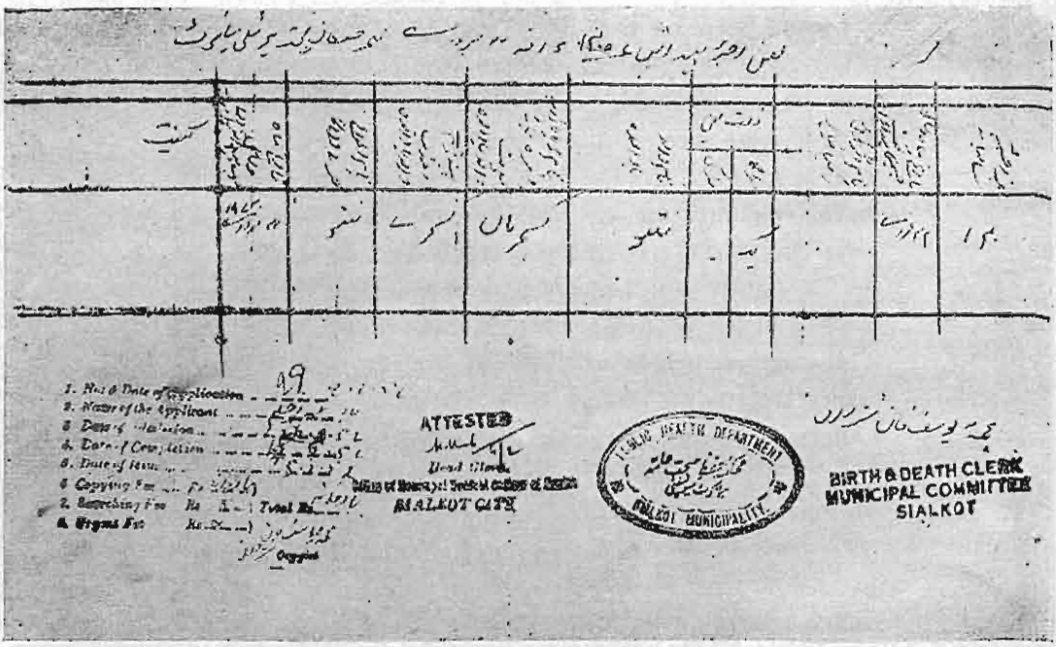
14. According to F. Wustenfeld - *Mahler' sche Verglei chungstabellen der Mohammedanischen wnd Christlichen Zeitrechnung* 2 Aufl: Leipzig 1926

EXHIBIT 'A'



میونسپل کمیٹی سیالکوٹ کے رجسٹر میں تاریخ پیدائش کا وہ اندراج،
جس سے ڈاکٹر صاحب کی تاریخ پیدائش کے متعلق غلط فہمی پیدا ہوئی۔

EXHIBIT 'B'

LEBENSLAUF

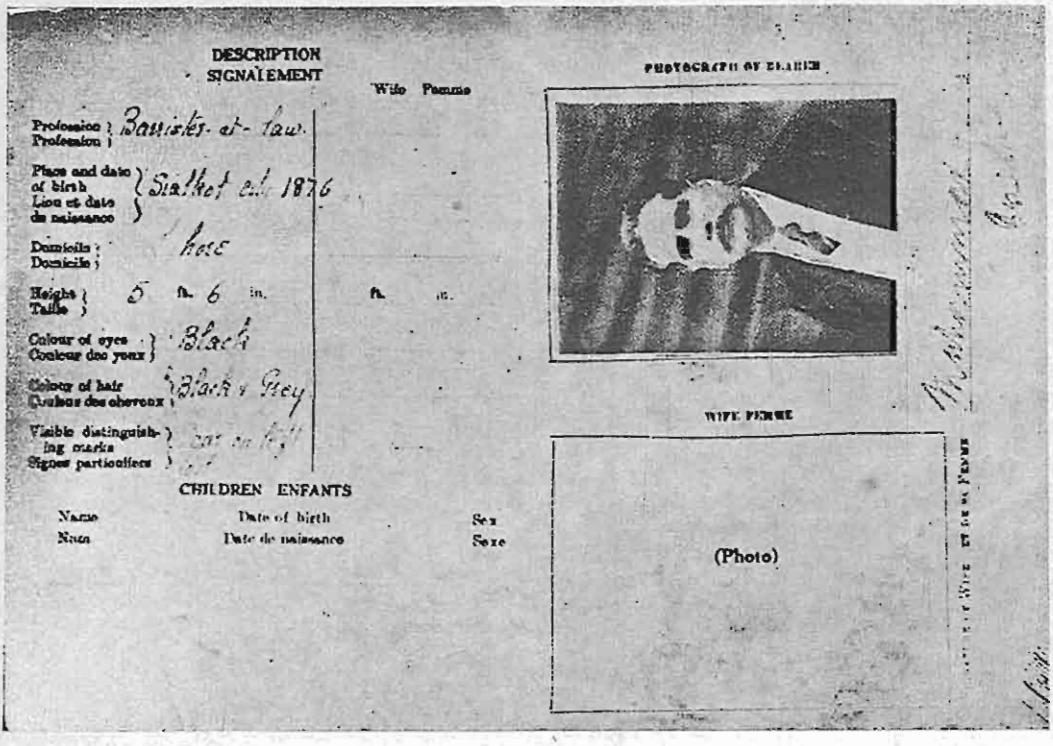
I was born on the 3rd of Dhū Qa d 1294 A. H (1876 A. D) at Sialkot—Punjab (India). My education began with the study of Arabic and Persian. A few years after I joined one of the local schools and began my University career, passing the first Public examination of the Punjab University in 1891 In 1893 I passed the Matriculation and joined the Scotch Mission College Sialkot where I studied for two years, passing the Intermediate Examination of the Punjab University in 1895. In 1897 and 1899 respectively I passed my B. A. and M. A. from the Lahore Government College. During the course of my University career I had the good fortune to win several gold and silver medals and scholarships. After my M. A. I was appointed Mc Leod Arabic Reader in the Punjab University Oriental College where I lectured on History and Political Economy for about 3 years I was then appointed Asst. Professor of Philosophy in the Lahore Goverment college In 1905 I got leave of absence for three years in order to complete my studies in Europe where I am at present residing

S. M. IQBAL.

EXHIBIT 'C'

Merit No.	Name	Race	Age (as given in application form)	Total number of marks obtained	Institution	Subjects in which the candidate was examined
11	Sheikh Mohd. Iqbal	Mohammadan	19	260	Govt. College Lahore	English Arabic Philosophy

EXHIBIT 'D'



DESCRIPTION
SIGNALEMENT

Wife Femme

Profession / Profession: Barister-at-law.

Place and date of birth / Lieu et date de naissance: Sialkot ca. 1876

Domicile / Domicile: Lahore

Height / Taille: 5 ft. 6 in. — ft. in.

Colour of eyes / Couleur des yeux: Black

Colour of hair / Couleur des cheveux: Black & Grey

Visible distinguishing marks / Signes particuliers: Scar on left

CHILDREN ENFANTS

Name / Nom	Date of birth / Date de naissance	Sex / Sexe

PHOTOGRAPH OF HOLDER

WIFE FEMME

(Photo)

پاسپورٹ میں تاریخ پیدائش کے اندراج کا عکس

THE CONCEPT OF VERSTEHEN AND THE PHILOSOPHY OF SELF.

ATAUR RAHIM

The Self-consciousness or Self of man is, according to Iqbal, the reality of his being. Self-consciousness is also the ultimate reality and the sole creative and directive force of the universe. This self-consciousness of the universe is known to the religious man as God. After evolving the universe through its various stages, the universal self-consciousness has manifested its creative will in the human form of life, as human self-consciousness, for the achievement of its own ends in creation—man is now the instrument of Divine purpose in the universe. The essence of the human self-consciousness is its urge to love the universal self-consciousness. Thus to the human self God is the most satisfactory of all ideals, the ideal which accords fully with its nature and which alone has all the highest qualities of beauty and perfection. In fact the terms beautiful and ugly true and false, good or bad, praiseworthy or detestable acquire their meaning from the nature of this innate urge of the human self which is its only criterion of beauty and goodness and the only motivating force of its activities. That which is consistent with the self's ideal is true, beautiful and good and that which is inconsistent with it, is false, ugly and bad. As the human self acts consciously and deliberately for the expression and satisfaction of its urge to love God, the universe changes and evolves gradually, at its highest level, which is the human level, towards the stage of its greatest perfection. But when the self is not aware of its true ideal or when it cannot feel or experience its beauty it loves substitute ideals which are really lacking in the qualities of beauty and perfection and cause the self's disappointment later on. Every ideal of life which is the final end of the activities of an individual is achieved by him through a series of smaller subordinate ends, purposes or goals which owe their existence to the ideal and lead upto the ideal. Whether the smaller ends and goals of an individual are right or wrong, true or false good or bad depends upon the fact whether the ideal which gives birth to them is right or wrong, true or false good or bad. The ideals and the resulting ends, purposes or goals whether right or wrong and true or false, good or bad are thus according to Iqbal the very essence of the life of the human self. This means that the social activities of men cannot be understood and social services cannot be formulated apart

from the understanding of their ideals. But ideals and the resulting ends are not external observable objects which are studied by the physical sciences but internal mental or psychic concepts. Hence the methodology of social sciences must be radically different from that of the physical sciences. The concept of "Verstehend" introduced by the recent western philosophers is an indication that they have realized this important fact. In my opinion this concept is not only relevant to Iqbal's philosophy of the self but also constitutes, when properly understood and formulated, an elaboration or development of an important aspect of that philosophy. I propose, therefore, to explain in this paper the meaning of this concept as it has been used by these philosophers with some of the difficulties being faced by them in its proper ennunciation and articulation. I am doing so in the hope that the future research scholar of Iqbal will make use of this concept for the development of Iqbal's philosophy appropriately.

II

The theory of verstehen stands for the general methodological approach that the subject-matter of the social sciences is typically different from that of the natural sciences, and as such the techniques of the physical sciences cannot be applied to the study of the social sciences. The subject-matter of the social sciences is frequently identified as 'purposive behaviour directed towards ends', conscious and unconscious. But, motives, dispositions and goals cannot be publicly observable in the sense certain physical and bodily movements can be. Nevertheless, they can be 'understood'. The social sciences are the "Sciences of Understanding", and as such not only they require objectively observable behaviour but also "subjectively intended meaning". 'Meaning' plays the role of a useful concept for the analysis of behaviour in its varied aspects.

III

As to the origin of meaning, it may be said that the social sciences study human social relations. These relations are the creations of the human will determined partly by the social environment. They exist as social facts only through the wills of the individuals. They are willed because of the demands of the social living, around some end, and by the overall needs of the normative social order. Thus, the psychic interaction is the essence of society with wants, demands, volitions and ends in it. Consequently, a social relation is a psychic relation. It is willed

to exist and persist. For this reason, a social relation is not a simple observable fact like a natural phenomenon; it is highly complex and intricate. As it exists between psychic entities, it cannot be adequately studied by observation and by the experimental method alone.

The social relations are purely human relations. Being psychic events, they are "internal" in character; a quality which is not possessed by the physical events.

Moreover, the human actions are motivational. Their understanding ranges from the bodily manifestation to the deeper analysis of inner motives. A human action is not all what is apparently known. The subtle nature of the social relations is expressed and communicated with the help of language, and the words, gestures and signs that convey their meanings to us. For example, the red and green signals express a traffic rule which is understood by the people who are conversant with it. However, those who do not know about it can be made to understand it. We see that a red signal forces a motorist to stop because he knows what it means to violate it and what will be its consequences?

Similarly, the various forms of intercourse as co-operation, sympathy, imitation, accommodation, conflict, etc. are based on social relations existing in a society. The human motives are understood in close relationship to other persons in the social environment. They are not the outward acts but the psychic manifestations determined by the social values, customs and traditions, which in turn are based on accumulated will of the people.

IV

In the nineteenth century it practically became a dogma in Germany that the methodology of the natural sciences could not be applied o the study of the social sciences, as the latter deal with the contents of the social life and with the intimate understanding of the subjective feelings, ideas, thoughts and values peculiar to the experiencing individuals and the norms existing in the society. Wilhelm Dilthey, Max Weber, Werner Sombart originated the method of verstehen. Werner[1] Sombart distinguished the two methods of inquiry: "the

1. Barnes, H. E. "An introduction to the History of Sociology" Chicago, 1961, p. 319. Barnes & Becker, "Contemporary Social Theory" Boston.

Ordnend" and "the Verstehend", the former for the natural sciences and the latter for the social sciences. The method of the natural sciences is characterized as an "external" ordering of phenomena for the purpose of forming laws of nature conceived as empirical generalisations. On the contrary, not just remaining content with external ordering, the "Verstehend method" is a "grasping of meaning". The term Verstehen may be followed in the English as "genuine understanding" or "imaginative insight" of "meaningful behaviour". The Verstehen theorists were dissatisfied with the empirical procedure of testing and observing human behaviour and with the attempt of translating the mental concepts into physiological terms.

