Part 2: The Philosophical Notion concerning the World

Chapter 1: Preliminary Notes

Ever since mankind attempted to determine its relations and links to the objective world, the issue of forming a general philosophical notion of the world has occupied a central position in the human mind. In this investigation of ours, we do not intend to write the history of this issue in its philosophical, religious and scientific progress, as well as its long development throughout history.

Rather, our purpose is to present the basic notions in the modern philosophical field, in order for us to determine the following: (1) our position with regard to such notions; and (2) the notion, in the light of which our general view must be formed and on whose basis our principle in life must be based.

This notion can be attributed to two issues: one of them is the issue of idealism and realism; and the other the issue of materialism and theology.

In the former issue, the question is presented in the following way: 'Are the beings of which the world is constituted realities that exist independently of consciousness and knowledge; or are they nothing but forms of our thought and conception in the sense that reality is thought or knowledge, and, in the last analysis, everything is attributed to the mental conceptions?' Thus, if we eliminate consciousness or the 'I', (p. 208) then the whole reality will be removed.

These are two estimations of the issue. The answer, according to the former estimation, recapitulates the philosophy of realism or the realistic notion of the world. The answer, according to the latter estimation, is that which offers the idealistic notion of the world.

In the second issue, the question is presented in light of the philosophy of realism, as follows: 'If we accept an objective reality of the world, do we stop with objectivity ac the limit of sensible matter, which

would thus be the common cause of all the phenomena of existence and being, including the phenomena of consciousness and knowledge; or do we seep beyond it to a further cause, an eternal and an infinite cause, as the primary cause of what we know of the world, including both its spiritual and its material realms?'

Thus, in the philosophical field, there are two notions of realism. One of them considers matter as the primary foundation of existence; this is the materialistic realistic notion. The other extends beyond matter to a cause above both spirit and nature; this is the theological realistic notion.

Therefore, there are three notions of the world at hand: the idealistic notion, the materialistic realistic notion and the theological realistic notion. Idealism may be expressed by spiritualism, since [it] considers the spirit or consciousness as the primary foundation of existence.

1. Correction of Errors

In light of this, we must correct a number of errors committed by some modern writers. The first is the attempt to consider the conflict between theology and materialism as an expression of the opposition between idealism and realism. They do not distinguish between the two issues that we have presented above.

Thus, they claim that the philosophical notion of the world is one of two kinds: either the idealistic notion or (p. 209) the materialistic notion. Therefore, the explanation of the world does not admit of more than two points of view. If you explain the world in a purely conceptual manner, and believe that conception or the 'I' is the primary source [of reality], then you are an idealist.

If, on the other hand, you wish to reject idealism and subjectivism, and accept a reality independent of the 'I', then you must adopt the materialistic notion of the world, and believe that matter is the primary principle, and that thought and consciousness are nothing but reflections of it and certain levels of its development.

But, as we have learned, this does not at all agree with the facts. Realism is not limited to the materialistic notion. Similarly, idealism or subjectivism is not the only thing that opposes and conflicts with the philosophical materialistic notion. Indeed, there is another notion of realism – namely, theological realism that accepts an external reality of the world and nature. Both spirit and matter, according to this notion, are attributed to a cause beyond the world and nature.

The second is the accusation made by some writers against the theological notion –namely, that it freezes the scientific principle in the natural sphere, and eliminates the natural laws and decrees that science uncovers and that are made more evident day by day. According to the claims of such writers, the theological notion links every phenomenon and every being to the theological principle.

This accusation has played an effective role in the materialistic philosophy, where the idea of God posits

an intelligible cause of the natural phenomena and events that people observe, and attempts to justify the existence of such phenomena and events. With this, the necessity of such phenomena and events is completely eliminated if we can discover by science and the scientific experiments the real causes, as well as the laws of the universe that govern the world, and in accordance with which the phenomena and vents are produced.

The malicious role that the church played in fighting the scientific progress and opposing the natural mysteries and laws disclosed by science at the beginning of the scientific renaissance in Europe aided in solidifying this accusation. (p. 210)

In fact, the theological notion of the world does not mean dispensing with natural causes or rebelling against any one of the sound scientific truths. Rather, it is the notion that considers God as a cause beyond [nature]. It imposes on the chain of agents and causes an ascent to a power above nature and matter. With this, opposition between it and any scientific truth is completely removed.

The reason for this is that it gives science the widest opportunity for discovering the mysteries and order o£ nature. At the same time, in the last analysis, it retains for itself the theological explanation which is the positing of a higher cause in a principle above nature and matter. Hence, the theological issue is not as its opponents wish to claim – namely, an issue concerning an invisible hand that sprinkles water in the atmosphere, that conceals the sun from us, or that acts as an obstacle between us and the moon, thus creating rain, a sun eclipse, or a moon eclipse.

If science reveals the causes of rain and the factors leading to its evaporation; and further, if science also reveals the causes of the sun's eclipse, and [if] we know that the celestial spheres are not equidistant from the earth, that the moon is closer to them than to the sun, and that it happens that the moon passes between the earth and the sun, thus concealing the sun's light from us; again; if science reveals the cause of the moon's eclipse, which is the passing of the moon in the shadow of the earth – this shadow extends behind the earth for around 900,000 miles – I say that if this information is available to a human being, then those materialists will imagine that the theological issue will no longer have a subject, and the invisible hand, which conceals from us the sun or the moon, is substituted for by the natural causes given by science.

However, this is only due to the misunderstanding of the theological issue, and to the undifferentiation of the place of the theological cause in the chain of causes.

The third is the spiritual character that has dominated both idealism and theology, so much so that spiritualism in the theological notion began to appear as having the same meaning as that of the idealistic notion. This caused a number of ambiguities. The reason is that spirituality can be considered as an attribute of each of (p. 211) the two notions.

However, we do not at all permit the negligence of the distinction between the two forms of spiritualism. Rather, we must know that by 'spiritualism', in the idealistic sense, one intends the realm which is

opposite the sensible material realm that is, the realm of consciousness, knowledge and the 'I'.

Thus, the idealistic notion is spiritual, to the sense that it explains every being and every existent in terms of this realm, and attributes every truth and every reality to it. According to the claims of idealism, the material realm is attributed to a spiritual realm.

As for 'spiritualism' in the theological sense, or in the theological doctrine, it is a method of viewing reality as a whole, and not as a specific realm opposite the material realm. Hence, the theology that asserts a supernatural, immaterial cause also asserts a link between all that exists in the general realm – be that spiritual or material – and the supernatural cause.

It believes that this link is one in whose light the human practical– and social position regarding all things must be determined. Spiritualism in the theological sense is a method for comprehending reality. It is equally applicable to the material realm and to the spiritual realm in the idealistic sense.

We can conclude from the previous presentation that the philosophical notions of the world are three. We have studied in the theory of knowledge the idealistic notion, since it is very much related to the theory of knowledge. We have also discussed its errors. Let us, therefore, take up in this investigation the study of the other two notions, the materialistic and the theological.

In the materialistic notion, there are two tendencies: the instrumental or mechanical tendency and the dialectical or contradiction tendency (that is, dynamic materialism).

2. Clarification of a Number of Points concerning These Two Notions

Before we discuss the materialistic notion, including both of its tendencies, we must seek clarification about a number of points concerning the theological and the materialistic notions. This will be done in the following questions. (p. 212)

The first question is this: 'What is the basic feature that distinguishes each of the materialistic tendencies (the philosophical materialistic school) and the theological tendency (the theological school) from one another; what is the main difference (between them) that makes them two conflicting tendencies and two opposite schools?'

Casting one glance at these two schools determines for us a clear answer to this question: namely, that the basic distinguishing feature of the materialistic school in philosophy is negation or denial of what appears to be above the capacity of the experimental sciences. Thus, in the scientific field – that is, in the positive aspects of science that experimentation demonstrates – there is not something theological and something material.

Whether a philosopher is a theologian or a materialist, he accepts the positive aspect of science. From

the point of view of science, the theologian and the materialist admit, for example, that radium produces a power of radiation as a result of an internal division, that water is composed of oxygen and hydrogen, and that the element of hydrogen has the lightest atomic weight of all elements.

They both also accept the other positive truths that appear on the scientific level. Hence, with regard to the scientific position, there is no theological philosopher and no materialist philosopher. Rather, these two sorts of philosophies exist, and materialism opposes theology when the issue of the existence of the beyond is presented. The theologian accepts a kind of existence free from matter that is, beyond the experimental field, its phenomena, and its powers.

The materialist, on the other hand, denies this, and limits existence to the specific experimental field. He considers the natural causes, which are revealed by experiments and touched by the hand of science, as the primary causes of existence, and nature as the only expression of this existence; whereas the theological tendency affirms that the human spirit or the 'I' is an immaterial subject, and that knowledge and thought are phenomena independent of nature and matter.

The materialist denies this, claiming that, in his analysis of the human body and in his observation of the operations of the nervous system, he has not seen anything outside the limits of nature and matter, as the theologians claim. (p. 213)

Further, the theological tendency asserts that the developments and movements that are revealed by science – be they mechanical movements subject to an external material cause, or natural movements not produced by experimentation from specific material causes – are, in the last analysis, attributable to an external cause beyond the fence of nature and matter.

The materialist opposes this, claiming that the mechanical movement as well as the natural movement are not linked to an immaterial cause, and that the natural movement is dynamic. It is self–sufficient, since the immaterial cause chat the theologians have accepted does not appear in the experimental field.

Thus, it becomes fully clear that the opposition between theology and materialism is not with regard to scientific truths. The theologian, like the materialist, admits all the scientific truths that sound experiments make clear about the human body, the physiology of its organs, and the natural development and movement.

The theologian just adds and admits other truths. He demonstrates the existence of an immaterial spiritual side of human beings other than that which is exhibited by them in the experimental field. He also demonstrates a non–sensible, primary, immaterial cause of the natural and mechanical movements.

Since we have learned that the scientific field does not involve what is theological and what is materialistic, we know that the philosophical structure of materialism – since it is a school opposed to the school of theology – is based solely on the negation of abstract truths, as well as on the denial of

existence beyond the limits of nature and matter, and not on positive scientific truths.

The second question is this: 'If compatibility between theology and materialism is the compatibility between affirmation and negation, then which of the two schools is responsible for giving evidence and proof for its own affirmative or negative position?'

It may appeal to some materialists to rid themselves of the responsibility for giving proof, and to consider the theologian responsible for giving evidence for his claim, because (p. 214) the theologian is the one who has the affirmative position –that is, the one claiming existence [beyond nature]. That is why the theologian must justify his position and demonstrate the existence of what he claims.

The truth though, is that each of the two is responsible for offering evidence and reasons for his own tendency. Thus, as the theologian must demonstrate affirmation; so also is the materialist responsible for providing evidence for the negation, since he does not make the metaphysical proposition the subject of doubt. Instead, he denies it without restriction. But absolute denial, like absolute affirmation, is in need of proof.

Therefore, when the materialist claims that the immaterial cause does not exist, he implies in this claim that he has known the whole existence, and has not found in it room for an immaterial cause. He must, therefore, advance a proof in support of this general knowledge, and a justification of the absolute negation.

Here we ask again: 'What is the nature of the evidence that the theologian or the materialist may offer in this area?' Our answer is that the evidence for affirmation or for denial must be reason, and not direct sense experience.

This is contrary to the materialist view that usually considers sense experience as evidence for its own notion – claiming that the theological notion or the metaphysical propositions cannot in general be affirmed by sense experience, and that sense experience rejects those claims, since it analyzes human beings and nature and shows that there are no immaterial things in them.

If materialism is correct in its claim –namely, that sense experience and scientific truths do not constitute a proof for the theological tendency – then neither can they be a proof for absolute negation that determines the materialistic tendency. For we have already learned that the various kinds of scientific truths are not the subject of disputation between theology and materialism.

Rather, the disputation is concerned with the philosophical interpretation of those truths: the existence of a superior cause beyond the limits of sense experience. It is clear that sense experience cannot be considered as a proof for the negation of a truth outside its own limits.

Thus, if the natural scientist does not find (p. 215) an immaterial cause in his laboratory, this will not be anything other than a proof for the non–existence of such a cause in the empirical realm. As for negating

the existence of such a cause in a realm above that of sense experience, this is something that cannot be inferred from sense experience itself.

In this clarification, we have asserted two things. First, materialism is in need of proving the negative aspect that distinguishes it from theology, as metaphysics is in need of proving the affirmation and positiveness. And second, materialism is a philosophical tendency, as is theology.

We do not have scientific or experimental materialism; for science, as we have learned, does not affirm the materialistic notion of the world in order chat materialism be scientific. Rather, all the truths and secrets that science discloses about the sphere of nature leave room for the assumption of a cause above matter.