V

The concept of "verstehen" represented as "ideal type" or "pure form" does not exist as such in the empirical world. It must be treated as an "explanatory concept", to guide collections, selections and systematization of the facts of social life so that they may be analysed and explained. One can talk of various "operations" or "forms" of verstehen rather than verstehen as such. As an ideal type verstehen can be understood as "genuine understanding" but in its varied manifestations, it can take on more or less different forms which can be distinguishable from but not antithetical to the basic concept. For example, space and time are the ideal types or pure categories. They are understood in their various spatial and temporal relations found in nature but all these forms are subsumed under the "logical types" of the two categories. Similarly, various forms of verstehen can be brought under one category of verstehen.

VI

Theodore[2] Abel has tried to evaluate the operation of verstehen. According to him the operation which he translates as understanding works in two ways: (i) internalizing of observed facts in a given situation (he gives three examples: a single case, a generalization and a statistical regularity), (ii) and the application of a behaviour maxim which works as the connection between different but relevant factors of the situation.

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2. Feigl & Brodbeck. "Readings in Philosophy of Science," article by Theodore Abel.

On a cold day he (Theodore Abel) saw that his neighbour went out, brought some wood, lighted it and then resumed his daily work. The behaviour of the neighbour was understood as: having felt chilly, he lighted the fire to warm himself. Abel is certain of this explanation because on a similar occasion he did the same thing. Thus we understand a given human action if we can apply to it a generalization based on our own personal experience. But, on the other hand, and it is its most obvious limitation, some other man, guided by experience of his own may interpret the behaviour differently. He may say that the person who lighted fire wanted to have tea or prepare food. Thus, different explanations of a single piece of behaviour are possible. But, how are we to judge which is the correct one? Many explanations may be correct or nearly correct. Understanding or the operation Verstehen, therefore, provides us with many possible solutions to one single case without pin-pointing the only correct explanation. Moreover, the ability to define behaviour will vary with the amount and quality of the personal experience and the introspective capacity of the interpreter and his ability to generalise. Most of the explanations may remain mere guesses. Verstehen, therefore, is of no scientific value for certain knowledge.

Secondly, it is not a method of verification. From the affirmation of a possible connection between a stimulus and a response, we cannot conclude that it is the only one. From the view-point of verstehen, any connection that is possibly conceivable is equally correct. But in the scientific inquiry, the probability calls for objective methods of verification i.e. experiments, comparative studies, statistical operations. For example, we do not accept a statistical generalisation 'that birth rate decreases with an increase in the standard of living' as valid because we simply understand it but because we have found reliable statistics supporting it.

These limitations virtually preclude the use of the operation of verstehen as a scientific tool of analysis. It can, however, perform one positive function in scientific investigation. It can serve as an aid in preliminary explorations of a subject and in setting up hypotheses though it cannot be used to test them.

The above criticism of the theory of verstehen misses the point, as the theory requires not understanding (in the sense used above) but genuine understanding which is over and above the superficial level of testing and observing. Verstehen is not to be understood as an aimless

speculation but a deeper probe concerning the various aspects of a problem. *Hypotheses are set up when the problems are analysed and synthesized by thought, while 'genuine understanding' is needed both before and after the scientific inquiry. It is understanding alone which tries to evaluate the findings of the scientific inquiry;* whether the data validates the conclusions or not? The statistical generalizations do not speak by themselves but need to be interpreted which is helped by '*understanding.*' Various psycho-sociological problems connected with them are studied, analysed and synthesized. *Understanding* not only helps us to set up hypotheses but enables us to critically examine the statistical and empirical laws which do not fit-in with the data. Is it not a fact that many generalisations and statistical inquiries are not wholly intelligible to us? For example, to say that there is 1: 6 ratio between divorce and marriage is not itself intelligible, unless all the problems of the married life are analysed by the process of the *genuine understanding.* Marriage is a social relationship between a male and a female and the divorce is the breaking up of this relationship. It is not a simple but complex, intricate and many-sided social relationship, affecting not only the individuals concerned but other persons connected with them. It is based on customs, traditions, psychological and social needs, geographic and economic conditions and religion. Socio-psychological causes for divorce need to be studied in the widest possible context and then a relation is established between marriage and divorce. All this is to be done by the genuine understanding. What it means is that social phenomena are to be studied not in their outward manifestations and observable contents but in their socio-psychological aspects which need a penetrating grasp so as to synthesize the facts in their proper perspectives. To accept the statistical inquiry only will be an acceptance at superficial level without any genuine understanding of the problem.

VII

The social scientists formulate social regularity and there are therefore criteria for the study of social behaviour. These criteria are the conventional rules. The individuals describe their activities and their description is also governed by these rules. For example, the activity of "praying" is not all that people do physically i.e. bending or kneeling in mosques or in churches and uttering certain words; but these bodily movements have their mental accompaniments—belief in God, religious faith, obedience, duty, humiliation, feeling of joy, etc. Only when the social scientist takes account of all these mental aspects, he has the genuine understanding of what is a "prayer". On the other

hand, if prayer is understood as a sum-total of bodily movements alone, it will not be a case of genuine understanding. Herein are implicit some rules of the selection of data based on not only external observation, but also on the operation of understanding.

The social scientist must elucidate these rules to achieve genuine understanding in his capacity as an epistemologist.

Rules presuppose language in which words are used and understood. Rule governing the use of a word or a phrase relates the expression to certain attitudes of those who employ it and also to certain objects in the world, if they exist. The word "prayer" is understood in a series of observations, mental and bodily, as it is used according to the rule. Human behaviour is a "meaningful behaviour", as it is a rule-governed behaviour. *A meaningful behaviour is one which is easily understood by a group of people sharing a common social life and a common language.* We have devised certain rules of language to stand for certain kinds of behaviour and to express certain mental facts. These conventional rules help us to communicate with one another. Max Weber formulates the rule that we are concerned with human behaviour "if and in so far as the agent or agents associate subjective sense with it".

The concept of meaningful behaviour is associated with motive and reason. Motive for an action is defined as a "meaningful configuration of circumstances" which to the person appears as a "meaningful reason for that action". It may be a consciously worked out reason or some unconscious motive. The unconscious motivation assumes an important place in the scheme of meaningful behaviour. With the help of various psycho-analytic techniques, the inner motives or reasons are unearthed. Both at the conscious and unconscious levels, reference needs be made to inner springs of action.

VIII

Peter Winch[3] says that to understand a human behaviour as meaningful behaviour, one must have a participative feeling, sharing

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3. Winch, Peter "The Idea of a Social Science", Routledge and Kegan Paul, London, Ch. II.
Peters, R. S., "The Concept of Motivation", London.
Geach, Peter, "Mental Acts", London.
Wittgenstein, L., "Philosophical Investigations", Blackwell, 1953.

a common social life with common beliefs, attitudes and aspirations. For example, if I am to understand the behaviour of "praying", I must have a participative feeling *i.e.* I must be one with the members of a religious group, understand their prayer as a religious belief and as a duty and share the religious feeling connected with it. This is an important point. A person who does not have this participative feeling will not understand "prayer" as a meaningful behaviour in its true perspective involving social and religious sentiments and psychological motivation. For example, a non-Muslim, who sees a Muslim praying may notice that he is praying (if he is told that such is praying) at the superficial level and not in the same way as another Muslim will understand it because of having the participative feeling and the same faith. Participative feeling gives rise to more penetrating and empathetic considerations and digs out many valuable details which enrich the explanation. Participative feeling is no doubt limited to certain cases, as it cannot be taken as a generalisation for all rational explanations, but, none the less, its importance cannot be minimised.

IX

Among the social sciences which have tried to use the conceptual framework of the natural sciences to make them objective and scientific, we take the case of Psychology. We find that the results are not encouraging. In its extreme form of Watsonian Behaviourism, it has miserably failed. Watson took up the impossible task of reducing psychology to the study of the visible and concrete facts of behaviour which could be observed and recorded. He discarded the mental concepts of sensation, perception, thinking, memory, imagination, and reduced all of them to the stimulus-response formula. He rejected the method of introspection. But we find that later he relaxed his rigorous requirement that all facts be tangible and observable. He admitted that there are changes which cannot be externally observed. He classified behaviour into implicit and explicit. Explicit behaviour is observable behaviour of bodily expressions and movements. The implicit behaviour is unobserved physiological changes going on in the body. He also admitted the use of introspection, as a person can observe his own behaviour, give verbal reports and compare his experiences with the experiences of other persons. He also realised the role and importance of unlearned activity (instinct) in learning and habit formation. The latter behaviourists continued to blunt its edge and with the admittance of "purpose" in behaviour, all rigour was gone. E. C. Tolman admitted that there is some end or goal in all

behaviour activity. Trial and error behaviour in animals is also goal directed. The behaviourists began to accept the psychological concepts. C. L. Hull added the concepts of expectation, purpose and guiding ideas. Every behaviour manifestation needs to be observed in its acquisition, guidance and extinction in relation to the condition which gives rise to it. The behavioural and mental concepts have been brought under the one concept of "activity". Admittance of the value of introspection and employing mental concepts supports the theory of verstehen.

X

The Gestalt Psychology is associated with the names of Wertheimer, Koffka and Kohler. They accepted the value of introspection. Excellent psychological data could be gained from "direct experience" than by external observation alone. The importance of introspective reports in experimental studies is acknowledged by them. Behaviour is neither reflexive nor conditioned. It is a unitary fact, a meaningful whole. It has its own properties which are revealed in its organization. Stimulus-response formula is revised as stimulus-organization-response formula. The principle of organization is basic and it works two ways: the organism is not passive to stimulus but accepts it after scrutiny and then makes an appropriate response. The response is the result of organization done by the organism. The principles of organization are more clear in learning, memory, emotion, thinking. The relationship between the organism and the environment is dynamic and functional. The functional relationship is both physical and psychological. The behavioral environmental is determined by the outside-inside interaction; inside interaction being determined by the individual's needs, interests, attitudes and abilities.

The Gestalt Psychologists gave another concept of "insight". For Kohler insight is a transition from helplessness to mastery; it is more than trial and error; it is the ability of observing and understanding the situation as a whole; it is an ability to perceive relations in the environment and to connect them to make a meaningful whole. Insight is exploratory in nature. If it is gained in one situation, it can be transferred to another more or less similar situation.

The two concepts of "organization" and "insight" are verstehen concepts.

XI

The theory of verstehen is a revolt against the use of statistical and experimental methods used in the social sciences and to their claim that these methods can explain the social phenomena and bring the social sciences at par with the physical sciences.

Statistical methods are no doubt amenable to certain social data which led themselves to quantification, but the method is misused when an attempt is made to quantify which cannot be quantified. Before discussing the matter in detail I want to state some of the assumptions which the statisticians of the social sciences have:—

1. Counting and the manipulation of the statistical studies in the social phenomena is the best and the surest method for discovering uniformities;

2. that the results of the counting can be generalised far beyond the phenomena counted and can be expressed in quantitative formulae as either universal or significant uniformities;

3. that these statistical operations permit one to define precisely and quantitatively many fundamental categories;

4. that each quantitative study is considered as a sign of the progress of the psycho-social sciences towards an objective, exact, and mathematical phase in their existence towards a maturity approaching that of the physical sciences;

5. that all non-quantitative studies are either armchair philosophy or subjective speculation or inexact and superficial.

I think that these assumptions are not well founded for the reason below:

I have already said that certain social phenomena are amenable to statistics. The problems relating to population growth, migration, crimes, unemployment, etc., are amenable to counting and yield important results. They establish empirical or statistical semi-uniformities with limitations on the prediction of their future course. Population census gives us the knowledge of its size, density, sex-age composition, religion, education, economic condition, death and birth rates. No

doubt that the results are valid under certain conditions and are of great value. But the trouble arises when the statisticians forget this limitation and try to apply it to other phenomena not amenable to statistics. The passion for quantifying all sorts of qualitative data has manifested in many fields: in measuring the intensities and qualities of beliefs, emotions, intelligence, ideologies, attitudes, personality traits, public opinion, etc. As to the success of these efforts, the matter could be foreseen. If the quantified qualities have units, they can be measured or scaled; if they do not have units, they cannot be adequately scaled and measured. In spite of this if an effort is made, the result is bound to be fictitious and arbitrarily superimposed upon the phenomena. What I mean by the quantification of the data is obvious from the above example of the population study. The population problem is split up into units which can be measured. The units are: size, sex, age-composition, marital status, education, profession, etc. The data can be collected under each head. The units are simple and natural. But the difficulty arises with regard to the qualitative data. For example, in the study of the personality traits, it is not possible to have units because the traits are psychological entities. The social psychologists generally scale a personality trait on its two extremes. "Honest" *e.g.* may be quantified as 'always honest', 'most of the time honest', 'honest on less occasions,' and 'completely dishonest'. The qualifications attached to the word honest are ambiguous and vague. To make it more exact, it may be expressed in percentage as 100 per cent, 75 per cent, 50 per cent and 0 per cent honest. But this quantification is inadequate. The trait of honesty is not something static and exact. It is not a fixed entity. It cannot be measured as objectively as height and weight. It is a mental entity connected with the psychological problem of motivation. At every stage of inquiry, it is not like a simple physical trait but a complex mental trait. The scale measures not the trait of honesty, but the extent to which an individual has been honest in a social situation. Estimation is of the timely behaviour and with reference to a particular situation. An over-all estimation of it is not possible. One may be rated as honest in one aspect of his life and dishonest in another. From this timely appraisal and restricted domain of inquiry, it cannot be generalised that the individual either is or is not honest.