Scientific experimentation cannot prove, for example, that matter is not created by an immaterial cause or that the forms of movement and the kinds of development which science has discovered in the various aspects of nature are self–sufficient and not produced by a cause above the limits and sphere of experimentation. The same is true of every scientific truth.

Therefore, the proof in support of materialism cannot be based on scientific truths or direct sense experience. Rather, it is formulated in a philosophical interpretation of those truths and experiences, precisely as is the proof in support of theology.

Let us take development as an example of this. Science proves the existence of natural development in a number of fields. It is possible to posit two philosophical interpretations of this kind of development. One of them is that it proceeds from the heart of a thing, and is the result of a conflict assumed among contradictories in that thing. This is the interpretation of dialectical materialism.

The other is that it is the product of an immaterial superior cause. The progressive nature does not involve contradictories within itself. Rather, it involves the possibility of development. It is that (p. 216) immaterial superior cause that provides this possibility with actual existence. This is the interpretation of the theological philosophy.

We notice with clarity that the scientific notion is just (the assertion of] the existence of natural development. As for those two notions of movement, they are two philosophical notions, the soundness of one of which and the erroneousness of the other is not something about which one can be sure from direct sense experience.

The third question is as follows: 'If scientific experimentation is not sufficient by itself for demonstrating the theological and the materialistic notions alike, then is it possible for the human mind to find evidence for any of the two notions, since both of them lie outside the realm of experimentation, or must the mind yield to skepticism, to freeze the theological and materialistic issue, and to limit itself to the fruitful field of science?'

The answer is that human intellectual capacity is sufficient for studying this issue and for commencing with respect to it from experimentation itself, not by considering experimentation as a direct proof for the notion which we form about the world, but as a starting point. Thus, the proper philosophical notion of the world – the theological notion – will be posited by the independent rational information in light of the interpretation of experiments and the experimental phenomena.

No doubt the reader remembers our study in the first investigation concerning the theory of knowledge of the rational doctrine, and how we demonstrated the presence of independent rational knowledge in a way that shows that the addition of rational knowledge to sense experience is something necessary not only with respect to our philosophical issue but also with respect to all scientific issues.

There is no scientific theory that rests on a purely empirical basis. Rather, it rests on the basis of sense experience and in light of independent rational knowledge. Therefore, our philosophical issue that investigates the supernatural world does not differ from any scientific issue that investigates one of the natural laws, or that reveals some natural powers (p. 217) or secrets. In all of this, sense experience is the point of departure. But in spite of that, sense experience is in need of a rational explanation if a philosophical or a scientific truth is to be inferred from it.

From these points, we draw the following conclusions. First, the materialistic school differs from the theological school in a negative aspect that is, in the denial of that which lies beyond the empirical field. Second, materialism is responsible for providing evidence for the negation, as theology must show evidence for the affirmation.

Third, sense experience cannot 6e considered a proof for the negation, since the non-existence of a superior cause in the empirical realm does not prove the non-existence of that cause in a superior realm not touched by direct sense experience. Fourth, the method adopted by the theological school in demonstrating its theological notion is the same method by means of which we prove scientifically all the scientific truths and laws.

3. The Dialectical Tendency of the Materialistic Notion

We have said that there are two tendencies in materialism. One of them is the mechanical, instrumental tendency, and the other is the dialectical tendency. We have already touched upon the former tendency briefly in the second chapter of the theory of knowledge, when we took up in our study and scrutiny the physical idealism which was established on the ruins of mechanical materialism.

The latter tendency of materialism, which explains the world in a materialistic fashion according to the laws of dialectics, is the tendency that was adopted by the Marxist school. Thus, this school established (p. 218) its materialistic notion of the world on the basis of the tendency under consideration.

We quote from Stalin:[1]

The Marxist materialism proceeds from the principle which asserts that the world is naturally material, that the numerous events of the world are various phenomena of the moving matter, that the mutual relations among events and the mutual adaptation of these events to one another are, according to the dialectical method, necessary laws for the development of the moving matter, and finally, that the world develops in accordance with the laws of the movements of matter and has no need of any universal mind.2

The materialistic notion considers matter or existence as the central point of the Marxist philosophy, because this point determines the Marxist view regarding life, and constructs for it a specific understanding of reality and its values. Without this point, it would not be possible to establish the purely material grounds of society and life. It has imposed on the Marxist doctrine a specific progression of thought and required it to establish its various philosophical aspects in the interest of this point.

In order for Marxism to have the right to determine the central point once and for all, it chose this point to be one of certainty, as we have learned in the theory of knowledge. It declared that human beings have the cognitive capacities that enable them to speak with certainty about a specific philosophy of life and to unravel the innermost secrets of existence and the world. It rejected the doctrine of absolute skepticism and even frozen subjectivism. By doing so, it attempted to give the main axis – the materialistic notion – a decisive quality. (p. 219)

Subsequently, it put forth a general criterion of knowledge and of the truth of sense experience. It considered necessary rational knowledge as improbable, and denied the rational logic which is independent of sense experience. All of this was for the purpose of avoiding the elimination of the possibility of the central point and the limitation of the human capacity by rational logic, particularly in the empirical field.

At this stage, Marxism faced a new problem – namely, if the human ideational criterion is the senses and the sense experience, then the information that people acquire by means of the senses and the sense experience must always be true and must be considered as a primary criterion for weighing ideas and knowledge. Now, are the scientific empirical conclusions indeed so? Further, is the truth of the theories which are established on the basis of sense experience always secure?

Marxism falls between two dangers. If it admits that the information which is based on the ground of sense experience is not free from error, then sense experience falls short of being a primary criterion of truth and knowledge. if, on the other hand, the Marxists claim chat the theory which is derived from sense experience and application is above error and ambiguity, then they clash with the reality which no one can deny: the reality that many scientific theories, or many of the laws that people have attained by way of studying the sensible phenomena have proved to be false and not in agreement with reality. Thus, they fell from the scientific throne that they had been mounting for hundreds of years.

If the scientific or empirical notions should be false, and [if] rational logic is eliminated, then how can one

declare a philosophy of certitude, or establish a school whose ideas are characterized by decisiveness?

Marxism has insisted on erecting sense experience as the highest criterion. It rid itself of this difficulty by positing the law of movement and development of the sciences and ideas due to [its consideration of] the mind as a part of nature. By virtue of this, the mind realizes the natural laws (p. 220) in full. Thus, it develops and grows as nature does.

The scientific development does not mean the elimination of the previously mentioned scientific notion. Rather, it expresses an integral movement of truth and knowledge. Truth and knowledge are truth and knowledge, but they grow, move and ascend continuously.

Thus, all the self-evident propositions and truths are abolished; for all thought moves along the path of development and change. Hence, there is never a fixed truth in the realm of thought, nor can one be certain of the self-evident propositions that we now know, such as our knowledge of the following: 'The whole is greater than the part,' and 'Two plus two equals four'. This knowledge acquires another form in its developmental movement – thus, we know the truth at that point in another manner.

Since the movement that Marxism posited as the law of thought and of nature in general does not proceed other than from a power or a cause, and (since), according to Marxism, there is no reality in the world other than matter, it states that movement is the result of the contradictions of the internal content of matter, and that these contradictions are at war with one another, thus causing matter and its development. For this reason, Marxism cancelled the principle of non-contradiction. It took dialectics as a method of understanding the world, and placed its materialistic notion within the scope of this method.

With this, it became clear that all the philosophical aspects of dialectical materialism are linked to the central point- that is, to the materialistic notion – and are formed for the purpose of establishing and preserving this point.

Eliminating the self-evident propositions and making them subject to change, or accepting contradiction and considering it as a general natural law, as well as reaching the other similar strange conclusions chat Marxism drew, is nothing but an inevitable progression of the advance that began from the Marxist materialistic notion, and a justification of this advance in the philosophical field.

1. Joseph Stalin, (1879-1953). He was a Marxist theoretician, apolitical and a military leader. He was born in Soviet Georgia to a modest family. His father was a shoemaker. At nineteen years of age, he joined the revolutionary underground. In 1917, he became the editor-in-chief of Pravda, and in 1922, he was appointed secretary general of the Communist Party, and Lenin's successor. In 1942, he became commander-in-chief, and led the war against Germany in 1943.
2. Al-Madda ad-Dialaktikyya, p. 20.

Chapter 2: Dialectics or Disputation

In classical logic, 'disputation' meant a specific method of discussion and' a certain manner of debate in which contradictory ideas and opposite points of view are presented. Every one of such points of view attempts to show the weakness and falsity of its opposite, in light of the knowledge already admitted and the propositions already acknowledged.

By virtue of this, conflict between negation and affirmation develops in the field of discussion and disputation, until a conclusion is reached in which one of the points of view at odds is asserted, or a new point of view reconciling all views evolves from the intellectual struggle between the contradictories, after casting their contradiction aside and showing the weakness of every one of them.

However, disputation in the new dialectic or the new disputation is no longer a method of discussion and a certain manner of exchanging opinions. Instead, it has become a method of explaining reality and a general law of the universe applicable to the various realities and kinds of existence.

Thus, contradiction does not only lie between opinions and points of view. Rather, it is fixed in the heart of every reality and truth. Therefore, there is no proposition that does not involve in itself its own contradiction and negation. (p. 222)

Hegel was the first to establish a complete logic on the basis of this [notion of dialectics]. Thus, the dialectical contradiction was the central point in his logic and the main principle on which a new understanding of the world is based and by means of which a new theory about the world is constructed – a theory that is completely different from the classical theory that mankind had adopted ever since they were made to know and to think.

Hegel was not the first to formulate the principles of the dialectic. These principles are deeply rooted in a number of ideas that had appeared intermittently on the stage of human thought.

However, these principles were not formulated in light of a complete logic which is clear in its explanation and view, and which is determined in its designs and rules, except at the hand of Hegel who constructed his whole idealistic philosophy on the basis of this kind of dialectic. He considered it a sufficient explanation of society, history, the nation and all aspects of life. After him, Marx adopted this dialectic and cast his materialistic philosophy in a purely dialectical form.

According to the claims of the dialecticians, the new dialectic is a law of thought and reality alike. That is why it is a method of thought as well as a principle on which the existence and development of reality is based.

We are told the following by Lenin:

If there are some contradictions among people's ideas, it is because the reality that our minds reflect involves contradictions. The dialectic of things produces the dialectic of ideas, and not vice versa.[1] (p. 223)

Marx also says:
The movement of thought is nothing but a reflection of the movement of reality, transmitted to, and transformed in the human mind.[2]

Hegelian logic, with the dialectic and contradiction on which it rests, is considered at the exact opposite end of the classical logic or the general human logic. This is because general logic accepts the principle of non-contradiction, and considers it a primary principle on the basis of which every knowledge must be based, and a necessary principle by which everything in the realm of existence abides, and without which no truth can be proved.

Hegelian logic, on the other hand, completely rejects the principle of non-contradiction. Further, it is not satisfied with emphasizing the possibility of contradiction. Rather, it views contradiction, instead of its opposite, as the primary principle for all true knowledge of the world, and the general law that explains the whole universe by means of a group of contradictions.

Every proposition concerning the world is considered as an affirmation; while at the same time, it forms its own negation. Affirmation and negation are synthesized in a new affirmation. Thus, the contradictory method of dialectics or disputation that governs the world involves three stages, called the thesis, the antithesis, and the synthesis – that is, the affirmation, the negation and the negation of the negation. In accordance with the requirements of this method of disputation, everything unites with its contradictory. It is at the same time affirmed and denied, existent and nonexistent.

Hegelian logic claims that, by the disputation it attributes to existence, it has abolished the main points of classical logic. According to Hegelian logic, these points are the following. (p. 224) The first is the principle of non-contradiction, which asserts that a thing cannot be simultaneously qualified by a certain attribute and by its contradictory.

The second is the principle of identity. This is the principle that states that every quiddity is what it is by necessity; that is, a thing cannot be stripped of itself. The third is the principle of rest and frozenness in nature. This principle asserts the negativity and fixedness of nature, and denies that the realm of matter is dynamic.

In the new logic, there is no room for the first principle, since everything pertaining to the reality of this logic is based on contradiction. If contradiction prevails as a general law, it is then also natural to drop the other principle of classical logic, the principle of non-contradiction. Everything loses its identity exactly at the moment of the affirmation, since it is in a continuous becoming.

As long as contradiction is the main foundation, it will not be surprising that truth always means two

contradictory things. Since this kind of contradiction, which lies at the heart of every reality, produces a continuous conflict in all things, and [since] 'conflict' means movement and progression, therefore nature is continuously active and developing, constantly moving forward and becoming. These are the blows that dialectical logic claims to have directed against general human logic and the familiar notion of the world, on which metaphysics rested for thousands of years.

The new method of understanding existence can be summed up in the assumption of a primary proposition that it views as a fundamental. Later, this fundamental converts to its contradictory by virtue of the conflict among the contradictories of the internal content. After that, the two contradictories are synthesized in a unity. This unity, in turn, becomes a fundamental and a new point of departure. Thus, this tri-progression is repeated (p. 225) endlessly and without limit. It moves with existence and extends as far as the phenomena and events of existence extend.

Hegel began with the general notions and categories, applying the dialectic to them, and inferring them in a disputational method based on the contradiction represented in the thesis, antithesis and synthesis. His best known and first triad in this area is that which begins from the simplest and most primary of chose notions: the notion of existence.

Thus, existence is. This is the affirmation or thesis. However, it is not a thing, because it can be everything. The circle, for example, is. The same is true of the square, the white, the black, the plant, and the stone. Existence, therefore, is nothing determined.

Consequently, it is not. This is the antithesis which the thesis produces. It is in this way that contradiction occurs in the notion of existence. This contradiction is resolved in the synthesis of existence and non-existence which produces an existent that does not fully exist, that is, becoming and movement. Hence, the conclusion to be drawn is that real existence is becoming.

We gave this example in order to show how the master of modern disputation moves in inferring the general notions from the more general to the more particular and from the more empty and weaker to the richer and closer to the external reality.

According to him, this kind of dialectic in inferring notions is nothing other than a reflection of the dialectic of actual things in themselves. Thus, if a certain idea causes an idea which is its opposite, that would be because the reality that the former idea represents requires an opposite reality.

A short glance at the thesis, the antithesis and the synthesis in the issue of existence, which is the best-known Hegelian triad, indicates clearly that Hegel did not really understand the principle of non-contradiction when he cancelled it and replaced it by the principle of contradiction. Further, I do not know (p. 226) how Hegel can explain to us contradiction, or negation and affirmation that unite in the notion of existence.

No doubt, the notion of existence is a general notion. That is why it can be everything – it can be a plant

or an inorganic thing, a white thing or a black thing, a circle or a square. But does this mean that these contradictories and opposite things unite in the notion of existence, such that it becomes the meeting point for contradictories and opposites? Of course not.

The union of opposite things in one subject is one thing, while the possibility of the applicability of one notion to these things is something else. Existence is a notion that does not involve anything black or white, plant-like or inorganic. Rather, it can be either this or that. But it is not this and that at the same time.[3]

The basic points are four: the movement of development, the contradictions of development, the leaps of development, and the assertion of general linkage. (p. 227)

1. The Movement of Development

Stalin declares that:
Contrary to metaphysics, the dialectic does not consider nature as a state of rest, frozenness, stagnation, and stability. Rather, it considers it as a state of constant motion, change, and uninterrupted renewal and development. In nature, there is always something generating and developing, and something disintegrating and perishing. That is why we wish [to establish] the dialectical method, so that one would not be satisfied with viewing events from the perspective of their relations to one another and from the perspective of their mutual adaptation to one another, but also from the perspective of their motion, change, development, appearance, and disappearance.[4]

Further, Engels says:
We must not view the world as if it were composed of complete things. Rather, we must view it as if it were composed in our minds. This passage (to the mental composition) indicates a continuous change of becoming and disintegration, where at last the light of progressive growth shines, in spite of all the apparent coincidence and temporary relapses.[5]

Thus, everything is subject to the laws of development and becoming. There is no limit at which this development or becoming ceases. (p. 228) For motion is the unlimited preoccupation of the whole existence.

The dialecticians claim that they alone consider nature in a constant state of motion and change. Further, they reproach metaphysical logic, or the traditional method of thinking for its procedure of studying and comprehending things, as this logic or method supposes nature in a state of absolute rest and frozenness.

Therefore, it does not reflect nature in its moving and progressive reality. Thus, according to the dialecticians, the difference between the dialectical logic, which attributes to nature a constant motion and a continuous progression, and the formal logic is like the difference between two persons each of

whom wishes to explore the innermost structure of a living being in its various roles.

Each of them carries out his experiments on this being; then one of them stops to observe the continuous development and motion of this being and to study this being in light of its whole development; whereas the other is satisfied with the first experiment, thinking that this being is static in its structure and stable in its identity and reality. Nature as a whole is similar to this living being, [whether as] a plant or as an animal, in development and growth. Thus, the mind does not accompany nature except if is resembles nature in its motion and development.

In fact, the law of dialectical development, which modern disputation considers one of its own basic features, is not something new in human thought. Rather, what is new is its dialectical character of which it must be stripped, as we will know later.

In its proper limits, this law is in agreement with the general logic and has no relation to dialectics, nor was it discovered by dialectics. Thus, in order for us to accept this law and to know that metaphysics realized is before [the dialectic], we need only to strip this law of the form of contradiction and the ground of disputation on which the dialectic bases it.

According to the claims of the dialectician, the metaphysician believes that nature is frozen, characterized by rest, and fixed, stable and unchanging in all its aspects. It is as if (p. 229) the poor metaphysician were deprived of any kinds of knowledge and stripped of both consciousness and sensation. Thus, he became unperceptive and unaware of the kinds of changes and transformations in the realm of nature, of which all human beings, including children, are aware.

It is clear to everyone chat the acceptance of the presence of change in the realm of nature is a matter that does not require prior scientific study, and is not the subject of controversy or dispute.

Rather, what is worthy of study is the nature of this change and the extent of its profundity and generality. For change is of two kinds: one of them is pure succession, and the other motion. The history of philosophy relates a sharp struggle, not with regard to change in general, but with regard to its essence and its precise philosophical explanation. The struggle centers on the answer to the following questions.

Is the change that occurs to a body, when that body traverses a certain distance, nothing but numerous poses that quickly follow one another in numerous places, thus forming in the mind the idea of motion? Or, can this change be attributed to a single gradual advance in which there is neither pose nor rest?

Further, does the change that occurs to water, when the water's temperature is doubled and intensified, mean an assembly of successive temperatures that follow one another? Or is it one temperature that becomes more complete, and that alters and becomes of a higher degree? We face these questions with regard to every kind of change that requires a philosophical explanation in one of the two ways offered by these questions.

Greek history relates that some philosophical schools denied motion and adopted the other explanation of change – that which attributes change to the succession of motionless things. One of the proponents of such schools is Zeno,[6] who asserted that the motion of a traveler from the farthest point on earth to the farthest opposite point is nothing but a series of successive rests. (p. 230) Zeno did not see the gradual (motion) and process of completion of existence.

Rather, he believed that every phenomenon is static, and that change occurs by the succession of static things, and not by the development and gradual [motion] of one thing. With this, the motion of a human being over a certain distance becomes an expression of his rest at the first point of the distance, then at the second point and after that at the third point, and so on.

If we see two individuals, one of whom is standing at a certain point, while the other is walking in a specific direction, both individuals, according to Zeno's view, are standing at rest. The first, however, is constantly at rest in a specific point; while the other has as many rests as the points he covers.

At every moment, he is in a specific space, but at no moment does he differ at all from the first individual who stands at a specific point. Both individuals are at rest, even though the rest of the first is continuous, while the rest of the second quickly changes to another rest at another point of the distance. Hence, the difference between the two rests is the difference between a short rest and a long rest.

This is what Zeno as well as some other Greek philosophers attempted [to show]. He demonstrated his point of view by his four well–known proofs that did not meet with progress and success in the field of philosophy. This is because the Aristotelian school, the greatest philosophical school in the Greek age, accepted motion. It rejected and falsified those proofs and demonstrated the presence of motion and development in the neural phenomena and attributes.

This means that a natural phenomenon may not fully exist at one moment. Rather, it exists gradually, and exhausts its possibilities step by step. This results in the occurrence of development and the completion of existence. When the temperature of water is doubled, this does not mean that at every moment water receives a specific degree of temperature that fully exists, then perishes, and then another degree of temperature is freshly produced.

Rather, the essence of this doubling (p. 231) consists in that one temperature had existed in the water yet not fully, in the sense that it did not exhaust in its first moment all its powers and possibilities. Due to this, it began to exhaust its possibilities gradually, and to advance and develop later on.

In philosophical terminology, it is a continuous progressive motion. It is clear that the process of completion or the developmental motion cannot be understood except in this sense. As for the succession of numerous phenomena– of which each one exists after the previous one and, by its own perishing, opens the way for a new phenomenon – it is not growth and completion. Consequently, it is not a motion, but a kind of general change.

Motion, therefore, is the gradual advance of existence and the development of a thing to the level permitted by its possibilities. That is why the philosophical notion of motion is defined as the gradual actualization of the potentiality of a thing.[7]

This definition rests on the idea of motion presented earlier. Motion, as we have already learned, is not the absolute perishing of a thing and the existence of another new thing. Rather, it is the progression of a thing in the order of existence.

Therefore, from the time it begins to the time it ceases, every motion must contain one continuous existence. It is this-existence that moves, in the sense that [it progresses] step by step and continuously becomes more enriched. Every step is one of the stages of this one existence. These stages exist only by virtue of motion.

Thus, a thing that moves or an existence that develops does not possess these stages before its motion; otherwise, there would not be any motion.[8] Rather, at the starting point, that thing or existence is represented to us as potentialities and possibilities. It is by motion that those possibilities are exhausted. At every step of the motion, possibility is substituted by reality and potentiality by actuality.

Thus, before water is placed on the fire, it possesses nothing of the perceptible temperature other than (p. 232) its possibility. Further, this possibility that it possesses is not the possibility of a certain degree of temperature, but includes all the degrees of temperature that, in the last analysis, lead to the vapor state. When water begins to be acted upon and influenced by the heat of fire, its temperature begins to change and develop.

This means that the potentialities and possibilities that water enjoyed changed into a reality. At every stage of the motion, water proceeds from possibility to actuality. For this reason, potentiality and actuality are tied together in all the stages of the motion. At the point at which all possibilities are exhausted, motion ceases. Motion, therefore, is of two kinds at every stage. In one respect, it is actual and real. This is because the step registered by a stage exists in a real and an actual manner.

In another respect, it is a possibility and a potentiality of the other progressive steps that motion is expected to register in its new stages. Thus, if we observe the water in our example at a specific point of motion, we find that it is actually hot at 80 degrees (centigrade), for instance. However, at the same time, it involves the possibility of exceeding this degree and the potentiality of advancing to a higher degree. Hence, the actuality of every step in its specific stage is linked to the potentiality for its perishing.

Let us take a more profound example of motion. This is the living being that develops by a gradual motion. It is (at first) an ovum, then a zygote, then a fetus, then an infant, then an adolescent, and finally an adult. Indeed, at a specific stage of its motion, this being is an actual sperm. However, at the same time, it is something else opposite the sperm and superior to it.

That is, it is potentially an infant. This means that motion in this being is such that both actuality and

potentiality are combined in it. If this living being does not have potentiality and possibility for a new stage, it will not have any motion. Further, if it is nothing in actuality, it will be pure non-existence; and hence, it will not have any motion.

Development, therefore, always consists of something actual and something potential. Thus, motion continues as long as a thing combines both actuality and potentiality, existence and possibility. If possibility is exhausted, and no capacity for a new stage remains in the tiring, the life of motion ends. (p. 233)

This is the meaning of the gradual actualization of the potentiality of a thing, or the entanglement or union of potentiality and actuality in motion. This is also the precise philosophical sense that metaphysics gives to motion.

Dialectical materialism has adopted this sense without understanding it and knowing it as it is. Thus, it claimed that motion is not completed except through the continuous contradiction at the heart of things, as we will soon learn.

After this, Islamic philosophy played its role at the hands of the great Muslim philosopher, Saar ad-Din ash-Shirazi.[9] He posited the theory of general motion, and demonstrated philosophically that motion, in the precise meaning that has been presented above, does not only touch the phenomena of nature and its accidental surface, but the motion of such phenomena is just an aspect of the development that discloses a deeper aspect: that is, the development at the heart of nature and the substantial motion of nature.

This is. so, because since the outermost motion of the phenomena means renewal and perishing, its direct cause must be a renewable thing whose essence is also unfixed; for the cause of what is fixed is fixed, and the cause of what is alterable and renewable is alterable and renewable. Thus, the direct cause of motion cannot be a fixed thing; otherwise, the parts of motion would not perish, but would become stagnation and rest.[10] (p. 234)

The philosopher ash-Shirazi did not only demonstrate substantial motion, but also showed clearly that the principle of motion in nature is one of the necessary philosophical principles (p. 235) of metaphysics. In light of this principle, he explained the connection of the new with the old,[11] as well as a number of other philosophical problems, such as the problem of time,[12] the issue of the separability of matter, and the relation of the soul to the body.[13]

After all this, can one accuse theology and metaphysics of asserting the frozenness and rest of nature? Actually, there is no reason for this accusation other than the fact that dialectical materialism does not understand motion in the proper philosophical sense. What then is the difference between motion and its general law in our philosophy and the theory of dialectical motion in dialectical materialism? The difference between the two kinds of motion is summed up in two basic points.