Similar is the case with the quantification of "intelligence". Intelligence is not one ability but a number of abilities found in the individual which make him proficient in different pursuits. If one is intelligent in science, he may not be so in arts and literature; he may even

be proficient in one branch of study than in other. Intelligence is a capacity, partly given to use by nature in the form of an aptitude, a natural inclination, and partly developed by hard work and training. Intelligence is an ability to integrate the elements of experience, to reason, compare, comprehend and to tackle new situations.

One obvious defect of statistics is that it cuts the problem down to the size of the technique instead of raising the technique upto the size of the problem.

The knowledge of social sciences cannot be had alone by the empirical and the statistical approach but by direct co-feeling, co-experiencing and co-living in the psycho-social states. A scientist who has never experienced joy or sorrow, love or hatred, religious and aesthetic bliss, justice or injustice can never obtain even the remotest knowledge of these states of living, feeling, wishing, emotion and thought. This leads to the significant conclusion that in spite of all objective technique verstehen functions as the basic tool of grasping the 'meaningful behaviour' of the individual and the group.

4. Sorokin, P. "Fads and Foibles About the Social Sciences". P. 129

THE NATURE OF EGO

G. R. MALIK

"The operation of thought which is essentially symbolic in character," says Iqbal, "veils the true nature of life, and can only picture it as a kind of universal current flowing through all things. The result of an intellectual view of life, therefore, is pantheistic"[1] These remarks, largely gone unnoticed, indeed lay the foundation of the philosophy of Self, by bringing to light the basic fallacy immanent in Pantheistic Philosophies. These latter philosophies are led to the universal all-inclusive, one, indivisible consciousness by virtue of the inherent nature of thought. Since thought issues in unity of the judgement, they infer unity of consciousness. Again, as the thought works out its end through symbols, which are in essence, general, it results in *deindividualization*. It does not see concrete individual entities, without symbolizing them, and as it symbolizes, life *becomes* a general *divested of all individuals*. Consequently, the thinking activity easily goes to the delusion that one universal life is flowing through the particular evidences (centres) of life. The individuals are nothing but bubbles in the universal life stream.

This illusion influences Bergson, and forces him to represent reality as one "vital force" going on. The same fallacy plays with Hegel, and the latter seeks out his philosophical system in the idea of dialectic of the universal spirit. Iqbal corrects this tendency of universalization by appeal to immediate experience. He says "We have a first hand knowledge of the appreciative aspect of life from within. Intuition reveals life as a centralizing ego."[2]

This observation serves a dual purpose: one the clarification of the nature of intuition as opposed to thought, the other, bringing forth the nature of life.

Intuition is that probing which does not proceed by universalization and as a consequence does not fail to disclose the true character of concrete things. Intuition reveals that every living entity converges upon an ego-hood. It is an experience from within, while thought is

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1, 2. Reconstruction of Religious Thought in Islam, p. 61.

'sight' from without. At this point, Iqbal does not imply that ego is something 'inward'; his appeal to self-experience is simply a method of demonstration of the existence of one's own self, in opposition to the theory that onself is merely a bubble in a universal stream of life. Every individual, on the testing of immediate experience, is a profound ego, with a life of his own, existing in himself, in an existing world.

I

All 'egos' are not of the same level of reality.

"From the psychological point of view, one thing appears to me to be certain," says Iqbal, "Only that is, strictly speaking, real which is directly conscious of its own reality. The degree of reality varies with the degree of egohood."[3] Iqbal is obviously embarking here on the theory of the Hierarchy of Being. Every thinker who deals with ontological problem tries to give a systematic account of the chain of being, and advances a theory of the positions of different entities in the scale of reality. Iqbal's criterion of the station of a thing in the total scheme of being is the note of ego-hood resonant in its composition. On this issue, Iqbal revives the tradition of the Ishraqui philosophy. He uses the same criterion, which Shahabuddin Suharwardi formulated in his 'Heirarchy of reality' in which 'Light' (Nur) means self-conscious existence. Light is being and existence, its absence darkness is not being and nothingness. All the beings are in a hierarchy of reality from light to darkness. The being that is conscious of itself is really existent in itself. If a being is unconscious, that is devoid of light, it is simply obscurity, nothingness, at the lowest grade of reality. Between the supreme light and obscurity, there are various grades of light (*i.e.*, of self-consciousness) which determine the orders of existence in the total scheme of reality. Each order represents a level of reality and is object of love of the entities at the lower order of existence. All the orders, in their gradation, represent in the word of Iqbal 'rising note of egohood."[5]

Displaying of self is customary with the ego.

In every particle lies hidden the power of ego.

3. Ibid. p. 72.

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5. Loc cited p. 72.

The structure of existence is of the signs of Ego.

Whatever you behold is of the secrets of Ego.[6]

Shahabuddin Suharwardi, however, does not give an adequate account of the nature of light (egohood). He is busy with broad categories of the chain of being.

Iqbal, however, concentrates on the problem of the life of ego, its discernible features unique to itself, in which no other thing may intrude.

II

"The nature of ego is such that", Iqbal remarks, "in spite of its capacity to respond to other egos, it is self-centred and possesses a private circuit of individuality excluding all egos other than himself" ( ). These words mark off the point of departure of the Philosophy of Self from the Ishraqui Philosophy. To Shahabuddin Suharwardi, the contemplating being must dissolve itself in the contemplation of the higher ego. Consequently, in his metaphysics, the Light, which is diffused in all directions, returns to itself, dissolving all the grades of being in the Light of Lights. In opposition to this dissolution and return, Iqbal develops his own ideas of Elevation and Ascension.

What is Ascension? Only a search for a Witness.

Who may finally confirm thy reality—

A witness whose confirmation alone makes thee eternal.

No one can stand unshaken in HIS Presence;

And he who can, verily, he is pure gold.

Art thou a mere particle of dust?

Tighten the Knot of thy ego;

And hold fast to thy tiny being!

How glorious to burnish one's ego

6. English rendering by Dr. Rafiuddin.

And to test its [illegible] sun!

Re-chisel, then, [illegible]

And build up a new being.

Such being is real being;

or else thy ego is a mere ring of smoke."

Iqbal ends his Lectures on the *Reconstruction of Religious Thought* on these above lines from the *Jawid Nama*.

Every ego is required to dissolve his own frame of being, he has to shape and reshape his own personality, prepare a new and more intensive frame of being of himself. This is the nature of *Ascension*. He is not to surrender his individuality, but has to make it firmer, more deepened and intensified. This is an *endless* career.[7] In this alone consists its reality as an ego.[8]

III

Human ego occupies a special position in Iqbal's Philosophy of Self. "The purpose underlying the revolution of time is that thy ego should reveal itself to thee".[10]

This is an address to *Man*, which tells him, what he is to be. "Endowed with the power to imagine a better world..the ego in him (in man) aspires, in the interests of a unique and comprehensive individuality, to exploit all the various environments on which he may be called upon to operate during the course of an endless career."[11] The ego is therefore in a state of tension.

Rafiuddin elaborates these points. He uses the term of "*consciousness*" for the "ego" and says, "Consciousness in creating the universe anew from moment to moment for the sake of its own self expression is continuously breaking through its own resistance and outgrowing itself.[12]

7,8. Loc Cited p. 72,

10. *English rendering* by Dr. Rafiuddin.

11. Loc Cited p. 72.

12. Iqbal's idea of Self, *Iqbal Review*, volume iv, No. 3; October 1963. p. 7

Here in the analysis of the life of ego, the notion of time enters. The intensive magnitude of ego lives in pure duration. M. M. Sharif remarks, "It is a genuine creative movement, the course of which is not already predetermined." The life of ego does not tread a pre-ordained parth. It lives by perpetual creation. Its essence is movement. "Its life consists in movement from appreciation to efficiency from intuition to intellect, from pure duration to serial time which can be measured by day and night. Serial time is born of this movement".[14] Thus, ego does not exist in serial time. By its ever new activity it produces the serial time itself. Its own essence is identical with pure duration. "To exist in pure duration is to be a self".[15] This is real Time. "To real time or pure duration the distinction of past, present and future does not apply. In flow the past rolls into the present".[16]

Thus human self so far as it is a distinct individuality lives in its pure duration, perpetual movement and creativity, creating its own serial time. Its real life is change without succession. According to Iqbal human self is immense dynamism. It lives by constant creation, negate the present forms of existence, and out of himself generates new forms. He is change and activity, struggle and tension.

But, contemporary sciences and studies about man, a close examination must convincingly demonstrate, are in deep antagonism with this notion of self that creativity and activism are not imposed on the life of self from some external condition, they are intrinsic to the nucleus of its every existence. The contemporary psychology is such that it cannot assimilate this truth for its frames of reference are sharply in conflict with the true nature of *dynamism*. Thus, this science of psychology is the greatest impediments to the proper appreciation of the phenomenon of self, and cannot therefore help us to understand the secrets of the human existence.

Analysis of this psychology leads us to the conclusion that it is rooted in an ideology whose source lies in the Greek world view. According to the Greeks, activity is impossible without some deficiency. Consequently the perfect being does not move; he is unmoved mover.

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13. Iqbal on the Nature of Time, *Iqbal Review*, Volume 1, No. 3; October 1960 p, 36.
14. ibid p. 38.
15. ibid p. 38.
16. ibid p. 37.

But, according to the theory of *Khudi*, movement and doing is the very substance of being and reality, hence the conflict between the Western theories and the philosophy of self. The so-called dynamic theories of today are offshoots of this Greek legacy, and presuppose the impossibility of activity without some goal, which in turn is considered unimaginable without some disharmony in the state of a living being. Consequently, work, doing, or movement, in them, is a symptom of some want; and as soon as the want is over, the activity ceases to exist.

This notion of movement is ingrained in the Western culture and flourishes in the development of the theories of man, social sciences and humanities. Consequently, we find Psychologism, Actionism, or Hoemostatis as frame of reference of the contemporary psycho-social sciences. These frames of reference are nothing more than different hues of the same Greek legacy.

IV

We may well start with Psychologism. It is based on the generalization of the Psychic Principle as the foundation of arts, religion, morals, social sciences, and a comprehensive view about man, his origin and destiny.

Psychologism represents an image of the life of the self, that it is but a stream of wants, and its activity continuously aims at the fulfilment of these wants. All wishes, purposes and ideals, have their origin in the nature of Psyche which underlies the phenomena of self and are reducible to this principle of dynamism, which may be articulated in the "Motive-Action" conceptual system for investigation into the nature of man.

Universal application of this principle on all the aspects of human life is Psychologism. It is not less than a world-view.

There is no doubt that the reality of self may also be visualized in terms of goals, motives, actions and purposes. *But these concepts in the philosophy of self are not representations of wants, scarcities, poverty, imbalance, etc. in the structure of self. They represent something concretely positive, the very activistic and creative nature of the self.* The significant difference may be noted by that in Hormic-Psychology, Psycho-analysis, Holism, the psychology of Verstehend, moreover, in social behaviourism of Mead and Cooley there are extensions of

various degrees of the ideology of Psychologism in the field of personality. Accordingly, the goals are not expressions of the creative, ever new aspects of the self but that of the tensions and disturbances that the ego tries to overcome by the goals it seeks.

McDougal's psychology is the first systematic account of modern Psychologism. He defines the basic unit of human personality, as a discrete action pattern which issues from a motive, results in co-ordinated muscular movement and finally terminates at the goal. The goal is anything whose achievement leads to the satisfaction of the want hidden in a motive. According to McDougal the basic 'goal directed' action pattern is unlearned. As human organism is endowed with a set of instincts, out of this set various combinations of these instinctive behavioural units, intricate order of activities, personality traits and social systems are emerged.

This theory, in its fabric, is a generalization of want—controlled behaviour so as to cover all sorts of responses and acts of the living organisms and is meant to serve as a systematic basis for the necessary frames of reference in terms of which any other humanistic science may raise its theoretical structure. McDougal's system by grounding itself in a fixed set of instincts is rigid and inelastic, while change in behaviour-patterns is an observed phenomenon. Consequently, only the want or motive segment or the element of drive survives out of McDougal's Programme of the reconstruction of the human sciences, most in lines with that portion of James's '*Principles of Psychology*' which deal with the stream of consciousness, which according to him is homogeneous, yet splits up into different pieces of events under the determinations of the organic needs, so much so that the discrete contours of reality are not more than projections of our interests. McDougal's thesis had to undergo heated debates and bitter discussions about the list of instincts. As a result R. B. Catell [17], E. C. Tolman, M. A. Murray, A. H. Maslon [18], S. S. Tomkins [19] and others prepared their own lists of basic motives.

The initial drives or unlearned motives, with their origin in organic disequillbria, attach themselves to those (possible) co-ordinates of actions which may terminate at their satisfaction. Those satisfactory

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17. R.B. Cattell "*General Psychology*" 1941.
18. A.H. Maslon "*A Theory of Human Maturation*", 1943.
19. S.S. Tomkins "*Thematic Apperception Tests*," 1947.

co-ordinates of activity gained in the learning process become habits of the organism on frequent repetition. This is the quintessence of the contemporary theory of Psychologism. The basic drives along with the successful behavioural complexes give rise to a secondary order of needs and their complex coordinates and patterns which finally lead to the integration and consolidation of the total action system into the personality system.

V

Thus, the entire personality is approached as a system of habit to serve the motive system (comprised of basic drive, secondary needs, and higher purposes) of the organism. It was the general academic air during the first four decades of the twentieth century and as a result many theories of human nature were developed on this model.

Oppenheimer conceived the law of decreasing satisfaction as the central principle of psychological behaviour.[20]

Ratzenhofer propounded that the Primeval Force (Urkraft) expresses itself in the form of inherent interests which become particularized in the procreative interest, the physiological interest, the individual interest, the social interest and the transcendental interest. This theory of interest, to him, is the constitutive law of the social and personality formations. [21]

From this schema issued the theory of understanding. Thus, Bernard Notcutt remarks, "the distinctive point of view of biology concerns the efficacy of the system for maintaining life. The distinctive point of view of psychology concerns the meaning of the act for the person. Its interpretation is in terms of people's motives and values and in general of the life stage". [22]

In our times, Psychologism has received the most powerful impetus from the Freudian movement, according to which, every event is of symbolic nature. Its meaning may be sought by reducing it to the motives of the erotogenic zones. Religion and Morals are sublimated expressions of the genital stage and the oedepus situation. Berkley's

20. F. Oppenheimer, "*The State.*"
21. G. Ratzenhofer, "*Sociologische Erkenntnis.*"
22. "The *Psychology of Personality*". p. 211, 1952

philosophy too is a product of some conflict going back to the anal stage.[23]

Thus, Psychologism which assumes the forms of Romanticism, of Psycho-analysis and of Hormic Psychology considers the observable events as phenomenal in character, and symbolic in nature. The meanings of the presentations it implies, must be sought by referring them back to some *secret imbalance developing into a motive.*

Psychologism, thus, tends towards taking the overt behaviour as mere appearance; and claims to catch hold of the deeper strata of life by locating the tension which is behind the guise and semblance of the overt activity. With this programme in view, the observer completes the observable action of the organism by pouring some motive into it. Thus the motive, in actual practice, is a projection, or an inference, or a mental construct of the observer.

This is the inevitable consequence of the psychologistic line of approach that its Model classifies the personality system into three sub-systems :—

1. The motivational substratum

2. The action patterns.

3. The organization of goals.

It deduces the latter two sub-systems from the 1st sub-systems.

These allegations need be overcome. Current improvements upon Psychologism in the form of Actionism claim to do that.

VI

Actionism is a slightly different ideology; it places the data of action in the focus of study. Consequently, it adopts the 'action frame of reference' in relative isolation from other components of the personality system.

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23. J.O. Wisdom, "*The Unconscious origin of Berkley's Philosophy,*" 1953.

Actionism has developed out of the inescapable drawbacks inherent in the outright psychologistic model of approach. Only very recently, it has become the basis of a new science called 'Praxeology'.

Praxeological Research includes not only human personality, but also culture in its scope of study. Its basic axioms are as follows:–

1. "The theme of Praxeology is action as such.[24]

2. "We call contentment or satisfaction that state of a human being which does not and cannot result in any action. [25]

3. "Acting man is eager to substitute a more satisfactory state of affairs for a less satisfaction..... the incentive that impels a man to act is always some uneasiness". [26]

Action is a process in the actor-situation, which has motivational significance to the individual actor, or in the case of a collectivity, its component individuals. [27]

Thus, '*action*' as defined by its upholders is immersed in the 'end-means' or 'motive-instrument' model which is the basis of Psychologism. In fact, Actionism is but another phase of the same outlook with a greater weight on the 'Instrumental' side of the Psychologistic model of reality. The advocates of Actionism point out that Psychology deals with the 'motives' while Praxeology takes the 'means' or 'action' as its object-matter of its study. Personality and society both, it presupposes, are Praxeological orders having a common genesis in the sphere of drives, and motives, which carve out the field of study for psychology. Accordingly, *the general theory of Psychology, articulated on the want satisfaction model is the foundation of the science of personality and society*. It may be recalled that Dilthey had a primary concern to develop a structural psychology so that it may become the basis of other human sciences. Now Von Mises, the Praxeologist, develops the thesis of Actionism for that purpose. "The field of our science is human action, not the psychological events which result in an action. It is precisely this which distinguishes the general theory

24. "*Human Action*" by Ludwig Von Mises. 1949, p.p. 13, 14, 15.

25. 26, ibid 1949 p.p. 13, 14, 15.

27. "*The Social System*" Talcot Person, 1952. P.U.

of human action, praxeology, from psychology. The theme of psychology is the internal events that result or can result in a definete action. The theme of Praxeology is action as such". [28]

Thus, it may be seen that Praxeology consumes all the significant data and leaves out etherial matter for psychology. The existence of such material over and above the 'activities' is but a Faith; every observable datum is a piece of action and as such is referred back to some hidden component. In this manner psychology is deprived of all the objectivity, it could claim.

VI

However, behaviourism considers that the activities themselves are the stuff of psychology. Before the development of the Behaviouristic outlook it was Brentano, who may be rightly considered as the founder of '*Actionism*' in the science of psychology. It may be recalled that W. Wundt considered 'consciousness' as the subject matter of psychology. Experimental observation and analysis yield according to him 'sensations' as elements of consciousness. The sensations, in accordance with the principles of *Association* define various aspects of the life of mind. Brentano raised objection against this schema or psychology. He pointed out that there is a clear distinction between *sensory phenomena* (the contents of experience) and the *psychical acts* (like judging, comparing, combining, deciding, etc.) the *contents* are the *data* of physics; the *acts* are the *data* of psychological science. To Brentano, the *acts are the* foundations of mental spiritual world and are the ultimate components of the psychic world given to the science of psychology.[29]

Behaviourism also defines the subject matter of psychology as the study of behaviour, and considers the 'reflexes' as the simple units of behaviour, which in accordance with certain combinatory principles (the laws of conditioning) become integrated in complex patterns of responses. [30]

What the reflexes are and whether the physiological definition is justified or not, these questions are important, but irrelevant to this discussion. The relevant point is, *psychology, too, is the science of action* and behaviourism considers the "reflexes" as the basic units of

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28. Loc cited, p. 12.
29. '*Psychologic Vom Empirischen Standpunk*' *by* Brentano.... 1874.
30. "*Behaviour*", T.B. Watson, 1914, p. 26-28.

actions which define the life of an organism. But as soon as the object-matter is clearly specified, the behaviourists are lost in psychologistic model of construction. Hobbes, the father of all the modern behaviourists, says that the appetite and aversions are the first endeavours of the animal motion.

The most up-to-date attempt towards a behvaiouristic psychology is made by C.Hull, in which he employs the concepts of *'reduction'*, *'successful response'*, *'reinforcement'*, *'threshold resistance'* etc. These concepts are clearly psychologistic in import. Successful response, according to the Hullian Scheme, results in the reduction of the internal stimulation, and is integrated in the organism's habit structure.[31] Thus, *we are forced to have a static concept of the nature of life.*

J. S. Brown makes the reduction in anxiety as the principle criterion for the explanation of the psychic activities.[32]

It is said that *the goal of the central nervous system is the restoration of the end state. This idea not only shows that the old psychologism is renewed in the concept of the Actionism but also lead us to the concept of the homeo-statis....an imitation of the mechanistic science.*

VII

By definition, a *homeostasis* is a system which preserves a certain end-state through the operation of a mechanism. The points of the breakdown of the homeostatis are its boundary conditions, which set a limit over the operative mechanisms given in it.[33] A Homeostat is characterised by (1) an equil'ibrium state and (2) the set of operations tending towards the equillibrium point. This point is strictly definable without reference to any external situation. *It is the point of least activity.* The surface of the sea is Horizontal; it is in equillibrium which coincides with the state of its calmness. As soon as the system is out of balance, certain operations and mechanisms start which counteract the imbalance; quietness prevails again and the operations cease to exist. Various phenomena of nature exhibit the homeostatic character. There are thermo-stasis, electro-stasis and magnetostasis in the Physical world. All 'states' are covered under

31. 'A behaviour system' by G.L. Hull, 1952
32. 'Problems presented by the concept of Acquired Drives' by J.S. Brown (in a symposium on current theory & research in Motivations) 1953.
33. 'The wisdom of the body' by W. B. Cannon, 1932.

the general name of cybernatics. There would have been no movements of the wind on the surface of the earth, but for the formations of the low bar zones, the columns of the wind set in motion to equallse the pressures as the cybernatic operations. The heat engines are also cybernatical. Their movements tend to remove the imbalance introduced by the steam and other motive powers. *The Newtonian principle of the equality of the action and reaction is a statement of the static principle in nature.* Mechanical operations are homeostatic; the behaviour of the organism is also considered homeostatic, by the new investigators of human nature. [34]

Psychologists, especially the behaviourists employ homeostatic concepts more or less in imitation of the natural sciences. Homeostatic Models have a peculiar appeal, they are helpful in giving a mechanical semblance to the dynamism of life. Propounding the concept of drive, E. C. Tolman says that its identifying aspect is a specific and characteristic consummatory response. *Each appetite is set in motion by some peculiar internal metabolic condition.* This metabolic change occurs in apparently more or less regular cycles due to combinations of internal and external conditions. *And when it is in force the animal is driven until an approximate consummatory object is found.*

Freudian Psychology, too, is given to this sort of approach as follows:

(a) A system in the homeostatic sense is one whose state of least activity, or end-states, coincide with states of affairs readily definable in terms of the system itself.

(b) A stimulus is a state of affairs which gives rise (in the central nervous system) to activity such as to abolish that state of affairs.

It seems to follow that:

(c) States of least activity in the central nervous system coincide with states of least stimulation.

From this the conclusion follows that:

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34. "Life and Mind" by Dr. E.W. Sinnot, 1956.

(d) The central nervous system is a homeostatic system whose end-state is the state of least stimulation. [34]

The Behaviourist's 'stimulus-response' model is rooted in the general idea of the homeostatic principle. Any state of affairs which causes the imbalance is stimulus; the set of operations which remove it is response of the organism. *The equillibrium state of the organism is the state of the least stimulation and hence of least activity.* The 'Stimulus' is something foreign to the system—the steam driving the engine, the storms disturbing the oceans, the heat causing low pressures, etc. are external elements. The responses and the state of least activity, (or 'steady motion' just as in the case of solar system) are internal to the system. Therefore the adaptation of Psychology to Homeostatic descriptions has a guise of 'mechanical' formalisation. Stimulus belongs to the environment, and response to the organism, and the task of psychology is to discover the functional correlations between the stimulus and responses of the organism. This is behaviourism.

But, it does not eradicate the 'end means' model of thinking. It tries to use, however, a different language in the guise of the homeostasis. This is the peculiar quality of the homeostatic models that they are amenable not only to the language of the Mechanics (*i.e.* push and pull), but also to the language of Teleology. We can safely give a description of climatology, in terms of the 'end means' model without loss of meanings; we can say that the purpose of the heat is to lower down the pressure which in turn invites the wind to move in its direction. The purpose of the movement of the wind is to maintain its balance. This teleological language embodies all that is contained in the language of physics. The maintenance of the end-state is the purpose, the operations of the homeostasis are the means to secure them. Thus if the behaviourists and the Psychoanalysts adopt the 'mechanistic' model they are not free from the old teleological frame of reference merely on that ground. They are deep in the same old Psychologism. This exposition contains a further suggestion: mechanical system may be represented in end-means, 'goal-action' scheme without distortion. If the medieval science was couched in the teleological 'frame of reference' it was not at a loss on that score. Teleology or mechanism are not two distinct ways of the arrangements in the world, they are simply two equivalent ways of description. So long as teleology re-

34. "Freud and Homeostatis" by Nigel Walker, the *British Journal of Philosophy*, (May, 1956) p. 71.

mains at par with mechanism, there is no harm; but as soon as Teleology assumes the heights of a *transcendental principle* it ceases to share equivalence with the 'Mechanism' in its essential features.