The first point is that motion in the dialectical sense is based on (p. 236) the contradiction and strife among contradictories. Such contradiction and strife are the internal power that causes motion and produces development. In our philosophical view of motion, the reverse of this is true.

According to our view, motion is considered as a progression from one step to an opposite step, without the union of those opposite steps in one of the stages of motion. For the purpose of clarifying this point, we must distinguish between potentiality and actuality and analyze the Marxist fallacy which rests on the consideration of potentiality and actuality as contradictory units.

Motion is composed of potentiality and actuality. Potentiality and actuality are tied up together in the various stages of motion. It is impossible for the nature of motion to exist without either of these two elements. Thus, existence in every stage of its progression toward completion involves a specific actual rank and a higher rank than that in' potentiality. At the moment at which it adapts itself to the [specific actual] rank, it progresses in an ascending fashion and supersedes its present rank.

Marxism has imagined chat this is a kind of contradiction, that the progressive existence involves the thing and its contradictory, and that the contradiction between the two contradictories is what produces the motion. We quote from Engels:

The situation would be completely different if we see the existents while in the state of their motion, change, and mutual influences on one another; for at the beginning of such a site, we find ourselves immersed in contradictions.

Motion contradicts the fact that the simplest mechanical change in place cannot, in the last analysis, occur except by means of the presence of a certain body in a certain place at a certain moment, and in (p. 287) another place at that same moment. In other words, it's being and nonbeing are simultaneously in one place. The continuous succession of this contradiction and the temporary reconciliation of this contradiction with this succession is what is called motion.[14]

Reflect on how nonsensical the idea of motion is in dialectical materialism! Engels explains this idea on the basis of contradiction, not knowing that if two ranks of motion actually existed in a specific stage of the motion, development would not be possible; and consequently, motion would be frozen. The reason for this is that motion is a transposition of the existent from one rank to another rank and from one limit to another limit.

Thus, if all limits and points were actually united, there would not be any motion. Therefore, it is necessary not to explain motion except in light of the principle of non-contradiction; otherwise, if contradiction were permissible, then it would be appropriate for us to ask whether or not motion involves a change in the ranks of the progressive thing, and a substitution of the limits and quality of that thing. If motion does not involve any change or renewal, then it is not motion.

Rather, it is frozenness and fixedness. If Marxism admits the renewal and change of motion, [then the

question is] this: for what purpose is this renewal if all contradictions are actually present and have no opposition among themselves? The simplest analysis of motion shows us that motion is one of the phenomena that prevent and make impossible the union of contradictories and opposites, something that imposes on the progressive existent a continuous change in its rank and limit. The alleged contradiction or dialectic in motion is only due to the confusion between potentiality and actuality.

Hence, at no stage does motion involve two ranks or two actual contradictories. Rather, it involves a specific rank in actuality and another rank in potentiality. For this reason, (p. 288) motion is a gradual actualization of potentiality. However, incomplete philosophical awareness was the cause of the falsification of the idea of motion.

This makes it clear that the law of contradicting non-contradiction (*naqd an-naqd*) and the explanation of motion in terms of this law, as well as all the confusion and clamor surrounding this law, and the displeasure with, and ridicule of the metaphysical notions that adopt the principle of non-contradiction are attributed to the philosophical idea of motion that we have already presented and that Marxism misunderstood.

Thus, Marxism considered the entanglement of actuality with potentiality or their union in all the stages of motion as a union of actual opposite things, a continuous contradiction and a strife among the contradictories. For this reason, Marxism rejected the principle of non-contradiction and put down the whole general logic.

This Marxist attempt is not the first of its kind. Some metaphysicians in the history of ancient philosophy had also attempted something similar, but with one difference between the two: Marxism wished to justify contradiction by this attempt; whereas those ancient metaphysicians had attempted to demonstrate the negation of the possibility of motion because motion involves contradiction.

Al-Fakhr ad-Din ar-Razi[15] had also made a similar attempt in which he mentioned that motion is a gradual progression – that is, a gradual existence of a thing. He claimed that the gradual progression of existence is unlikely, since it leads to a kind of contradiction. Scholars of philosophy have shown that [this idea of motion] was the product of misunderstanding the meaning of gradual progression and gradual existence.

Since we now know with clarity that motion is not a strife among actual things that are always in contradiction, but an entanglement of potentiality with actuality, and the gradual departure of a thing from one of these two states to the other, we can know that it is impossible for motion to be self-sufficient or without an [external] cause, that the progressive existence does not depart from (p. 239) actuality except due to an external cause, and that strife among contradictories is not the internal cause of that departure, since motion does not involve a union of contradictories or opposites from whose strife it can result.

As long as at the beginning of the motion, the progressive existence is empty of ranks or kinds, which it

acquires throughout the stages of the motion, and as long as it does not internally involve anything except the possibility of those ranks and the readiness for them, there must be a cause for bringing that existence from potentiality to actuality, in order that its possibility which is fixed in its innermost being be converted into a reality.

We learn from this that the general law of motion in nature proves by itself the necessity of the existence of a principle external to the material limits of nature. The reason is that motion, according to this law, is the manner in which nature exists. Thus, the existence of nature is another form of the motion and gradual progression of nature, as well as its continuous departure from potentiality to actuality. The theory of the self-sufficiency of motion due to its internal contradictions whose strife among each other produces motion, according to the claim of the Marxists, has already collapsed, since there is no contradiction and no strife.

Therefore, there must be causation, and causation must be by something external to the limits of nature. For everything existing in nature is such that its existence is motion and gradual progression, since there is no fixedness in the realm of nature according to the law of general motion. Hence, in searching for the [primary] cause, we cannot stop at something natural.

The second point is that motion, according to the Marxist view, does not stop at the limits of the objective reality of nature. Rather, it is also common to human truths and ideas. As the external reality of matter develops and grows, so also do the truths and mental perceptions submit to the same laws of development and growth that apply to the realm of nature. On the basis of this, there are no absolute truths according to the Marxist view of ideas. (p. 240)

We are told by Lenin: 'Therefore, the dialectic, in the view of Marx, is the science of the general laws of motion, whether in the external world or in the human mind.'[16]

According to our opinion, however, the law of general motion is the opposite of this. It is a natural law common to the realm of matter and does not extend to the realm of thought and knowledge. Truth and knowledge do not involve and cannot involve development in the precise philosophical sense, as we pointed out with clarity in the first investigation (the theory of knowledge).

Our present purpose of studying the alleged dialectical motion of knowledge and truth is to present the main attempts that Marxism adopted for demonstrating the dialectic and the movement of thought. These attempts are summed up as three. The first attempt is that thought and knowledge are reflections of the objective reality. In order for them to correspond to this reality, they must reflect its laws, its development and its movement. Nature develops and changes continuously in accordance with the law of motion.

Truth could not portray nature in the human mind if truth were frozen and at rest. Rather, truth exists in our thoughts, only if these thoughts are such that they grow and develop dialectically, so that our thoughts of things match the things themselves.

In this respect, we should pay attention to the following texts: (p. 241)
Reality grows, and the knowledge chat results from this reality reflects it, grows as it grows, and becomes an effective element of its growth. Thought does not produce its subject. Rather, it reflects and portrays objective reality by disclosing the laws of the growth of this reality.[17]

The difference between formal logic and dialectical logic is confined to the fact that both of them face in different ways the basic issue of logic, i.e. the issue of truth. From the point of view of dialectical logic, truth is not something given once and for all. It is not something complete, determined, frozen, and at rest. Rather, it is the opposite of this. Truth is a process of the growth of a human being's knowledge of the objective world.[18]

The Marxist dialectical logic treats the thing that it studies from a historical point of view inasmuch as that thing is a process of growth and development. It agrees with the general history of knowledge and the history of science.[19]

There is no doubt that thought and knowledge portray objective reality in some form. But this does not mean that the motion of objective reality is reflected in them and, therefore, that they grow and move in accordance with its [growth and motion]. The reason is this.

The realm of nature – that is, the realm of change, renewal and motion necessarily involves fixed general laws. No logic can deny this, except if it denies itself. For a logic cannot be a logic, unless it establishes (p. 242) its method of thinking and its understanding of the world on fixed, specific laws. Even the dialectic itself asserts that a number of laws are in control of nature and always govern it. One of these laws is that of motion.

Therefore, the realm of nature –whether subject to the general human law or to the law of dialectics or disputation – involves fixed laws chat reflect fixed truths in the realm of thought and the area of human knowledge. With regard to this objection, the dialecticians have to choose between the following two considerations.

They either consider the law of motion as fixed and constant, thus there would be constant truth; or that the same law is re-evaluated. This would mean that motion is not constant, that it may be transformed into rest, and that truths become fixed after they had been moveable. In either case, the dialectic would be forced to admit the presence of a third truth.

Thought, knowledge and truth do not reflect the actual properties of nature. We have already pointed out in 'the theory of knowledge' that the human mind comprehends the notions and natures of objective things. The notions of those things that are reflected in the mind are different from the external realities in existence and properties.

Thus, the scientist is able to form a precise scientific idea about the microbe, its composition, its specific activity and its interaction with the human body. However, no matter how precise and detailed an idea

may be, it does not involve the properties of the external microbe and cannot play the same role played by its own objective reality.

The physicist may acquire a precise scientific notion of the radium atom and may determine its atomic weight, the number of electrons it carries, its negative and positive charges, the quantity of radiation it emits, and the exact scientific proportion of this radiation to the radiation emitted by the uranium atom, as well as other information and details.

However, (p. 243) regardless of the depth of this notion or its profound disclosure of the mysteries of the radium element, it will not acquire the properties of objective reality – namely, the properties of the radium – nor will it emit the radiation emitted by the atoms of this element. Consequently, our notion of the atom will not develop into radiation, as do some atoms in the external world.

Thus, it becomes clear that the laws and properties of objective reality are not present in the idea itself. Motion is one of those laws and properties. Thus, even though it is a general property of matter and one of its fixed laws, the truth in our minds or the idea that reflects nature does not involve this property. A true idea need not reflect objective reality in its properties and various kinds of activities; otherwise, none of our ideas would be true.

In spite of the fact that metaphysics considers nature as a realm of continuous motion and development, yet it differs from the dialectic in rejecting the application of the law of motion to mental notions, for such notions do not involve all the properties of objective reality.

This does not mean that if the metaphysicians form a notion about nature in one of its stages, therefore, they freeze their ideas, stop their research, and consider this notion sufficient for disclosing the innermost secrets of nature in all its stages. We do not know any reasonable person who would be satisfied, for example, with the scientific notion that he forms about the ovum, thus discontinuing the progression of the living being in its second stage, and contenting himself with the scientific notion that he had formed about it in that specific stage.

Thus, we .believe that nature develops, and we find it necessary to study it in every stage of its growth and motion, and to form a notion about it. This is not something restricted to the dialectic. What metaphysics rejects is (p. 244) the existence of a natural dynamic motion in every mental notion.

Therefore, metaphysics calls for a distinction between the ovum and our scientific notion of the ovum. The ovum develops and grows naturally. It becomes a zygote and then a fetus. But our notion of it is fixed. It cannot under any circumstance become a sperm. Rather, for knowing what a sperm is we must form another notion in light of observing the ovum in a new stage.

Thought about the development of the ovum is like a movie film that takes a number of successive pictures. The first picture in the film is not the one that develops and moves. Rather, it is the succession among the pictures that constitutes the movie film.

On the basis of this, human knowledge would not reflect reality, except inasmuch as the movie film reflects the kinds of motion and activity that it includes. Thus, knowledge does not develop or grow in a dialectical manner, in accordance with the reflected reality. Rather, it is necessary to form a fixed knowledge of every stage of reality.

Let us take as another example the element of uranium that exhibits the alpha wave, the beta wave and the gamma wave, and gradually changes to another element lighter than it in its atomic weight – this is the radium element that, in turn, gradually changes to an element lighter than it, and passes through [various] stages, until it becomes lead.

This is an objective reality explained by science. In light of it, we form our specific notion about it. What then does Marxism mean by the dialectical development of the mental notion or truth in accordance with the development of reality? If it means by this that our very scientific notion about uranium develops dialectically and naturally in accordance with the development of the uranium – thus emitting the specific waves of uranium and transforming, in the last analysis, into lead – this will be closer to a charming, humorous chat than to a reasonable philosophical discourse.

If, on the other hand, Marxism intends [by this] that human beings must not view uranium as a frozen, motionless element, (p. 245) but as something that continues its progression, and about every stage of which human beings form a notion, this will close the discussion; [for] it does not mean a dialectical motion in truths and notions. Every notion we form about a specific stage of the development of uranium is fixed and does not develop dialectically to another notion. Rather, a new notion is added to it.

At the end of this process, we possess a number of fixed notions and truths, every one of which portrays a specific level of the objective reality. Where then is the disputation or dialectic of thought? Also, where is the notion that develops naturally in accordance with the external development? This is all that relates to the first Marxist attempt and its refutation.

The second attempt made by Marxism to demonstrate the dialectic and development of thought is that thought or knowledge is one of the natural phenomena and a superior product of matter. Consequently, it is part of nature. Therefore, it is governed by the same laws that administer nature. It alters and grows dialectically, as do all the phenomena of nature.

We must warn that this demonstration is different from the abovementioned demonstration. In the previous demonstration, Marxism attempted to show that motion is present in thought due to the thought's character as a reflection of the moving reality. The reflection is not complete if the moving reality is not reflected in thought in its motion and growth. In the present attempt, however, Marxism endeavors to show that the dialectical motion of thought is due to the thought's character as a part of nature.

Thus, the laws of the dialectic apply to both matter and knowledge, and extend to reality and thought alike, since each of them is an aspect of nature. Thought or truth develops and grows, not only because

it reflects a reality that develops and grows, (p. 246) but also because it itself is a part of the realm that develops in accordance with the laws of the dialectic. As the dialectic dictates the existence of dynamic motion, which is grounded on the basis of internal contradiction in the innermost being of every objective phenomenon of nature, it also dictates the existence of dynamic motion in all the phenomena of thought and knowledge.

Let us go over what is related to this subject in the following texts:
Being is the motion of matter which is subject to laws. Since our knowledge is nothing but a superior product of nature, it cannot but reflect these laws.[20]

If we inquire about the nature of thought, the nature of awareness, and their source, we will find that human beings are themselves the product of nature. They grow in a certain community and with the growth of that community. At this point, it becomes evident that the products of the human mind which are also, in the last analysis, products of nature, are not in contradiction, but in agreement with the rest of the interconnected nature.[21]

The basic point on which this demonstration rests is the adoption of the purely materialistic explanation of knowledge that imposes on knowledge a sharing with all the laws and decrees of nature, including the law of motion. We will analyze this basic point in an independent chapter of this investigation.

At the present, however, we are attempting to inquire from the Marxists whether the materialistic explanation of thought or knowledge is reserved for the thoughts of the dialecticians in particular. Or does it also pervade the thoughts of others who (p. 247) do not accept the dialectic? If it pervades all thoughts – as the materialistic philosophy necessitates – then all thoughts must be subject to the laws of the general development of matter.

But because of this, it becomes curiously contradictory for Marxism to accuse other thoughts of frozenness and stationariness, and to consider its thought as the only one that develops and grows due to the fact that it is a part of the progressive nature, even though all human thoughts, according to the materialistic notion, are nothing but a product of nature. All that there is to this matter is that the proponents of the general or formal logic, as they claim, do not accept the dialectical development of thought, as the Marxists do.

However, when was the acceptance of a natural law a condition for the existence of that law? Do not the body of Pasteur,[22] the discoverer of the microbe, and the body of Ibn Send, who did not know anything about the microbe, both share reaction to germs, in accordance with the specific natural laws governing germs? The same holds true for every natural law. Thus, if the dialectic is a natural law common to both thought and matter, then it must apply to [all] human thoughts alike. If there is anything to its discovery, it is only the speed of the developmental motion.

The third attempt is the exploitation of scientific development and wholeness in the various fields, and the consideration of this as an empirical evidence for the dialectic and development of thought. The

history of sciences, according to the Marxist claim, is itself the history of the dialectical movement of the human thought that becomes more complete with the passage of time.

Here is a citation from Kedrov:
The absolute truth which results from relative truths is a historical movement of development. It is the movement of knowledge. It is precisely for this reason that the Marxist dialectical logic treats the thing that it studies from a historical point of view, i.e. from the point of view of that thing's being a process of growth and development.

This logic (p. 248) is in agreement with the general history of knowledge and the history of science. By using as examples the natural sciences, economics, politics, and history, Lenin shows that the dialectic derives its conclusions from the history of thought, while at the same time, he asserts that the history of thought in logic must agree, in part and in whole, with the laws of thought.[23]

No two persons disagree on the fact that the history of human knowledge and science is full of advances and completion of knowledge in the various fields and in the different types of life and experience.' Casting one glance on science in its present and past makes us fully believe the extent of the fast development and the remarkable completion that science has attained in its latest races. But this scientific development is not a kind of motion in the philosophical sense intended by Marxism.

Indeed, it is nothing more than a decrease in the quantity of errors and an increase in the quantity of truths. Science develops, not in the sense that scientific truth grows and becomes complete, but in the sense that its truths multiply and are increased in number, and its errors are reduced and decreased in number, in accordance with the enlargement of the experimental scope, the deeper plunge into experimentation, and the precision of the means of experimentation.

In order to clarify this, it is necessary to give an idea about the procession of the scientific development and the method of gradual progression and completion in the scientific theories and truths, so that we can see clearly the difference between the alleged dialectic of thought, on the one hand, and the historical development of the human sciences, on the other hand.

Scientific truths begin with a theoretical procedure, such as with a research hypothesis that occurs to the natural scientist due to a number of previous pieces of information and scientific or simple observations. A hypothesis is the first stage that the scientific theory crosses in its developmental procession.

After that, the scientist begins a scientific investigation and an experimental study (p. 249) of that hypothesis. He performs all kinds of tests by means of precise scientific observations and various experiments in a field related to the hypothesis. If the results of the observations or experiments agree with the hypothesis and are in harmony with its nature and with the nature of its phenomena, the hypothesis acquires a new character: that is, the character of a scientific law.

Subsequently, the theory enters the second stage of its scientific procession. But this development that

transfers the theory from the level of a hypothesis to that of a law does not mean that the scientific truth has grown and altered. Rather, it means that a specific idea was the subject of doubt, but has attained the level of scientific trust and certitude.

Thus, Pasteur's theory concerning microbic living beings, which he posited on an intuitive basis, was then confirmed by careful observations through modern scientific means. Also, the theory of general gravity, the hypothesis for which was evoked in Newton's mind by a simple scene (the scene of the fall of an apple on the ground), made Newton inquire as to why it is that the force that made the apple fall on the ground is not itself the force that preserves the moon's balance and guides its motion? Later, experiments and scientific observations confirmed the applicability of gravity to the celestial bodies, and considered it a general law based on a specific relation.

The same is true of the theory stating that the difference in the speed of the fall of bodies is attributed to the resistance of air, and not to the difference in their mass, which was introduced as an [important] scientific event whose truth was later proved by science through experiments on various bodies in a place void of air – thus demonstrating that all bodies share a certain degree of speed – I say chat such a theory and thousands of other theories, which have all passed through the above–mentioned stage of development by crossing the level of a hypothesis to the level of a law.

They do not express by this crossing and development of a growth in the same truth, but a difference in the level of its scientific acceptance. The idea is the same idea, but it has passed scientific examination. (p. 250) Due to this, is became clear as a truth, after is had been the subject of doubt.

When this theory attains its proper position among scientific laws, it plays its role of application, and acquires the property of scientific reference for explaining the phenomena of nature that appear in observation, experimentation or disclosure of new truths and secrets. The more such a theory can discover unknown truths, whose soundness is later confirmed by experiments, the more established and the clearer does it become in the scientific mentality.

For this reason, the scientists' discovery of the planet Neptune in light of the law of gravity and its mathematical formula was considered a great victory for the theory of general gravity. The existence of this planet was then confirmed by scientific observations. This, too, is nothing but a kind of strong scientific confidence in the truth and soundness of the theory.

If the theory is constantly accompanied by success in the scientific field, it is then confirmed for good. If, on the other hand, it begins to shift from corresponding to the reality that is scientifically scrutinized, after carefully examining the systems and tools, and after making penetrating observations and tests, the theory begins at that point the stage of adjustment and renewal.

In this stage, new observations and experiments may be required to complete the previous scientific theory by means of new notions that are added to the previous theory, so that a unified explanation of the whole experimental reality will be attained. Pieces of scientific evidence may reveal the falsehood of

the previous theory. Thus, in light of experiments and observations, this theory collapses and is substituted by another.

In none of this can we understand scientific development in a dialectical fashion or imagine the truth as it is supposed by the dialectic – that is, that it grows and alters in accordance with the contradictions that it involves internally; thus, taking on in every stage a new foot, while in all those forms it is a complete scientific truth.

This is quite different from the scientific reality (p. 251) of human thought. Rather, what happens in the area of scientific adjustment is the attainment of new truths that are added to the fixed scientific truth, or the discovery of the falsehood of the previous truth and the truth of another idea for explaining reality.

What occurred to the atomic theory (the theory of atomism) falls in the first category: the attainment of new truths that are added to the fixed scientific truth. This theory was first a hypothesis, and then, in accordance with experiments, it became a scientific law. Later, in light of experiments, physics was able to reach [the conclusion] that the atom is not the primordial unit of matter, but that it itself also consists of parts.

This is how the atomic theory was completed by a new scientific notion of the nucleus and the charges of which the atom is composed. The truth did not grow, but the scientific truths were increased in number. However, the quantitative increase is other than the dialectical growth and the philosophical movement of truth.

What occurred to the theory of general gravity (the mechanical explanation of the world in Newton's theories) falls in the second category (the discovery of the falsehood of a previous theory and the truth of another idea). The disagreement of this explanation with a number of electric and magnetic phenomena has been noticed. The same is true of the inappropriateness of this explanation for explaining the manner in which light forms and propagates as well as similar points that were taken by later physicists to constitute an evidence of the falsehood of the Newtonian notion of the world.

On the basis of this, Einstein put forth his theory of relativity that he cast in a mathematical explanation of the world that differs completely from that of Newton. Can we then say that Newton's theory for explaining the world and that of Einstein are both true, and that the truth has developed and grown such that it took the form of the relativity theory after it had been in the form of (the theory of) general gravity?

Further, is time, space, and mass,[24] the absolute fixed triad in Newton's explanation, the scientific truth that (p. 252) grew and altered in accordance with the law of dialectical movement, and was then transformed into the relativity of time, space and mass?[25] Or has the force of gravity in Newton's theory developed into a curvature in space [time]; thus, the mechanical force by motion is a property of the geometry of the world,[26] by means of which the motion of earth around the sun and other motions are explained, as is the bending of nuclear radiation?

The only reasonable [interpretation] is that careful or numerous experiments have led to the manifestation of error [of incompleteness] in the previous theory, the absence of truth (or generality] in it, and the evidence of the presence of truth [or generality] in another explanation.27

At last, our assertion becomes clear; namely, that scientific development does not mean that the truth grows and comes into being gradually. Rather, it means the completion of knowledge inasmuch as knowledge is a whole; that is, inasmuch as it is an assembly of theories and laws. Further, its completion means a quantitative increase of its truths and a quantitative decrease of its errors.

Finally, we wish to know what Marxism seeks in the development of the truth. Indeed, Marxism seeks two things in the assertion of the development of the truth and the application of the dialectic to the truth.

First, it seeks a negation of absolute truth. If the truth continuously moves and grows, then there is no fixed and absolute truth. Consequently, the metaphysical fixed truths, for which Marxism condemns theology, will be destroyed. Second, it seeks to deny absolute falsity in the march of scientific development.

Scientific development, (p. 253) in the dialectical sense, does not mean that the previous theory is absolutely false, but that it is a relative truth. This means that it is a truth at a specific stage of development and growth. By means of this, Marxism placed the security of truth in the various stages of scientific completion.

These two aims collapse in light of the sound and reasonable explanation of scientific development that we have presented above. In accordance with this explanation, the scientific development is not a growth of a specific truth, but new discoveries of truths not known before, as well as corrections of previous errors. Every corrigible error is an absolute error, and every discoverable truth is an absolute truth.

Add to this that Marxism fell into a basic confusion between truth, in the sense of thought, and truth, in the sense of independent objective reality. Metaphysics asserts the presence of absolute truth in the second sense. It accepts a fixed objective reality beyond the limits of nature. This is not incompatible with the negation of truth in the first sense and the continuous development of truth.

Suppose that truth in the human mind is in a constant and a continuous development and movement. What harm would this cause the metaphysical reality admitted by theology, as long as we accept the possibility of an objective reality independent of consciousness and knowledge? Marxism can fulfill its wish if we pursue idealism and say that reality is the truth that exists in our minds only. Thus, if the truth in our minds develops and changes, then there will be no room for belief in an absolute reality. If, on the other hand, we distinguish between thought and reality, and accept the possibility of the existence of a reality independent of consciousness and thought, then there will be no harm to the existence of an absolute reality external to the limits of knowledge, even though there may not be any absolute truth in our minds. (p. 254)

2. The Contradictions of Development

The following passage is taken from Stalin:
Contrary to metaphysics, the starting point of the dialectic is the view which rests on the fact that all natural events and things involve contradictions, since all of them involve a negative aspect as well as a positive aspect in the past and in the present.