If the 'purpose' of the wind is something transcendental, a state of affairs which is not contained within its nature, then there is a caes of purposive causality. Here is something which is not mechanistic but irreducibly teleological. But, in a Homeostat *the end-state is a part of the nature of the system; it is one of the states of its set-up.* The compensating operations are also part of its set-up. In a continuous operation, the terminal point is the end-state. The 'purpose' (the end-state) is not transcendental but immanent, it is not immanent even, it is the last phase of an operation; it is the phase of the least activity. All these points of the operations, including the end-point are at the same level, "only a 'section' of a continuous series is marked out as a purpose, and the rest as 'means' or instruments". It is this case wherein Mechanism and Teleology are alternate descriptions with the same meanings. *Thus current psychology, even though it may allow telic concepts, is still a mechanistic science.*

The employment of 'end means' model for homeostat represents an unwholesome language construction. There must be some criterion of classifying some events as 'means' and other events as 'ends'. A series of events contain the events of the same type and level within its fold. A mere marking off and labelling it out does not put its parts into two distinct classes. Hence 'end means' and 'purpose-instrument' schemes cannot be valid constructions in the current western psychological theories, they are mere symbolisations without any advantage in a mechanistic system like that of the homeostatis. Consequently, on the sheer basis of the economy of words they may be dropped. Development of psychology from motivation psychology to a homeostatic science is simply a series of refinement in language around the same Psychologism. But the *Psychologism as a world view is itself a mechanistic ideology. The state of least activity is its 'ideal' system.* Every activity that takes place persists only from one point of least activity to another point of least activity. *Inherently, it believes in restoration of the same old state of the system. On this score, too, it cannot work with the philosophy of Self. All its concepts, from motive to goal, are radically mechanistic.* Therefore, they cannot be read as one with the concepts of tension, goal, ideal, etc., of the philosophy o Self.

VIII

Thus, it may be seen that the sort of purposiveness, motivation and activity, all these theoretical bases, *i.e.*, Psychologism, Actionism and Homeostatic model try to assign to the human organism are not truly speaking genuine phenomena of self. They have beginning in disturbances and terminate in calmness. But, according to the Philosophy of *Khudi* the true life of self is active by itself. Consequently it cannot be articulated in any of these explanatory principles.

A further thing which is notable is this: since these theoretic bases are not capable of genuine representation of life, they often end in airy projections.

On both these grounds there is a need for *the reconstruction of human sciences on the basis of Self.*

NATURE OF THE UNIVERSE

SIBTE NABI NAQVI

According to the Quran, "says Iqbal" there are (besides inner experience) two other sources of Knowledge—Nature and History; and it is in the tapping of these sources of knowledge that the spirit of Islam is seen at its best. The Quran sees sign of the ultimate reality in the 'sun', the 'moon', the lengthening out of shadow, the alternation of day and night.....in fact in the whole of nature as revealed to the sense perception*."

إن في خلق السماوات و الارض و اختلاف اللیل و النهار لآیات لاولی الا لباب. .
(القران. آل عمران)

The development of contemporary knowledge in physics, tensor calculus, nuclear science, astronomy, if properly analysed, give definite inklinkings to the unshakable soundness of the words of the Quran.

Advent of the age of interstellar space travel, of new techniques of cosmic photography and radio-sound has ushered in a new revolution, especially in the field of astro-physics which is bound to be more far reaching in its consequences than the revolution which started on the invention of telescope in the seventeenth century. At that time our material world was very limited indeed. The telescope widened our observational horizon several times. It has continued to expand very rapidly with the manufacture of bigger telescopes, and advances in techniques of photography and sensitiveness of the photoplates. Today we can see millions of galaxies like our own, at distances of millions of light years. Each of these galaxies contains millions of stars, like our sun. With the help of radio-telescopes we have discovered large masses of dark clouds and other heavenly bodies which could never be imagined before. All these visible and invisible heavenly bodies are sending out visual and radio messages and inviting us continuously to unfold their secrets.

All the astronomical observations were so far taken from the bottom of a restless atmosphere, extending to several hundred miles. This atmosphere is divided into well marked layers like troposphere,

* Reconstruction; p. 128.

stratosphere, ionosphere, etc. Each of these layers modifies the electromagnetic radiations passing through it so profoundly that the pictures of heavenly bodies seen by us are completely distorted. But so far there was no way out. Now, for the first time, we have succeeded in getting out of the atmosphere into free space and seeing things as they are. The Astronomical science, which was so far purely speculative, has suddenly changed into experimental science. The human race is ready to jump out into the space and to gain knowledge about sun, moon, planets and the interplanetary space by direct experiments uninterfered with by the atmosphere. *The problems of space, time and gravitation, which were so far matters of mere theoretical interest, are now becoming matters of practical importance, and the knowledge of the structure of the universe is soon going to be of immediate practical use.* These problems are but phases of the cosmological problem, which in its own turn, converges into two main issues: the structure of the universe and the creation of the universe.

There is no doubt that the cosmological problem has been the subject of speculation from earliest stages of human existence. In fact, if we look upon the concepts about the creation of the universe, put forward by various generations and nations, we get a very good idea of not only the scientific facts known to them, but also of their religious beliefs and hidden hopes and motives. They show the breadth of experimental knowledge attained in every generation, the depth of their thoughts and the height of their aspirations. They also throw light on their social ideals and behaviour. The story of creation of the universe in fact provides a key to the story of evolution of scientific investigation and research, and sums up the total knowledge gained by man at each stage.

"Cosmology" is not an apriori science; its basis lies in astronomy, mathematics, physics, chemistry, astrophysics, etc. The history of these sciences is in fact a description of a rapidly receding and expanding intellectual horizon, not only the observational horizon, but also that of basic concepts on which philosophers raise their systems of cosmological thought

In every branch of knowledge there are certain facts which form the core. These are based on inviolable and experimentally verifiable Laws. On the other hand, there are always certain concepts near the border line of the science which are hazy and ill-defined. In cosmology the reasoning is generally co-extensive with these ill-defined concepts

and uncrystallised ideas, because, in this, we actually try to step even beyond their limits. It is therefore natural that certain parts of cosmology are controversial and not quite certain. But we can neither ignore them nor can we brush them aside simply for this reason, because the advancement of knowledge is always on the border line, near the horizon.

I

Efforts to comprehend the problem of creation of the universe has been made by different nations from the earliest times in two entirely different ways. By introspective contemplation in the mystic way. The pantheistic dogma that "God is all and all is God" or its reverse theistic belief that the universe is a creation distinct from God, are the results of this effort. The second approach has been inductive and scientific. We wish to discuss the knowledge about creation as it has been obtained by the scientific and inductive methods. The progress of knowledge by this method though slow, is certain and beyond controversy. No doubt, the scientific theories also change from time to time, yet every one of them is correct within the limits of observations on which it is based. Every step forward on this path carries us closer to the ultimate goal, correlation of our experiences for the full understanding of reality as it is.

The cosmologists have put forward a number of hypotheses about the creation of the universe. This group of workers include the well known personalities of Kant, Laplace, Jeans, Jafry, Eddington, Hubble, Gamo, Schind, Lemaitre, Hoyell, etc. Every one of the hypotheses they made has some strong points and some weaknesses, but ultimately all of them reduce themselves into two big groups—the Hypothesis of Explosion and that of Steady State. Their propounders also divide into two groups of theists and atheists respectively. This basic difference between the two groups has crystallised in the last few decades.

In this paper I will try to encompass physical cosmology; will try to represent the structure and topology of the universe. I will also discuss its general atomic structure, and after considering the physical and chemical composition of the material world, I will try to take a glimpse of that field of events where at a particular moment, for reasons beyond our comprehension, a sudden explosion occurred in yelm, the mother atom, and after first appearance of light and then darkness, this material universe, as we see and experience today, came into exist-

ence. This is a very difficult and complicated problem, but I hope to clarify the issues involved in this most perplexing story hurriedly.

Before the invention of telescope, *i.e.*, upto 1609 A.D. all the astronomical observations were taken by the naked eye. Human eye can see things upto a very limited distance. Upto that time, therefore, our universe was confined to a very limited corner of our galaxy of the milkyway. The population of stars appeared to be spread out equally on all sides. The Sun, Moon and the planets of the solar system occupied an important, rather the most prominent place in the universe seen by the naked eye. It appeared that the earth was at the centre of that universe. Practically all the astronomers believed it to be at the centre, and this inference, based on visual observations, was not far wrong. If you are standing in a forest, with a diameter of 20 or 30 miles, far away from the centre, say at a distance of 4 or 5 miles from the edge, and if a fog envelopes you and you are not able to see beyond a mile or so, you will see trees spread out equally all around you; and on the basis of this observation you will be justified in thinking yourself to be at the centre of the forest. This was exactly the position of astronomers depending on the observations of their naked eye. They used to consider their planet earth to be at the centre of the universe. This belief was most satisfying psychologically also. The most intellegent creature in the universe, Man, should be at the centre.

But, even in that period careful observers had succeeded in coming to the right conclusion. Some 2495 years back in 530 B.C. Pythagons had reached the conclusion that the earth is round. About 300 years after him Erostosthenese had calculated the diameter of the spherical earth, within about 150 miles of the correct value. At about the same time an Alexandrian astronomer, Aristarchus computed that the Sun was several thousand times larger than the Earth, and that the latter was revolving round the Sun. He explained that the stars do not appear to be changing their position during the course of a year, in spite of this revolution round the Sun, simply because they are so for away from us that the diameter of the orbit of the earth round the Sun is negligible, like zero, as compared to their distances. This correct conclusion, based on observations of thousands of years was put forward by him for the first time in his book on the Sizes and Distances of the Sun and the Moon. Shortly after, came the towering personalities of Plato and Aristotle who proved that the earth was situated at the centre of the universe and that the moon, the sun, the planets and the stars, all were revolving round the earth with their firmaments in

which they were studded. They explained the characteristics of the apparent revolution of each sky by special and complicated laws of revolution of each. Plato and Aristotle were such great intellectual authorities that the voice of Aristarchus proved to be a call in wilderness for more or less two thousand years, and the geocentric concept of the universe reigned supreme.

Ptolemy put forward evaportive arguments for the earth being stationary at the centre of the universe. One of these was the often repeated argument that if the earth revolves round the sun, the position of star should change when viewed from different points of the orbit during the course of the year. Because this does not happen, the logical conclusion was that the earth does not revolve round the sun and is stationary at the centre of the universe. The second argument which he put forward with great force was that if the earth were rotating on its axis, or was revolving round the sun, such a strong current of air should be produced that once the birds fly out of their nests it should be impossible for them to return back. Some thirty-five years back when I first read this argument in a book by a medieval Muslim Scholar about the controversies regarding the rotating and revolving planet earth, I was led to believe that this must have been based on some verses in the Holy Quran. It was only later on that I found that this argument had not even a remote reference to the teachings of the Holy Quran. That was only borrowed from Ptolemy.

II

These remnants of Greek thought have survived in Muslim scholars because, not realizing that the spirit of the Quran was essentially anticlassical and putting full confidence in Greek thinkers, "their first impulse was to understand the Quran in the light of Greek Philosophy". Along with other Greek theories and speculations, they accepted the Geocentric hypothesis. But the spirit of the Islamic culture could not remain without manifesting itself in the development of science. "The spirit of Islamic Culture is that" says Iqbal 'for purposes of knowledge, it fixes its gaze on the concrete the finite'. "It is clearly visible in the metaphysical thought of the Ash'arite, but appears as a most well-defined phenomenon in the muslim criticism of Greek Logic".* "Abu Bakr Razi was perhaps the first to criticise Aristotle's first figure, and in our own times his objection, conceived in a thoroughly inductive spirit, has been reformulated by John Stuart Mill.

* Reconstruction P. 131

"Ibn-i-Hazam, in his *Scope of Logic* shows that induction is the only form of reliable argument. Thus arose the method of observation and experiment*" Although the muslims took the Geocentric Theory, they began the tradition of taking most accurate astronomical observations, and began recording them in well preserved almanacs.

Along with many other discoveries during these regular observations, they discovered several variable stars whose brightness varies in regular periods. They called them "Alghol" and this name continues to be used for such stars even today, along with many technical terms which they coined for new concepts and things and which continue to remind us of their intellectual leadership for centuries.

By introducing Astrolob and the Quadrent in astronomical observational practice, the Muslims could take observations correct to a minute fraction of a second. These accurate observations brought out the wobbling of the earth on its axis, the variation of its velocity in different parts of the orbit round the sun, the effect of these changes on the motion of the moon and the irregularities of the motion of the moon itself. The need for changing the earlier computations became evident. The Muslims solved these difficulties on the geocentric hypothesis on the Greek lines. But, at the same time they proved to the world, for the first time, that Plato, Aristotle and Potelmy were not beyond error. This was a revolutionary achievement of their method of scientific research. It proved the supremacy of empirical observations over the established opinions of the great Masters. It began to show the dark corners and the blind alleys of the charmed fortress of Greek philosophy and science. The knots that had been tightened in the string of Astronomy by Aristotle and Potelmy were loosened . This was the first death blow to the authority of Aristotle and Potelmy. It shook its very foundations and thus opened the way for future progress of science on right lines. This was necessary because as Iqbal says

هر بنائے کہنہ کہ بادان کنند اول ان بنیاد را ویران کنند

If we wish to erect a new structure we must completely destroy the old foundations built of faulty and distorted bricks. This was done by the Muslims by their uninhibited, correct observations.