Further, they all have elements that disintegrate or develop. Thus, the strife of these opposites lies in the internal content responsible for transferring the quantitative changes to qualitative changes.[28]

Again, Mao Tse-Tung says:
The law of contradiction in things, i.e. the law of the union of opposites, is the basic and most important law in dialectical materialism.

Lenin tells us: 'The dialectic, in the precise sense, is a study of the contradiction in the innermost essence of things.'

Lenin often called this law 'the essence of the dialectic', as he called it 'the heart of the dialectic'.[29] (p. 255)

This is the basic law that the dialectic alleges to be capable of explaining nature and the world, as well as justifying linear movement and the developments and leaps that this-movement involves.

When Lenin discarded the notion of the first principle from his philosophy, and considered as totally improbable the assumption of a cause external to, and beyond [to nature], he found himself required to provide a justification and an explanation of the continuous march and the constant change, in the realm of matter, in order to show how matter develops and cakes on different forms; that is, in order to determine the source of motion and the primary cause of the phenomena of existence.

He assumed that this source is in the internal content of matter; hence, matter contains a continuous replenishment of motion. But how does matter contain this replenishment? This is the main question regarding this issue. Dialectical materialism answers this question by saying that matter is a union of opposites and an assembly of contradictories. If all opposites and contradictories melt in a specific unity, it will be natural then that they struggle among each other for the acquisition of knowledge. Development and change result from this struggle.

Consequently, nature attains the stages of its completion by way of this method. On the basis of this, Marxism abandoned the principle of non-contradiction. It considered it a characteristic of metaphysical thought and one of the fundamentals of formal logic chat succumb to the sharp pickax of the dialectic.

This is confirmed by Kedrov in the following statement:
By the expression 'formal logic' we understand the logic that rests on nothing other than the four laws of

thought: the law of identity, the law of contradiction, the law of conversion, and the law of demonstration. This logic stops at this point. But we consider the dialectical logic, on the other hand, as the science of thought which rests on the Marxist method which is characterized by the following main points: admission of (1) the general linkage, (p. 256) (2) the movement of development, (8) the leaps of development, and (4) the contradiction of development.30

Thus, we see that the dialectic discarded from its field most of the intuitive human thoughts. It rejected the principle of non-contradiction; instead, it assumed contradiction as a general law of nature and existence. In this rejection and assumption, the dialectic unconsciously applied the principle of non-contradiction.

When the dialectician admits the dialectical contradictions and the dialectical explanation of nature, he finds himself obliged to reject the principle of non-contradiction and its metaphysical explanation. Clearly, this is only due to the fact that human nature cannot reconcile negation and affirmation.

Rather, it essentially feels an absolute opposition between the two. If this is not so, then why did Marxism reject the principle of non-contradiction and assert its falsehood? Is it not because it accepted contradiction and could not accept its negation, as long as it had already accepted its affirmation?

Thus, we know that the principle of non-contradiction is the general basic principle of which human thought was never free, even at the point of enthusiasm for disputation and dialectics.

Dialectical contradiction also resulted in the elimination of the principle of identity (a is a) from the dictionary of disputation. A thing was permitted to be other than itself. Indeed, the general dialectical contradiction makes this necessary, for everything involves its contradictory and expresses its own negation at the time of its affirmation.

Thus 'a is a' is not so absolutely. Rather, every being is the contradictory and the negation of itself, as it is an affirmation of it. This is so, because its being is essentially contradictory and involves negation and affirmation that are always in conflict and that, by their conflict, erupt (p. 257) in motion.

The Marxists have not attempted to prove the contradiction of things- that is, the law of dialectics and its disputational basis - except by a group of examples and phenomena, by means of which they tried to show the contradiction and disputation of nature.

Thus, [to them], contradiction is just one of the laws of dialectical logic, since nature itself is contradictory and dialectical. This is made evident by the kinds of contradiction given by the senses or revealed by science, which destroy the principle of non-contradiction and make it inconsistent with the reality and laws of nature that govern the various fields and areas of nature.

We have alluded earlier to the fact that Marxism did not find a way to the dynamism of nature and to making the forces that are active by motion as the internal content of the same progressive matter,

except by starting from contradiction and accepting the union of contradictories in a progressive unity, in accordance with the struggle and strife of these contradictories.

The issue, according to Marxism, is only two sided. First, we either form our idea about the world on the principle that asserts non-contradiction. Thus, there would neither be negation and affirmation at the heart of things, nor would such things involve the strife of contradictories.

Consequently, we must search for the source of motion and development in a cause superior to nature and to its developments. Or else, second, we establish our logic on the belief that contradiction penetrates to the heart of things, and that in every being, opposites or negation and affirmation unite.31 (p. 258) With this, we find the secret of development in the internal contradiction.

Since, according to the claims of Marxism, nature provides in every opportunity and in every field testimony and evidence for the confirmation of contradiction and the union of contradictories and opposites, one must, therefore, adopt the second point of view.

In fact, the principle of non-contradiction is the most general law and the most common to the various fields of application. No phenomenon of existence or being is an exception to it at all. Any dialectical attempt seeking to reject it or to show nature as contradictory is a primitive attempt that rests on the misunderstanding of the principle of non-contradiction or on some misguidance.

Therefore, let us at the outset explain the principle of non-contradiction in its necessary sense, which general logic considers as a main principle of human thought. After that, we will take up the phenomena of the alleged contradiction in nature and existence. It is on these phenomena that Marxism relies for establishing its dialectical logic, and for destroying the principle of non-contradiction and the principle of identity.

We will show that those phenomena are harmonious with these two principles, and that chose phenomena are empty32 of dialectical contradictions. With this, the dialectic loses its support in nature and its material evidence. Consequently, we determine the extent of the dialectic's failure to explain the world and to justify its existence. (p. 259)

A. The Nature of the Principle of Non-Contradiction

The principle of non-contradiction states that contradiction is impossible. Thus, negation and affirmation cannot agree under any circumstance. This is clear; but what is the contradiction that this principle rejects and that the mind cannot accept? Is it any negation and affirmation? The answer is no, for not every negation contradicts every affirmation, and not every affirmation is incompatible with every negation. Rather, an affirmation is contradictory to its own negation, and not to the negation of another affirmation.

Thus, the existence of a thing is basically contradictory to the non-existence of that thing, and not to the

non-existence of another thing. What is meant by their incompatibility is that it is impossible for both of them to unite or to come together. For example, a square has four sides. This is a fixed geometrical truth. A triangle, on the other hand, does not have four sides. This is also a fixed sound negation.

There is no contradiction at all between this negation and that affirmation, for each of them deals with a specific subject that is different from the subject with which the other deals. The four sides are fixed in a square and are negated in a triangle. Hence, we have not negated what we have affirmed, nor affirmed what we have negated. There would be contradiction only if we affirm and also negate that a square has four sides; or if we affirm and at the same time negate that a triangle has four sides.

By virtue of this consideration, the metaphysical logic dictates that contradiction exists only between the negation and the affirmation that agree in circumstances. Thus, if the circumstances of negation differ from the circumstances of affirmation, negation and affirmation will not be contradictory. Let us take a number of examples of negation and affirmation that differ in their circumstances.

'Four is even.' 'Three is not even.' Negation and affirmation in these two propositions are not contradictory due to the fact that each of them is different from the other in the subject with which it deals. Affirmation is related to 'four', and negation is related to 'three'. (p. 260)

'In infancy, a human being is quick to believe.' 'At the stage of youth and maturity, a human being is not quick to believe.' Negation and affirmation in these two propositions are related to 'human beings'. However, each of them has its own time that differs from the time of the other. Therefore, there is no contradiction here between the negation and the affirmation.

'An infant does not know in actuality.' 'An infant knows in potentiality; that is, it is possible that he knows.' Here, too, we are confronted with a negation and an affirmation that are not contradictory. This is because in the first proposition, we do not negate the same affirmation involved in the second proposition. The first proposition negates the attribute of knowledge in an infant. The second proposition does not affirm this attribute.

Instead, it affirms its possibility – that is, the capacity of the infant and his proper readiness for acquiring it. Therefore, it is the infant's potency for knowledge that the second proposition affirms, and not the infant's actual knowledge.

Thus, we know that contradiction between negation and affirmation is attained only if both share the subject with which each deals, and agree with regard to spatial and temporal conditions and circumstances, and the like. But if negation and affirmation do not agree in all these conditions and circumstances, then there will be no contradiction between them. There is no person or logic that can assert the impossibility of the truth of both in this case.

B. The Manner in which Marxism Understood Contradiction

After having studied the notion of contradiction and the content of the main principle of general logic – the principle of non-contradiction – we must shed some light on the Marxist understanding of this principle and on the justification to which Marxism resorted in its rejection of this principle. It is not difficult for one to realize that Marxism was not able to or did not care to understand this principle in the proper sense.

Thus, it rejected it for the sake of attaining its own materialism. (p. 261) It gathered a number of examples chat it claimed are inconsistent with this principle. Consequently, it posited contradiction and strife between contradictories and opposites as a principle of its new logic. It filled the world with noise about this principle and boasted to the general human logic about constructing this principle and discovering contradiction and strife between contradictories and opposites.

In order for us to see the extent of error in which Marxism fell and which led it to reject the principle of non-contradiction and the other principles that are based on it, such as the metaphysical logic, we must distinguish with clarity between two things: the first is strife between external opposites and contradictories; the second is strife between opposites and contradictories that come together in a specific unity.

It is the second that contradicts the principle of non-contradiction. As for the first, it has no relation to contradiction at all. This is because it is not concerned with the union of two contradictories or two opposites. Rather, it is referred to the independent existence of each of them. The presence of strife between them leads to a specific result.

The shape of the shore, for example, is the result of a mutual action between the waves and currents of water, on the one hand, that collide with the land (thus making the bank recede) and, on the other hand, the steadfastness of the land in the face of the currents and its pushing back those waves to some extent.

Further, the shape of a clay bottle is the result of a process that takes place between a quantity of clay and the hand of a potter.

If dialectical materialism intends this kind of strife between external opposites, this would not be at all incompatible with the principle of non-contradiction, and would not call for accepting contradiction which human thought has rejected from the beginning of its existence. The reason is that opposites never come together in a unity. Rather, each of them exists independently in its own sphere.

They share in a mutual action by means of which they achieve a certain result. Moreover, this principle does not justify self-sufficiency and the dispensing with an external cause. The shape of the shore or the shape of the bottle is not determined and does not exist through a development based (p. 262) on internal contradictions.

Rather, it is the result of an external process achieved by two independent opposites. This kind of strife between external opposites and their shared processes is not something discovered by materialism or the dialectic. Rather, iris something clear and affirmed by every logic and by every philosopher, whether a materialist or a theologian, since the oldest times of materialism and theology, and until today.

For instance, let us take Aristotle, the leader of the school of metaphysics in Greek philosophy. We choose Aristotle in particular, not only because he is a theology philosopher, but also because he has put forth the rules, principles and foundations of general logic which the Marxists call 'formal logic'.

Aristotle believes that there is strife between external opposites, even though he erects logic on the basis of the principle of non–contradiction. It did not occur to him that hundreds of years later, somebody will emerge to consider this strife as a proof for the collapse of this necessary principle.

Here are some of Aristotle's texts concerning strife among external opposites:
Put briefly, something of the same genus may be actually accepted by something else of the same genus. The reason for this is that all opposites are of the same genus, and opposites act upon one another and accept one another from one another.33

It is in accordance with the forth, and hoc in accordance with matter that a certain thing is added to every part in just any manner. In spite of this, the whole becomes greater, for something is added to it. This thing is what is called 'nourishment'. It is also called 'opposite'.

However, this thing is nothing but a change in the very kind [of the whole]. For instance, when the damp is added to the dry, (p. 268) it changes by becoming itself dry. In actuality, it is both possible chat that which is similar grows by that to which it is similar, and on the other hand, by that to which it is not similar.34

Thus, it becomes clear that the common operations of external opposites do not reveal the dialectic, nor refute the metaphysical logic, nor constitute something new in the philosophical field. Rather, they are truths determined with clarity in all philosophies from the beginning of the history of philosophy. They involve nothing that helps attain the Marxist philosophical aims that Marxism seeks to achieve in light of the dialectic.

But if Marxism intends 'contradiction' in the real sense of the term, which attributes an internal source to motion – something that is rejected by the main principle of our logic – contradiction then will be something that no healthy mind can accept. Marxism does not have any example whatsoever of contradiction in this sense from nature or the phenomena of existence. All the alleged contradictions of nature that Marxism offers us are not related to the dialectic in any way.

Let us present a number of such examples by means of which Marxism intended to prove its dialectical logic, so that we can see the extent of its weakness and failure to demonstrate its own logic.

a. The contradictions of motion

The following is a passage from Georges Lefebvre:[35]
When nothing goes on, then there is no contradiction. Conversely, when there is no contradiction, nothing happens, nothing exists, no appearance of any activity is noticed, and nothing new emerges. (p. 264) Whether the matter is related to a state of stagnation, to a temporary equilibrium, or to a moment of flourishing, the being or thing that is not self-contradictory is temporarily in a state of rest.[36]

Also, we quote from Mao Tse-Tung:
A proposition with general contradiction or with the absolute existence of contradiction has a dual meaning. The first is that contradiction exists in the process of the development of all things. The second is that from the beginning to the end of the development of everything, there is a movement of opposites. Engels says that movement itself is contradictory.[37]

These texts make it clear that Marxism upholds the existence of opposition between the law of development and completion and the law of non-contradiction. It believes chat development and completion are not achieved except on the basis of continuous contradiction As long as development and motion are realized in the realm of nature, one must put aside the idea of non-contradiction and take up the dialectic, which will explain to us motion in its various forms and kinds.

Previously (when we studied the movement of development), we touched upon the fact that development and completion are not at all incompatible with the principle of non-contradiction, and that the idea that asserts incompatibility between the two rests on the confusion between potentiality and actuality. At every stage, motion is an affirmation in actuality and a negation in potentiality.

Thus, when the germ of a living being develops in the egg until it becomes a chick, and the chick becomes a chicken, this development does not mean that the egg is not in its first stage an egg in actuality. (p. 265) Indeed, it is an egg in actuality and a chicken in potentiality; that is, it can become a chicken.

Therefore, the possibility for a chicken and the character of an egg, and not both the character of the egg and the character of the chicken, unite in the essence of the egg. In fact, we know more than this, namely, that the movement of the development cannot be understood except in light of the principle of non-contradiction. If it were truly possible for contradictories to come together in the essence of a thing, there would be no change, and the thing would not be transformed from one state to another. Consequently, there would be no change and no development.

If Marxism wishes to show us that the process of motion involves contradiction that is truly incompatible with the principle of non-contradiction, let it then provide an example of development that involves and does not involve motion – that is, in which both negation and affirmation are applicable to the development.

Is it permissible for Marxism, after it had rejected the principle of non–contradiction, to assert that a thing develops and does not develop at the same time? If this were permissible, let Marxism then show us an instance of it in nature and existence. If, on the other hand, this were not permissible, it would be nothing but an admission of the principle of non–contradiction and of the rules of the metaphysical logic.

b. The contradictions of life or of a living body

[Concerning this,] Georges Lefebvre tells us the following:
In spite of this, it is not clear that life is birth, growth, and development? Still, a living being cannot grow without changing and developing, i.e. without ceasing to be what he was. In order for him to become a man, he must abandon and lose adolescence. Everything that necessarily accompanies rest declines and falls behind . . . Every living being, therefore, struggles against death, for he carries his death within himself.38 (p. 266)

We also quote the following passage from Engels:

We have seen earlier chat the essence of life is chat a living body is ac every moment itself; while at the same moment, it is not itself, i.e. it is something other than itself. Life, therefore, is a contradiction fixed in the beings and processes themselves.39

There is no doubt that a living being undergoes two renewable processes: life and death. As long as these two processes perform their function, life continues. But this does not involve any contradiction. The reason is that if we analyze these two processes, and, to begin with, add them to one living being, we know that the process of death and that of life do not meet in one subject.

A living being receives new cells at every stage and leaves behind disintegrated cells. Death and life partition the cells [of that being]. The cell that dies at one moment is other than the cell that exists and lives at that particular moment. This is how the living being at large remains held together; for the process of life replaces in him the dead cells with new cells. Thus, life continues until its possibilities are exhausted and its light is extinguished.

Rather, contradiction obtains if death and life cover all the cells of the living being at a specific moment. But this is not what we know about the nature of life and living beings. A living being does not carry within himself other than the possibility of death, and the possibility of death does not contradict life. Rather, what contradicts life is actual death.

c. The contradiction in people's capacity for knowledge

In his presentation of the principle of contradiction in the dialectic (p. 267), Engels says:
As we have seen, contradiction, for example, between the genuine and unlimited human capacity for knowledge and the actual realization of this capacity in people who are restricted by their external circumstances and mental receptivity finds its resolution in the indefinite succession of generations in the

endless advance, at least with respect to us and, according to the practical point of view.40

In this, we find a new example, not of the principle of contradiction, but of the Marxist misunderstanding of the principle of non-contradiction. If it were true that people are capable of full knowledge, and of acquiring such knowledge by themselves, this will not confirm the dialectic, nor will it be a phenomenon that constitutes an exception to the metaphysical logic and to the basic principle of this logic.

Instead, it will be similar to our assertion chat the army is capable of defending the country, and that no member of the army has this ability. Is this contradictory, and is this something on whose rejection the metaphysical logic is based? Indeed, no. Contradiction obtains between negation and affirmation if their subject is one.

However, if affirmation deals with humanity as a whole, while negation deals with every individual independently – as in the example given by Engels – then there is no incompatibility between negation and affirmation.

d. The contradiction in physics between the positive and the negative charges

41This alleged contradiction involves two errors. The first is the consideration of the positive charge and the negative charge as belonging to the categories of existence and non-existence, (p. 268) affirmation and negation [respectively] ; due to the fact that the scientific term for the former is 'positive charge' and for the latter 'negative charge', even though we know that these expressions are just technical physical terms.

This does not mean that both are two contradictories, as are non-positiveness and positiveness, or negation and affirmation. Thus, the positive charge is similar to the charge produced in the glass stick that is touched by a piece of silk. The negative charge is similar to the charge produced by the ion that is couched by the cat skin. Each of the two charges is a specific kind of electric charge. Neither of them is the existence of a thing, while the other the non-existence of that thing.

The second error is the consideration of attraction as a kind of union. On the basis of this, the relation of attraction between the positive charge and the negative charge was explained as one of contradiction. This contradiction was considered one of the dialectical phenomena, even though, in fact, the negative and the positive charges are not united in one charge.

Rather, they are two independent charges attracting each other, as the two different magnetic poles attract each other, without indicating the existence of one charge that is both positive and negative at the same time, or the existence of one magnetic pole that is both north and south. Thus, attraction between different charges (or repulsion between similar charges] is a kind of interaction among external opposites that are independent in existence from one another.

We learned earlier that interaction among external opposites is not at all dialectical and has no relation

to the contradiction that is rejected by the metaphysical logic. The issue is one of two powers each influencing the other, and not an issue of a power involving contradiction in its internal content, as the dialectic claims.

e. The contradiction of action and reaction in mechanics

According to Marxism (and to Newton) 42, the mechanical law that asserts that for every action, there is a reaction equal to it in quantity, and opposed to it in direction: [for every action, there is an equal and opposite reaction] is one of the phenomena of dialectical contradiction (p. 269)

Once again, we find ourselves in need of emphasizing that this Newtonian law does not in any way justify dialectical contradictions; for action and reaction are two powers that exist in two bodies, and not two contradictories united in one body. Thus, the two rear wheels of a car push against the ground with force; this is the action. The ground, on the other hand, pushes the two car wheels with another force that is quantitatively equal and directionally opposite the first force; this is the reaction. By means of this, the car moves. Hence, the one body does not involve two contradictory forces, nor does its internal content undergo a struggle between negation and affirmation or between one contradictory and another.

Rather, the car pushes the ground in one direction, while the ground pushes the car in another direction. The dialectic attempts to explain a thing's growth and movement by two internal repelling forces or two internal contradictories at strife. Each struggles against the other, overcomes it and forms the thing [containing them] in accordance with itself.

Is this not different from two external forces of which one produces a specific action and the other a reaction? We all know that the two opposite forces produced by the action and the reaction are present in two bodies, and that it is impossible for them to be present in one body; they oppose and negate one another. This is so, only by virtue of the principle of non-contradiction.

f. The contradictions of war discussed by Mao Tse-Tung in the following statement:

Actually, in war, attack and defense, advance and retreat, victory and defeat are all contradictory phenomena. Neither one of the two [in any pair] can be present without the other. These two extremes struggle [against each other], as they unite with each other – thus forming the totality of war, imposing their development, and solving the problems of war.43 (p. 270)

The truth is that this text is the strangest of all the above-mentioned texts. In it, Mao Tse-Tung considers war as a real living being involving the two contradictories, victory and defeat, even though this notion of war is inappropriate except to a primitive mentality that is accustomed to viewing things in a general framework.

War, in philosophical analysis, is nothing but a multiplicity of events united in the manner of expression only. Victory is other than defeat, a victorious army is other than a defeated army, and the methods or

points of strength that prepare for victory are other than the methods or points of weakness that lead to defeat. The decisive results to which war leads are not due to a dialectical struggle and united contradictories, but to a struggle between two external forces of which one overcomes the other.

g. The contradictions of judgements discussed by Kedrov

The contradictions of judgements discussed by Kedrov in what follows:
Regardless[44] of the simplicity of a judgment and regardless of the ordinariness of that judgment, it contains seeds or elements of dialectical contradiction which move and grow in the sphere of all human knowledge.[45]

Lenin emphasizes this point saying:
Beginning with any proposition, even with the simplest proposition or with the most ordinary and most common proposition, etc., such as: 'The tree leaves are green,' 'Ivan is a man,' 'Zhuchka is a dog,' and so on, also involves a dialectic. The particular is the general; that is, opposites (the particular is the opposite of the general) are identical.

But even here, there are primary principles, necessary notions, and an objective relation to nature, etc. The accidental, (p. 271) the necessary, the appearance, and the substance are all present here. Thus, when I say: 'Ivan is a man,' 'Zhuchka is a dog,' 'This is the leaf of a tree,' etc., I just reject a series of symbols, since they are accidental, I separate the surface from the substance, and I affirm opposition between the two. Similarly, in every proposition and in every cell, we can disclose all the elements of the dialectic.[46]

But it is our right to ask Lenin about the attribute of generality that he ascribes to the meaning of the term 'man'. Is it an attribute of the idea that we form in our minds about the word 'man', or of the objective reality of this word? This question does not require much reflection, in order for one to attain the correct answer, which is as follows.

Generality is an attribute of thought and not of reality. Our idea of the word 'man' constitutes a general notion that expresses many particulars having this name. Thus, Ivan is a man, Kedrov is a man, and Lenin is a man, in the sense that the idea that we have of the expression 'man' is the mental product that is common to these individuals. The objective reality of man; on the other hand, is always something determined and limited.

If we take this remark into consideration, we can then know that the contradiction in our statement: 'Ivan is a man' obtains only if we wish to judge our specific idea of Ivan as being the same as the general idea that we have of man. This is a clear contradiction and cannot be true at all. The reason is that the specific idea of Ivan cannot be the same general idea of man; otherwise, the general and the particular would be the same thing as Lenin thought.

Thus, if we take Ivan as a specific idea and man as a general idea, we will find ourselves in contradiction

when we try to unite the two ideas. (p. 272) However, our statement, 'Ivan is a man', does not actually mean a union between the two ideas, but a union between the objective reality of the word 'Ivan' and the objective reality of the word 'man', in the sense that the two expressions are one objective reality. It is clear that the reality of man does not contradict the external reality of Ivan; rather it is one and the same with it. Therefore, the union between the two does not involve a contradiction.

Hence, it becomes clear that the contradiction, which is claimed by Marxism to exist in the proposition 'Ivan is a man' is based on a false interpretation of this proposition, which considers this proposition as a union between two ideas, one of which is general and the other particular, and not between two objective realities.

Once again, we inquire about this alleged contradiction in the proposition 'Ivan is a man'. What is its consequence, what is the struggle produced by it, and what is the development resulting from it? According to Marxism, the internal contradictions ignite the struggle and are considered as fuel for the development. How then can Marxism explain to us the manner in which the proposition: 'Ivan is a man' develops? Further, is it reduced to another form due to its contradictions?

The conclusions we reach as a result of our study of the alleged dialectical contradictions is that all the contradictions mentioned by Marxism in the fields of philosophy and science or in the general, ordinary sphere are not of the kind of contradiction rejected by the basic principle of the metaphysical logic.

Moreover, such contradictions cannot be considered as an evidence for refuting this principle. Rather, they are nothing but the 'opposites' of the Maltese Chrysippus47 (2,000 years ago) to the principle of non-contradiction. Chrysippus48 responded to this principle as follows. If your father comes to you veiled, you do not recognize him. Therefore, you know your father and you do not know him at the same time.

But it is intuitive that these kinds of simple opposites cannot destroy the general necessary principle of human thought: the principle of non-contradiction. (p. 273)

The truth that was evident to us from a number of examples of dialectical contradiction is the struggle and the interaction between external opposites. We have already learned that this kind of interaction between opposites is not one of the attributes of the dialectic. Rather, it is one of the assertions of metaphysics, as we have learned from Aristotle's texts.