If the Muslim scientists had contributed only this much, they ought to have been given a much higher place in the history of science

* *Ibid* P 128-29

than has been assigned to them by the European scholars. In fact, they have contributed much more in solving the riddle of creation. They introduced tangent, sine and other trigonometric ratios in Astronomical computations and thus simplified them considerably. They discovered the property of logarithm and solutions of six different forms of algebraic equations. By these contributions they unknowingly placed very effective means in the hands of scientist for representing the complicated functional relationship by symbols and signs, and for solving very lengthy and involved astronomical equations.

Even greater and more far-reaching were their contributions in optics. The Greeks believed that just as we feel material objects by touching them, we could see an object only when a ray shot from our eye touched the iliuminated object and returned. If this wrong hypothesis had not been disproved by the Muslims, it would have remained impossible to solve the problems of cosmology in which we deal with heavenly bodies situated at distances of thousands of light years. Muslims corrected not only this absurd hypothesis of the Greeks, they also formulated and perfected the laws of reflection and refraction of light from plane and spherical mirrors and lenses to an extent that we have not been able to make much advances in this branch of optics, even in the 20th century. It was possible to make telescope and microscope only after this major and far-reaching contribution was made.

III

It was only after these contributions that Copernicus and Tychobrahi could dare to revive the hypothesis of Aristarchus for the sun being the centre of the solar system againstthe erroneous Geocentric assertions of the Platonic school. Upto that time the Christian church also believed in the Greek science, but the Ministers of the church itself began to challenge the Greek hypotheses because these reached Europe through the Muslims and they wanted to prove every thing which the Muslims had accepted, to be wrong. It was in this spirit that they started challenging the geocentric hypothesis and struck the correct path by chance! The Europeans who just wanted to change the path in this field, just in the spirit of controversy, found the straight road.

My statement is supported by the fact that although originally the Christian church also believed in the wrong coslomological hypotheses of the Greek, in the fourteenth century we see a strange phenomenon. Some of the clever ministers of the church became its

greatest opponents—Oresme, the Bishop of Lisiue, Cardinal Nicola of Cusa, Canon Copernicus of Frunburg, Monk Gardino Bruno. They were all against the cosmology of the Greeks. They tried to prove that earth revolves round the sun and not the other way. They repeated the argument of Aristarchus for the fixed stars not changing their position during the year, *viz*, the diameter of the orbit of the earth round the sun is so insignificantly small as compared to the distances of stars that it could be regarded as zero. Bruno went even further and said that in the face of infinite bounty of God, the number of stars in the Universe should be infinite. There could be no centre of a body which is infinite and therefore neither the earth nor the sun could be at the centre of the infinite universe. This was really the nearest approach to truth, but according to the Christian church it was such a serious heresy that Bruno was burnt alive.

The change of position of stars during the year which is called parallex, assumed a critical importance in the controversy of geocentric and helliocentric systems. Actually when this problem was examined accurately by telescope it was found that it was not a problem at all. In 1718 A.D. it was first noted that the bright stars Sirius and Archurus occupied positions considerably different from those shown in the charts of Potelmy. This meant that in 1600 years the solar system had considerably changed its position in heavenly bodies. Now when the problem of parallex was minutely examined, it became apparent that the stars of the galaxy do change their positions even during the year, and their change of position is proportional to their distances from the earth. The parallex could thus be used for computing the distances of the stars. This work was actually started about 200 years back when the distances of many of the nearer stars were computed very accurately from the observed parallexes.

It will thus be seen that upto the fifteenth century A.D. it was generally believed that the earth was at the centre of the universe. Copernicus started the study of solar system in 1512 A.D. After a continuous study for 20 years he proved convincingly in his book "De Revotionibus orbium coelestime" that the sun is situated at the centre of the solar system and the earth and all other planets revolve round it in circular orbits.

In 1609 A.D. Galileo constructed the first telescope with which he took observations of the moon, sun, and other heavenly bodies with great accuracy. This triggered a series of far reaching revolutions in

the field of astronomy. Keppler proved in the seventeenth century that the planets move round the sun in elliptic orbits. Newton put forward the law of gravitation in the eighteenth century. So far all the astronomical investigations used to be based on detailed examination of old observations and were mainly empirical. A different set of fortuitous laws were supposed to govern the movements of each planet and its firmament. Newton's Law of Gravitation changed the entire situation. Now the sun, moon, planets and all the stars and other heavenly bodies came under one system.

The irregularities in the movements of Jupiter and Saturn were explained by the presence of an unknown planet in accordance with the law of gravitation. This planet, Uranus, was discovered in 1781 A.D. exactly in the position forecast. Similarly, Neptune and Pluto were discovered in 1846 and 1930 respectively. Now the law of gravitation was accepted as the Law of Nature and it placed the material universe on solid foundations of a mechanical system.

The discovery of telescope and the law of gravitation, and even more than that, the development of technique of photography and sensitivity of the photo plate, opened out ways for further discoveries. We could see about 5,000 stars with the naked eye. Now their number can be counted in hundreds and thousands of millions. Now we know that there are some 150 thousand millions stars in our galaxy which can be well recognised. The bright stars which can be seen in the northern and southern hemisphere of the sky are burning and raging spheres like our sun. In the beginning it was assumed that their masses and brightnesses are also like that of our sun. On the assumption that their brightness, as seen by us, varies in the inverse ratio as the square of their distance, Newton worked out the distances of all the stars. In the nineteenth century, when the distances of near stars were computed on the basis of parallex, they were found to agree fairly well with the results of Newton, which were therefore accepted to some extent. But when the colours and temperatures of the stars were estimated it was found that the brightness of stars varies very greatly. Some stars are three hundred thousand times brighter than the sun and some are less bright to the same extent. After this the distances calculated by Newton had to be changed completely.

While these efforts were in progress, Herschel put forward the hypothesis that the sun is at the centre of the universe. This was just like the geocentric assumption of astronomers depending on eye

observations. However, by the correct analysis of his telescopic observations he succeeded in reaching the conclusion that the stars in our galaxy are not equally spread in all directions within a sphere. These are spread far out in the equatorial plane and the galaxy is flattened on the poles in the shape of two saucers with their tops placed on each other. So is the case with more than 70 per cent of the galaxies now discovered.

IV

The stars are situated in the universe at far greater distance. Every star is like a lonely ship plying on an unbounded ocean. For instance, in the solar system itself, which is an insignificantly small part of the material world, the distance of the earth from the sun is 93 million miles and that of Pluto from the sun is 3670 million miles. This is longest distance in our solar system. Our close t neighbour amongst the stars is L. Centuuri. It is so far off that its light takes about 4.4 years to reach us. In other words it is situated at a distance of about 6,000,000 million miles, or about 64.5 thousands times the distance between the earth and the sun.

The stars are often found in groups of two, three or four. The periods of revolution of each of these round the other have been found to be in inverse ratio to their masses. We are thus able to determine their masses from the observations of their motions. It is simpler to determine masses of different members of the solar system, because in this we know the density, volume and velocities of rotation and revolution of different members very accurately. In this way the masses of different heavenly bodies have been computed with great confidence. We know that the masses of different stars do not vary much. The mass of our sun is about 1992 x 1024 tons, or 1992 million, million, million tons. This is nearly the average weight of the population of stars. The difference between this and the mass of the heaviest and lightest stars is not much. Ordinarily they vary from about one-tenths of solar mass to about ten times that of the solar mass. Of course some stars or their groups have masses varying from about one hundred to one thousand times that of the sun.

The variation in the brightness of stars is, however, much more. Some stars are three hundred thousand times brighter than the sun, and some are three hundred thousand times fainters. So far as the colours of the light sent out by the stars are concerned, we find all the hues of the rainbow and many more on both the sides of the visible

spectrum. The colours of the stars help us in determining their temperatures. The variation in respect of volumes and densities of matter in them is far greater.

If we arrange the stars according to their masses about 80 per cent of the stars are arranged in respect of their colours also. The heaviest stars send out light toward the blue and voilet end of the spectrum and are much hotter. The lighter stars are redish and at a lower temperature. The stars with average mass like our sun are yellow. These are called "main sequence stars". Besides these, there are stars of two different kinds—one "White Dwarfs" which have much higher temperatures at their centres than found in the sun. The matter near their centres is so compressed that its density is several hundred thousand times greater than the density of matter in the sun. In respect of their evolutionary stage they are in old age and they occur to the left in the graph for the main sequence stars. They burst at regular intervals. The greater they are removed from the main sequence the longer is the period of their explosion, and ultimately they burst and die out from the visible world.

Another type of stars are found to the right of the main sequence stars. They are usually red, or sometimes yellow. Their temperature is much lower as compared to other stars. They have huge masses, but their matter is spread over such vast volumes that their density is very low indeed. In some of them there are hardly a few molecules in a cubic centimeter. In mass and volume they are several million times larger than the sun. They are called "Red Giants". Their brightness varies in regular periods. They represent an early stage in the story of creation and meet the stars of the main sequence after considerable evolution.

Now we know that our sun is not even at the centre of our galaxy In fact it is a very ordinary member, situated in outskirts in a sprial arm of the galaxy, some 30 thousand light years away from its center. The diameter of our galaxy is about a hundred thousand light years. The sun with its 9 planets, 31 moons, 30 thousand astroids or planetoids and thousands of comets (tail stars), is revolving round the centre of the galaxy with a very great velocity, from west to east, and its one period will be completed in about two hundred million years In words of the Quran it is heading towards a goal !! unknownto us.

In our galaxy there are many bright or dark nebulae or cosmic clouds. In the galactic system we find some spots of light, some of

which are spread over vast areas and are called "magellenic clouds". Some of them are lighted up by bright stars in their midst. Others are dark and hide the stary sky behind them. These produce spectacles like those of holes or vast cracks in the sky. *These used to be considered as cracks and holes in the sky for many years. But the Holy Quran declared in Sura Al-Mulk, Vs 4 and 5: He who created the seven heavens in harmony. No cracks or incongruities canst thou see in the creation of the gracious God. Then look again; seest thou any fault Aye, look again, and yet again, thy sight will only return utterly confused and fatigued".*

How true has this Quranic assertion been found. We have examined the heavens again and again but found that there is no such incongruity as holes and cracks anywhere in the heavens.

The dark clouds are debris of gas and dust left over in the interstellar space after the formation of stars and hide the bright stars at their back and cast shadows which give impression of holes and cracks in the heavens.

Unlike these, there are patches of light which are called "Stellet nebulae". These have a round or flattened shapes and some have even spiral arms spreading out from their flattened mass in the central region. One such nebulae with spiral arms can be seen even with the naked eye in the constellation of Andromeda.

V

Until about 40 years back all these nebulae were considered to be a part of our galaxy. Kant and Laplace had put forward the hypotheses that these nebulae are formed by the collision of two stars and that our solar system has been produced like this.

In 1925, on the basis of the photographs of the nebulae taken by the big telescopes at Mount Wilsen and Mount Polomar, Hubble proved that these nebulae consist of millions of stars. They are not just like the page boys of our galaxy. In fact they are galaxies in their own right. Each of these galaxies has some Alghol stars called "cephaid variables". The periods of the cephaids vary from a few hours to days, weeks, months and years. From the observations of the cephaids in our galaxy whose distances could be calculated by other means Shapley proved that the brightness of all the cephaids having the same

period is the same and their brightness does not depend upon the variation of the light emitted by them, but entirely on the inverse ratio of the square of their distances. This provided us with a new yard-stick for measuring the distances of galaxies.

When the distances of galaxies were computed on the basis of periods of the cephaid variables, situated in them, it was found that the *galaxies also group themselves in constellations like the stars.* For instance we now know that there are about 17 galaxies on the group to which our galaxy belong and they occupy an area in space which would take light one hundred and fifty thousand years to traverse. In some cases there are as many as 500 galaxies in constellations. With the help of the biggest telescope we have so far counted about 150 billion galaxies.

If these galaxies are arranged according to their shapes, we find that some of them are spherical or a little flattened. These are about 17 per cent of the total number. 80 per cent of the galaxies have flattened out very much like our galaxy and have ultimately thrown out spiral arms as in our case. Some 3 per cent of the galaxies are irregular in shape.

When we arrange the nebulae according to their shapes, they are arranged surprisingly well with respect to their other characteristics also. For instance, the rounder and less flattened a galaxy is, we find it to be in earlier stage of evolution in other respects and their rate of rotation about their central axis is not very fast. As they become flatter the rotation about the central axis becomes faster. It is believed that the flatter the galaxies are and the faster they rotate, the older and more advanced they are, but some astronomers differ in this matter and believe just the reverse. However, in all these galaxies, we can easily distinguish different kinds of stars and we find that when the galaxies are very flat they become much brighter and more blue. Another striking thing noticed is that the galaxies of the same shape have similar brightness and similar volumes. In other words their ages and stages of evolution are also similar.

The flattened nebulae with spiral arms spreading out are very important from our point of view, because, they are like our own galaxy. These are populated in the inner central region with red giants and the inter-steller space is very clear. As against this the arms are full of particles of dust and gases and contain the main sequence

stars, Blue Giants and White Dwarfs. *Our sun is a main sequence star.* The presence of dust and gas in these arms, in the region of main sequence stars, plays an important role in the evolution of systems of planets, moons and the comets (tail stars) like those in our solar system.

It has been found that in the solar system the total angular momentum of the planets and moons, etc. is so great as compared to the angular momentum of the sun that its distribution could not be explained on the basis of the hypothesis of Laplace, Jeffry and Jeans. It has now been shown that the distribution of the momentum between the central star and the planets etc. and the other characteristics noticed in the solar system could be explained on the hypothesis that when the sun entered the cosmic cloud in the arm of the galaxy and when the plasmic matter expanded and cooled, the planets, moons, astroids and other members of the solar system were formed under the action and reaction of the forces of gravitation and magnetism. This would mean that in 80 per cent of the galaxies, which are like our galaxy, there can exist systems like our solar system, and even in the arms of our own galaxy there could be more systems like those associated with our sun. There must be life like the earthly life or of some different type present on planets at suitable distances from the central star in these systems, but our knowledge is very limited so far. We cannot say anything about this. In fact the stars are so far off that we cannot even observe the small planets associated with them.

From the observations of Cephaid variables in the near galaxies we have been able to compute their distances. These estimates have shown that the nebulae of similar shape are equal in size and also in their brightness. The Alghols and Cephaid variables cannot be distinguished in distant nebulae, but the discovery of similarity of galaxies has made it possible to compute their distance by the often used proportionality of the observed brightness with the inverse square of their distance.

VI

The material universe is spread around us upto a distance of about one thousand two hundred million light years. This is an expanding universe; every galaxy is receding from us with a velocity which is proportional to its distance.

We can measure their speeds of rotation round their axes and the

velocity of their recession from us is computed by spectral analysis of the light received from them. This can be done with the help of the principle called "Doppler's principle". The mixed light of different colours, as in sun light, appears to us colourless. If it is passed through a prism its colours separate out and we see the spectrum. These various colours are really electromagnetic waves with different wave lengths. If the body sending out light and the body on which the spectrometric observations are taken are relatively stationary, the bending of a ray of a particular colour is always the same, depending upon its wave length. If they are approaching each other, with a velocity comparable to the velocity of light, the lines of various colours in the spectrum are shifted towards the violet end of the spectrum. If they are receding from each other, the rays are shifted towards the red end of the spectrum. This is Doppler's principle which applies to all kinds of waves, and even the radio waves sent out from dark heavenly bodies follow it. By the spectrometric examination of all the galaxies we learn the interesting fact that the light coming from all the galaxies is shifted towards the red end of the spectrum, showing thereby that all the galaxies in the universe are receding from us, and from each other.

Hubble had discovered the law of recession of heavenly bodies in 1929. According to this law the velocity of recession of heavenly bodies is 38 times the distance between them in million light years. If a galaxy is 100 million years away from us, it will be receding from us at a rate of 3800 miles per second. If it is 1,000 million light years from us its rate of recession will be 38000 miles per second. This is about one-fifth of velocity of light. The rate of recession of the galaxies which we have succeeded in identifying with the 200-inch telescope has been as great as 2/3 of the velocity of light.

We know from the theory of relatively that no material body can move with a velocity greater than that of light. It is thus evident that with the biggest telescope the most distant galaxy which we will be able to see will be moving with a velocity which will be a little less than the velocity of light. This distance is now not far from our reach. In other words we have reached near the utmost limits of our time and space. Let us try to understand how this universe was created.

VI

In understanding "How" and "Why" in this field of cosmology the greatest difficulty is that we try to extend the results obtained from

observations on the tiny earth to the whole universe. But our earth, even our solar system is insignificant like a speck of dust in the universe. *On this earth we cannot produce and experience the velocities of material bodies which we are observing in the universe, nor can we understand the state of the continuum when the dimensions of space and times, so to say, merge into each other on approaching the velocity of light, where time, so to say, becomes stationary, where the meaning of mass changes its very significance, and where lengths have a different meaning altogether.* But, we cannot solve this problem unless we are clear on this point.

The discussion above leads us to the conclusion that ours is the universe, composed of the galactic systems. They are of the same type of matter as we have in our galaxy. Their atomic and molecular properties are the same as in our solar system. This we have ascertained from spectroscopic analysis.

The question that arises is whether all this matter which composes the material world is something created? Or that it has been there for ever.

The materialists believe that the matter is from ever. It is the reality. It has always been there and will continue for ever. The second thing which is from ever, accordingly, is its capacity for work—the Energy. The greatest achievement of the 19th century was the supposition of the conservation of energy and matter, which entails that matter can neither be produced nor annihilated, its shape and composition could change, but not its amount. So is the case with energy according to this principle of conservations. Its total amount in the universe is constant. Its capacity for doing work is shown by the concept of entropy which represents organisation or disorganisations in the universe. The entropy of the universe is increasing or in other words its organisation is becoming more and more perfect. According to this hypothesis a time could come when no work would be possible. The materialists, however, believe that accidents will continue to happen even then and some activity will always continue. To prove this, they take help of the kinetic theory of the gases, and put forward many interesting examples to prove their point. But all these discussions are needed for the difficulties created by themselves by exhypothesi accepting the conservation principle and thereby the eternity of matter and energy.

As the mechanical concept of this universe had reached its height of advancement at the end of the nineteenth century, it was generally

believed that science had reached its perfection, and its further advances would depend upon greater accuracy of measurements and observations. Kelvin had even stated that the future advances of science will be in the sixth or higher r lace of decimal. The atomic theory of Dalton and the Periodic law of Mendelefe had been fully demonstrated. New elements were being discovered with its help. Life was considered to be the result of the mechanical forces operative in matter. *It was asserted that if we could know the exact state at any moment and the condition of all the atoms in the universe, it would not* be difficult to describe its past and future completely by equations.

Soul and God were considered to be the results of blind faith. The scientists could not experiment on God and soul in their laboratories, therefore they were not their concern. *In this very period the Christian Church established after meticulous researches of their scriptures that the material universe was created in seven days in the month of October in* 4004 *B. C.* while the researches in geology unearthed fossils of plants and animals lying buried in layers deep down the earth. The geologists could calculate the time when they were actually buried in the earth on the basis of their stratification.

This came in hundreds of thousands and millions of years. Now those Christian and Jew scientists who believed in God and in the New and Old Testaments found themselves in a great difficulty. According to their own researches this earth has been in existence for millions of years, but the Bible taught them that this earth was created in 4004 B. C. They were simply perplexed. Added to this was the theory of evolution which was shaking Christianity and Judaism to their very foundations. It was completely at variance with the story of creation in their scriptures which taught them of spontaneous creation.

The Christian Church tried to meet the geological challenge by saying that though the earth was created in 4004 *B. C. the God in his endless bounty and also to show his miraculous powers had embedded the fossils of millions of years old plants and animals in the deep layers of the earth. Under these circumstances there was no way out for a Christian scientist except either to discard religion altogether, or to say that the religion and science are entirely different things* We should not mix them together This is what they did: they either became agnostics and atheists or left their religion behind when they came to their laboratories.

The difficulties which beset the Jewish and Christian scientists do not arise in the case of the Muslim scientists. The Holy Quran does not ask its followers to believe in foolish dogma. It does say that the sun, moon, the earth, the stars and heavens were created in seven days. But the Quran itself makes it clear that the word *'day' used in this context is a cosmic day which is equal to thousands of years of the terrestrial day.* It is therefore clear that 7 days mentioned in the Quran for completion of the creation of the universe are apparently seven periods or stages. *There is nothing in the Quran against the idea of evolution.* It rather emphasises the power of evolution as one of the most fundamental characteristics of God. There is nothing in the Holy Quran of which we should be ashamed to admit like the Christian and Jewish scientists of the West. But it appears that we are condemnd to be misled by the westerners. Originally we adopted the wrong geocentric astronomy of the Greeks and put ourseleves in the labyrinth of their design. And now under the misleading teachings of Christian scientists based on their doubts about the Christian dogma, we have started getting ashamed and frustrated about our simple religion.

VII

The most fundamental fact about the universe which has so far been brought out is that all the heavenly bodies are composed of material atoms, which we can identify by radiations emitted by them. Dalton believed that these particles are unbreakable and undestroyable; they are the smallest units of matter. The weight of atoms of different elements is different and on that their chemical and physical properties depend. If atoms of all the elements are arranged according to ascending order of their weights, they are automatically arranged according to their chemical and physical properties also. And these properties repeat themselves again and again with increase or decrease in their intensity after a certain number of elements. This was the periodic law.

Towards the end of the nineteenth century it appeared that there are over 92 elements consisting of atoms of different weights and colours, etc. The discovery of radioactive elements proved that the doctrine of the indivisible atoms is erroneous. The discharge of electricity in vacuum tubes and researches of Rutherford and Thompson proved that all material particles are composed of negatively and positively charged electrical particles, called electrons and protons respec-

tively. The protons are at the centre of the atom and the electrons revolve round them in fixed orbits, like the planets round the sun.

In the hydrogen atom, there is one proton at the centre and one electron that revolves round it on a shell or orbit. The Helium atom has two protons in the nucleus and two electrons on the outer shell. But the atomic weight of helium is 4. When this new complication was investigated it was found that in the nucleus of a helium atom there are two neutrons, besides two protons, and the weight of the neutrons is nearly equal to that of the proton. It was also found that the neutrons are very unstable particles. They break up into proton and electron in 13 minutes if they are left free in space. These neutrons have no electric charge and their presence in the nucleus increases the atomic weight only. Thus protons and neutrons make up the nucleus and they together form the "nucleons". As number of protons and neutrons increases in the nucleus, heavier elements are produced

The properties of atom depend upon the number of protons in its nucleus. Their position in periodic table is determined by these. It is called "atomic number". Arrangement of the periodic table shows at a glance both the continuity and difference in the properties of matter.

The number of electrons revolving in the outer shells in an atom is the same as the number of protons in its nucleus. The chemical properties of the atom depend upon these. Their valency depends upon the number of electrons on the outer-most shell. The maximum number of electrons which can exist on a particular shell is fixed. On the first shell round the nucleus can exist 2 electrons, on the second 8, on the third 18, and so on. When the number of electrons on the outermost shell becomes 2, 8, 18, etc. their capacities for combination with other elements is completely satisfied, their valency becomes zero and they do not readily combine with other elements. This is the case with helium, neon, argon, etc. Originally it was believed that there could be only 92 elements. With the help of atomic reactors we have discovered 102 elements and expect to discover two more thus making a total of 104.

VIII

The atoms in many of the elements are such that the number of protons in the nucleus and the number of electrons in the outer shell

remain unchanged, but the number of neutrons increases or decreases depending upon the manner in which the particular atom is formed. The result of this is that although the chemical and physical properties of a particular element remain unchanged, the atomic weights of their different atoms differ. These atoms are called isotopes. So far we have succeeded in separating out 300 isotopes in nature. 50 of these are radioactive. The isotopes are representative of temperatures and radiative balance of the cosmic environment at the time of creation. *Several isotopes are produced by the break up of the radioactive atoms and their relative number present in any body helps in estimating the age of their habitat very accurately.*

For instance, lead was formed as one of the elements at the tim of creation. It is also produced by the radioactive break up of the atoms of thorium, radium, uranium etc. The atomic weight of the lead atoms obtained from all these sources are different, but their chemical properties are the same. These are all the isotopes of lead. The weight of the natural lead atom is 204. The lead atom produced from U 238 weighs 206, that from U 235 weighs 207 and that from Th 232 weighs 208. If in a rock we find all these isotopes of lead and also U 238, U 235 then from their relative amounts present in the rock, we can easily compute the age of the rock. This can be done because every radioactive element has a fixed Half Life Period. The Half Life Period of Th 232 is 14000 million years, that of U 238 is 4500 million years and that of U 235 is only 900 million years. This means that if we have 2 gm of Thorium any where, it will be reduced to 1 gm in 14000 million years and to 0.5 gms in another 14000 million years, and so on. Similarly U 238 will be reduced to half in 4500 millions years and to its half in another 4500 million years and so on. Thus from the relative amounts of Th 232, U 238, U 235, Pb 208, Pb 206 and Pb 207, which will always be there, we calculate the age of the rock. The ages of rocks of the earth have been computed in this way. The oldest rock that has been found so far is about 2,000 million years old. This shows that the rocks in our earth were solidified about 2,000 million years back.

When we compute amounts of U 238 and U 235 present in the meteors falling on our earth we find the surprising fact that U 235 is nearly always only about 0.7 times of U 238. It cannot be believed that at the time of creation these two isotopes of uranium were created in such different amounts. Therefore assuming that originally their amounts were equal and the present difference in their amounts is due

to differences in their half life periods, we find that to reduce the amount of U 235 to its present proportion at least 7 periods of 900 million years must have passed. Thus we know that uranium was created in this universe about 6,000 million years back.

When on our earth we find that the amount of thorium is nearly the same as that of the non-radiative elements of similar atomic weights we at once know that even one half life period of this element, *i.e.* 14,000 million years has not yet passed since the creation. Thus when we compute the age of the earth from the relative amounts of different isotope of lead, we find according to Hubble, that the earth was created some 3500 million years back.

We know that all the rivers carry some salts into the oceans and the amount of salts in the oceans therefore goes on increasing from year to year. On computation it has been found that in every 100 years it increases by about a millionth part. We know the present quantity of salts in the oceans. If we compute the age of the earth from the rate of increase of salt, mentioned above we again find that the oceans came into existence on this earth some 3500 millions years back.

George Darwin, the grandson of the famous Charles Darwin, has found that due to the dissipation of energy by the tides, the distance of the moon from the earth increases by about 5 inches every year. At present the distance of the moon from the earth is nearly 239,000 miles. Assuming that the moon originally broke off from the earth and therefore dividing 239,000 miles by 5 inches we get a figure 4,000 million years which would apparently be the age of the moon.

Thus we find that the age of the earth computed from the isotopes of different elements present on it is in harmony with the age of various landmarks in the cosmic history, the formation of oceans, the breaking away of the moon, the consolidation of meteors, etc. It is thus seen that the amounts of isotopes, or rather the amounts of various elements serve as a very important link in understanding the story of evolution of the universe.

It may be shown by these methods that our *material universe came into existence between* 5 *and* 10 *thousand million years. This is a very important calculation. Because in the history of the human race it is for the first time that we have known by scientific method that matter has*

not been in existence from ever. It was created some time between 5 and 10 thousand million years. It may be recalled that all the millions of galactic universes are receding from each other at tremendous velocities and their rate of recession goes on increasing at the rate of 38 times the distances of galaxies measured in millions of light years. The velocities of recession measured near the horizon of the 200-inch telescope are approaching the velocity of light itself. *If we calculate the time when all these galactic systems started their journey outwards from a central position we come to the surprising figures of 5 thousand million years.* In other words, we learn that the galaxies which we now find at a distance of 2,000 million light years had started to disperse from a central point about 5 thousand million years.

When we get results of the same order of magnitude about the date of coming into existence of the material universe from all the different methods known to us, our confidence on the results obtained from our terrestrial observations is much increased. Again when we compute the ages of the sun, moon, the stars and the galactic systems, etc. from their brightness, from the variations in radiations emitted by them depending upon their atomic constitutions, their stages of evolution, their velocities—in whatever way we compute their ages, all come to a few thousand million years. No doubt, the ages which we obtain by different methods do differ—by some method we get 3 thousand million years, by some 5 thousand million years by some 10 thousand million years or so. But if we keep the difficulties of these computations, and uncertainties involved in view, and then if we also remember that a most insignificant being on an insignificant speck, the earth, is trying to peep out through formidable barriers of space and time, the difference of a few billion years in these computations is not important at all. *What is important is the fact that all these approaches lead us to a definite beginning of this material universe, a few billion years back.* It has not been in existence from ever.

IX

Now the question arises as to how all this matter was created. It is not difficult to understand this, if we keep in view the facts that the universe is expanding and that according to the theory of relativity, the expansion or contraction of the universe is as important a property of the four dimensional material universe as gravitation itself.

From our observations we know that all the galaxies are not only receding from each other, but they also rotate round their axes. This rotation affects their shape. *The greater the speed of rotation, the more*

they are flattened on their poles. This also shows their stage in evolution. Some 80 per cent of the galaxies are rotating so rapidly that they have flattened out very much and in most cases the matter has burst out in spiral arms, as in the Andromeda Nebulae, or in our own galaxy. Their average kinetic energy of rotation is proportional to their velocity of recession, just as is the case of molecules in gases. This is just according to statistical mechanics. This shows that the conditions which we experience on a small scale in the molecules of gases on the earth are happening on a large scale on galaxies in the inter-galactic space. We find that the galactic matter, spread out in space, is governed by similar laws as the fluids on the earth. Thus we understand how after first creation it must have divided into great pieces now constituting the galaxies after becoming a smoke like mass and how the stars in these galaxies must have formed.

All these observations also show that if today our space, with all its galactic systems, is expanding, at one stage it must have existed highly compressed in a small space. This was the case only a few billion years back. The state in which all that matter, which is spread over billions and billions of miles of space today, must have, about 5 billion years back, been packed up in a small space. At that time its diameter could not have been more than 30 times our sun. The pressure inside this sphere must have been so great that its density must have been several million times the density of water. At that time its temperature must have been millions, rather billions of degrees. Under these conditions it would be impossible for matter like ours to exist. The whole space must have been full of the fundamental particles like protons, neutrons, electrons, in close compaction. Nobody can say how the condition of original compaction were produced. *We can, of course, conjecture that this could have resulted either by the contraction of some earlier universe, or all those fundamental particles had come into being by the command of "Be".* In any case, when the compaction of this mother atom called "Yelm" reached its limit, a start of expansion was inevitable. Just as on July 4, 1754 on the burst of a white dwarf, crab nebulae began to expand, and it can be seen expanding even today exactly like that, the *sphere full of Yelm (the mother atom) burst some 5 or 6 billion years back. On this explosion our material universe came into being.*

X

We know that according to the theory of relativity the light Quanta have mass, which can be obtained by multiplying its intensity by the

square of its velocity. We also know that when the radiation pressure exceeds a limit it becomes dominant and overcomes gravitation. When the sphere full of "Yelm" must have exploded the temperature of the expanded mass must have been about 15 million degrees after about a minute. At that moment the mass of light would have been dominant over gravitational mass. *The condition of that moment can be described only by the word "light" because matter had not yet formed.* At that moment the fundamental particles must have started expanding and after the expansion for a few minutes, the conditions must have become favourable for the formation of hydrogen atoms and then for the formation of helium atoms. 99 per cent of the fundamental particles must have been used up in building up the hydrogen and helium atoms. After that the other heavy atoms must have formed. Gamo and his colleagues have worked on this problem in great detail and they have established that *all the elements, which we find today in the entire material universe, must have formed within an hour of our terrestrial counting and these must have remained drowned in the ocean of light for ages.*

When this elemental gas must have continued to expand under the pressure of light for something like 300 thousand years, it must have cooled to an extent that darkness must have taken place of light, because at that stage there were no stars to light up this mass of gases. Naturally at this stage *the dynamics of the system under radiation pressure must have come under the influence of gravitation. The condition of that entire mass must have been like smoke, in which there were gases and some small particles of dust.*

Now when gravitation became dominant over light, contraction must have started. On this contraction the total mass of gas and dust must have divided itself into big lumps which have formed the present galaxies. On this division on contraction, and under the influence of gravitation, it is inevitable that the big lumps of gas must have started rotating round their central axes. James Jeans had worked on these problems some forty or fifty years back and proved that at such a stage all these consequences are inevitable and rotation must start in the great lumps of gas. Commencement of a new turbulence in the whole system, under the above-mentioned rotation, was natural. As a result of this, formation of stars and their constellations and of cosmic nebulae must have started. All this must have taken several million years. After that planetary systems evolved round some of these stars and our planet earth is one of them.

XI

It must have taken about 3 billion years *for life to form* on a few of these planets and thus we came into existence and are trying today to reconstruct this long story on shaky grounds. But we have seen that matter itself is the best guide in reconstructing this story.

We have succeeded in forming estimates of the relative amounts of different material elements present on the earth, in the meteors, in the sun and in other stars. These estimates have been made both on the basis of observations and on the basis of various hypotheses put forward by different cosmologists about the creation of matter and the universe.

Hydrogen constitutes about 55 per cent of the total matter present in the universe; 44 per cent is helium and the remaining 1 per cent is made up of all the other elements. The second point which is brought out by these studies is that after we reach the atomic weight of 100 there is not much variations in the relative amounts of different elements. This distribution of quantities of different elements cannot be fully explained on the basis of the hypothesis of "Steady State" but it becomes evident on the basis of the hypothesis of "Explosion". The light which is reaching us from the stars near the border of our cosmic horizon has taken some 2 billion years to reach us and thus we are seeing the conditions which existed in those galaxies some 2 billion years back, while the light from near stars in our own galaxy takes hardly 80 to 90 light years. Thus the temperatures of the further galaxies must have been much lower. While we are noticing much later evolutionary stages of the near galaxies and stars.

We have thus, succeeded with our biggest telescopes to see the entire evolutionary condition of the universe covering 2 billion years. When we succeed in seeing galaxies moving with the velocity of light, we shall have reached a stage beyond which it would not be possible for us to see. Here the time and space merge into a condition which in Urdu we call by the name of " فلک الافلاک " "the heaven over the skies". This is the stage beyond which we cannot see-and our material laws have no meaning. At this stage the cosmic hypothesis of steady state gets perplexed because according to this the universe is infinite and this limit in the infinite has no meaning. It puts forward different concepts of limited space in an unlimited continuum, but

all that is really playing with words. It is for such reasons, besides many other reasons, that I do not find the hypothesis of steady state to be satisfactory. To me the explosion hypothesis is more satisfying.

According to this *the formation of the galactic systems started after two distinct stages of light and darkness from condition similar to smoke*. This hypothesis makes it clear that the action of energy in our present material world started at a particular moment, which was very distant if measured on the scale of terrestrial time, but on cosmic scale it is hardly more than 6 or 7 billion years old. The stars in this four or higher dimensional space-time continuum are advancing in stages of evolution or going down according to the inherent law of their nature. Some of them die out for ever after a few pre-death convulsions. Such sudden convulsions have been observed in stars even in the short history of man on the earth.

It seems that the law of birth, growth, decline and death is not limited to the biological world. It operates in the nature of the physical world also. It suggests that the physical universe is not an ever evolving system; it does not grow ever-lastingly. Finally, it is to die. The ever-expanding universe, as it were, means increase in velocity. This increase may touch the boundary of the light-speed. Celestial objects approaching the speed of light cease to operate according to the micro laws of physics. Their mass must disintegrate into light-waves. So the law of death prevails upon the expanding universe.

XII

This cosmological account that encompasses the physical structure of the Universe, its origin and disappearance leads to certain definite conclusions, which are far-reaching from the point of view of a total philosophy.

One conclusion is that the reality which permeates the physical universe is not static. It is something dynamic. The fundamental particles in the constitution of the physical world, congregation of these particles, known as atoms, their groups, known as molecules, do not represent a static mechanism in the nature of the world. They are produced by the impacts of lighter and heavier vortices electrical, magnetic or neutral in character. Their nature can therefore be best expressed in wave-equations.

Wave equations are the most developed tools to formulate and express in ever active and dynamic system of events. Further more, the wave-equations are methods of apprehension of the dimensions or degrees of freedom of the events of a system. A dimension is an indication of the degree of freedom. A two demensional continuum is more free than a one-dimensional series of events. Definitely a four-dimensional system has a higher degree of freedom for its sequences than that could be obtained in a three-dimensional continuum.

The dimensions or degrees of freedom increase so rapidly with the basic physical events that the latest advancements in physics could master the wave-equation of the hydrogen atom only— the simplest atom in the universe. Consequently, the wave-equation of the atom having the number of 102 is simply a far off cry.

The state of the physical universe from which all these atoms must have emerged should contain so enormous a degree of freedom that it must be beyond imagination. Let us concede, however, that there is no logical bar on wave-equations of this state of the universe, or of any degree of freedom.

The most important conclusion which follows from all cosmological thinking on the basis of the current scientific knowledge is that all lower dimension's have their origin in higher dimensions. Continuum of lesser degrees of freedom are grounded in the continuum of higher degree of freedom. In other words, from a world of four-dimensional continuum, a world of three, two or one dimensional continuum comes into being.

This principle is of great importance for it gives a definite lead to the nature of ultimate reality. The ultimate reality must have infinite dimensions. It should have the infinite degrees of freedom. It is on this basis, that worlds of lower dimensions, of lesser degrees of freedom come into being. To this ultimate reality with infinite dimensions, we give the name of "Allah" (the God). He is the ultimate ground of all finite dimensions or limited degrees of freedom which are there in the different strata of the world.

Thus, our cosmological inquiry, if it does not lead us to the realm beyond light waves at least ends in a conjecture about the character of ultimate reality. Any system of philosophy which will be in conflict with this conjecture shall be wrong.

The conjecture is: the existence of a lower independent dimensional continuum is beyond logical comprehension It should demand for its existence a higher dimensional continuum It may lead to the Being of the Infinite dimensions as the Universal stratum behind every thing that exists. To my mind, these conclusions are definity implicit in what Iqbal says: "The finite, as such, is an ideal obstructing the movement of the mind or in order to overpass its bounds the mind must overcome serial time and the pure vacuity of perceptual space. 'And verily towards thy God is the limit', says the Quran. This verse embodies one of the deepest thought in the Quran, for it definitely suggests that the ultimate limit is to be sought not in the direction of stars, but in an infinite cosmic life and spirituality*".

* Ibid. p 131—132.