If we wish to overlook the errors of Marxism in understanding contradiction, and its failure in the attempt to demonstrate the law of dialectics, we will still find that the dialectical contradiction does not give us an acceptable explanation of the world, nor can it offer a sound justification, as we will point out in Chapter 4 of this investigation, 'Matter or God'.

It is interesting to point to an example of contradiction offered by one of the modern writers49 for the purpose of falsifying the principle of non-contradiction. He says that the principle of non-contradiction

asserts that every quantity is either finite or infinite. It cannot be both finite and infinite at the same time due to the impossibility of contradiction.

If this is the case, then half a finite quantity is always finite. It cannot be infinite; otherwise, the sum of two infinite quantities would be finite. But this is impossible. Thus, the chain containing the following quantities:

1; 1/2; 1/4; ; 1/16; 1/32

(where each quantity has half the previous quantity), every part of this chain must be finite, regardless of the length of the chain. If the chain is infinite, we will have an infinite succession of quantities every one of which is finite. Thus, the sum of the parts of the chain (p. 274) would then be the sum of an infinite number of finite quantities. That is why it must be infinite. However, a little knowledge of mathematics shows us that it is finite, since it is 2.[50]

Thus, this writer wishes to conclude that the contradiction between the finite and the infinite permits the two contradictory poles to unite in one quantity. But he misses the point that the infinite quantity in his example is other than the finite quantity. Thus, there is no contradiction. It is not the case that one quantity is both finite and infinite in spite of the principle of non-contradiction, as this modern writer attempts to conclude.

We can consider the quantities that he supposes in this chain, of which each has half the previous quantity, inasmuch as they are units, and count them as we would count the units of nuts, or as we would count the rings of a long iron chain. In this case, we will face an infinite number of units. Thus, the complete number (1) is the first unit; while the fraction (1/2) is the second unit. Further, the fraction (1/4) is the third unit. In this way, the sum is increased one by one to infinity. Therefore, while adding these numbers, we are not faced with something like the units of (2). Rather, we are faced with an enormous, infinite number. If, on the other hand, we wish to add the quantities symbolized by these numbers, we will then get (2) only.

This is because the mathematical sum of those deficient quantities is just that. The infinite, therefore, is the quantity of the same numbers that can be added inasmuch as they are units that we add to each other, as we add a pencil to a pencil or a nut to a nut. But the finite is not the quantity of the numbers that can be added inasmuch as they are units and things that can be added, but the quantities that are symbolized by those numbers.

In other words, there are two quantities. One of them is the quantity of the same numbers inasmuch as they are units; while the other is the quantity of what is mathematically symbolized by them, due to the fact that every number in the chain symbolizes a certain quantity. The first is infinite, and it is impossible that it be finite. The second is finite, and it is impossible that it be infinite. (p. 275)

C. The Political Purpose beyond the Contradictory Movement

Movement and contradiction, the two dialectical points that we have criticized in detail, together constitute the law of dialectical movement or the law of contradictory movement whose development is based, constantly and always, on the dialectical principles.

Marxism has adopted this law as an eternal law of the world. Its purpose was to exploit this law in the political sphere for its own interest. Thus, political action was the first goal that required Marxism to cast this law in a philosophical form that helps it construct a new policy for the whole world. This was stated by Marx somewhat carefully: 'Philosophers have done nothing other than interpreted the world in various ways. But the issue is one of its development.'[51]

The issue, therefore, is the suggested political development that must find a logic to justify it and a philosophy on whose principles it rests. That is why Marxism put forth the law that agrees with its political plans, and then sought for evidence for this law in the scientific fields, convinced in advance and before any evidence that it is necessary to adopt this law, as long as this law sheds some light on the path of action and struggle.

On this occasion, we must listen to Engels discussing the research he carried on in his book, Anti-Duhring:
Needless to say, I had resorted to a quick and brief presentation of the subjects (p. 276) of mathematics and natural science for the purpose of acquiring peace of mind regarding the details of what I had not doubted in general, [namely] that the same dialectical laws of movement that govern the apparent spontaneity of events in history also pave their way in nature.[52]

In this text, Marxism summarizes for us its method in its philosophical attempts, the manner of its confidence in discovering the laws of the world and accepting them before it realizes the extent of their actuality in the scientific and mathematical fields.

After that, it was careful to apply these laws to those fields and to subjugate nature to the dialectic in a quick presentation, as Engels says, regardless of the cost that this may incur, and despite the protest of mathematicians and natural scientists themselves that this may cause. This is admitted by Engels in a phrase close to the text quoted above.

Since the basic aim of constructing this new logic is to arm Marxism with a mental weapon in its political battle, it was, therefore, natural for Marxism to begin –primarily and before anything else – by applying the dialectical law to the political and social spheres, thus, it explained society, including all its parts, in accordance with the law of contradictory movement or the moving contradiction.

It subjugated society to the dialectic that it claims to be the law of both the mind and the external world. Therefore, it assumed that society develops and moves in accordance with the class contradictions that are internal to society. At every stage of development, society takes on a new social form that agrees

with the dominant class in society.

Subsequently, struggle begins again on the basis of (p. 277) the contradiction is involved in that form. As a result of this, Marxism concluded that the analysis of the social content of capitalistic society is struggle between the contradictories that this society involves – that is, between the working class on the one hand and the capitalistic class on the other hand.

This struggle provides society with the developmental movement that will dissolve the capitalist contradictions when the leadership is handed to the working class represented by the party that was established on the basis of dialectic materialism that can adopt the interests of the working class with a composed scientific method.

At the present, we do not wish to discuss the Marxist dialectical explanation of society and its development, an explanation that collapses naturally, so that we can criticize and falsify the dialectic as a general logic, as has been determined in this study. We will reserve a detailed critical study of historical materialism in *Our Society* or in *Our Philosophy*.[53]

Rather, what we intend at the present is to clarify an important point in this social application of the dialectic that relates to the dialectic itself in general. This point is that the social and political application of the dialectic in the manner pursued by Marxism leads to an immediate refutation of the dialectic.

If the developmental movement of society derives its necessary fuel from the class struggle between contradictories contained in the general social structure, and if this contradictory justification of motion is the only explanation of history and society, then, in the last analysis, motion would inevitably come to rest.

Also, the differences between contradictories and between the motion spans of contradictories come to rest and frozenness; for Marxism believes that the stage which is produced on the basis of such contradictories, and to which it seeks to lead the march of the human race, is the stage (p. 278) in which classes are abolished and society becomes one class. If the variety of classes in the suggested socialist society is abolished, the blaze of conflict is extinguished, the contradictory movements completely disappear, and society reaches a fixed stability from which it does not diverge.

The reason for this is that the only fuel for social development, according to Marxism, is the myth of class contradiction that the development invents. Thus, if this contradiction is removed, that would mean the liberation of society from the influence of the dialectic; and thus, disputation would abandon the position of controlling and governing the world.

We know, therefore, that the Marxist explanation of social development on the basis of class contradiction and dialectical principles leads to a complete halt of this development. But the contrary holds true if we place the blaze of development or the fuel of movement in awareness or thought, or in anything other than class contradiction that Marxism considers as a general source of all development

and movement.

Is it not appropriate after all this to describe the dialectical explanation of history and society as the only explanation that imposes frozenness and fixedness on mankind, and not the explanation that places the source of development in a resource that never dries up – namely, awareness in its various kinds?

Add to this the frozenness that Marxism itself produced and that afflicted the human mental dialectic of which Marxism is proud, when the dialectic and the infinity of the world were taken as absolute truths, and when the state adopted the dialectic as an official doctrine above any discussion and debate, and as a final reference to which all science and knowledge must be subjugated. Any thought or mental effort that is not in harmony with it and that does not begin with it must be stopped.

Thus, human thought in the various fields of life fell captive to a specific logic. All the intellectual talents and capacities were pressed into the circle that was designed for mankind by the official philosophers of the state. (p. 279)

In future chapters, God willing, be He exalted, we will discuss how we can abolish the myth of class contradiction, how we can lift the curtain to show the fallacies of the Marxist disputation in specifying the contradictions of ownership, and how we can give a sound explanation of society and history.[54]

The Leaps of Development

Stalin tells us the following:
Contrary to metaphysics, the dialectic does not consider the movement of development as a simple movement of growth in which quantitative changes do not lead to qualitative changes. Rather, it considers it as a development that moves from small and hidden quantitative changes to expressed and basic changes, i.e. to qualitative changes.

These qualitative changes are not gradual; but fast and sudden. They happen by leaps from one stage to another. It is not [only] possible that these changes occur; they are necessary. They are the result of an accumulation of non-sensible and gradual quantitative changes. That is why, according to the dialectical method, it is necessary to understand the movement of development, not inasmuch as it is a circular movement or a simple repetition of the same procedure, but inasmuch as it is a linear progressive movement and a transmission from a previous qualitative stage to a new qualitative stage.[55]

The dialectic asserts in this point that the dialectical development of matter is of two kinds: (p. 280) one of them is a gradual quantitative change that occurs slowly. The other is a sudden qualitative change that occurs at once as a result of the gradual quantitative changes. This means that when the qualitative changes reach the point of transition, they are then transformed from a certain quantity to a new quality.

This dialectical development is not a circular motion of matter in which matter returns to its same source. Rather, it is a motion of completion that is constantly and continuously ascending.

If one objects to Marxism at this point, saying that nature may have circular motion, as in the fruit which develops into a tree, and consequently goes back to being a fruit as it was, Marxism responds as follows: This motion is also one of completion; and is not circular, as the motions that are drawn by the compass.

However, the completion in it is due to the quantitative and not to the qualitative aspect. Thus, even if the fruit goes back in its linear march to being a fruit once again, still it will achieve a quantitative completion. The reason is that the tree that was produced by one fruit branches out into hundreds of fruits. Thus, there is never a return to the [original] motion.56

To begin with, we must notice the purpose that lies behind this new dialectical point. We had learned that Marxism posited the practical plan for the required political development, and then sought for the logical and philosophical justification of that plan. What then is the plan for which this dialectical law was constructed?

It is very easy to answer this question. Marxism saw that the only thing that can pave the way for its political control or for the political control of the interests it adopts is a conversion. Thus, it went on to search for a philosophical justification of such a conversion. It did not find this justification either in the law of motion (p. 281) or in the law of contradiction. This is because these two laws require society to develop in accordance with the contradictions that unite in it.

The principle of contradictory motion is not sufficient for clarifying the method and immediacy of development. That is why it became necessary to posit another law on which the notion of conversion rests. This was the law of the leaps of development that asserts the immediate transformation of quantity into quality.

On the basis of this law, conversion became not only possible, but necessary and unavoidable in accordance with the general laws of the universe. Thus, the gradual quantitative changes in society are converted in great historical turns to a qualitative change. Hence, the old qualitative form of the general social structure is destroyed and changed into a new form.

Therefore, it becomes necessary, and not only good, that the contradictions of the general social edifice result from a sweeping principle of conversion, according to which the class that was previously in control, and that became secondary in the contradiction process, be removed and sentenced to destruction, so that the new contradictory that has been nominated by the internal contradictions to be the main side in the contradiction process will have the opportunity to be in control.

Both Manx and Engels say:
Communists do not come close to hiding their views, intentions, and plans. They declare with frankness that their purposes cannot be attained and realized except through the destruction of the whole traditional social system by violence and force.57

Also, Lenin says: (p. 282)
The proletariat revolution is not possible without destroying by violence the bourgeoisie system of the state.[58]

After Marxism posited the law of the leaps of development, it had to give a number of examples, 'presenting them in a quick manner', as Engels says, so that it can demonstrate by means of them the alleged law in its general and particular cases. This is exactly what Marxism did; it gave us a number of examples on which it based its general law.

One of the examples that Marxism gave of this law is that of water when placed on the fire. The temperature rises gradually. Due to this gradual rise, slow quantitative changes occur. At first, these changes do not have any effect on the state of the water inasmuch as it is a fluid. However if its temperature rises to 100 degrees [centigrade], then at that moment, it will shift from the state of fluidity to that of vapor.[59] Quantity is changed to quality. Similarly, if the temperature of water falls to zero [centigrade], the water will immediately change to ice.[60][61]

Engels presents other examples of the dialectical leaps from the organic acids in chemistry, of which every one has a specific degree [of temperature] at which it melts or boils. By virtue of reaching that degree, the fluid leaps to a new qualitative state.

Thus, formic acid, for example, boils at 100 degrees [centigrade]. But it melts at (p. 283) 15 degrees [centigrade]. Acetic acid boils at 118 degrees [centigrade]. Its melting point, on the other hand is 17 degrees [centigrade], and so on.[62] Thus, in boiling and melting, the hydrocarbonic compounds operate in accordance with the law of immediate leaps and transformations.

We do not doubt that the qualitative development of a number of natural phenomena happens by instantaneous leaps, as does the development of water in the previously mentioned scholastic example or the development of the organic or carbonic acids in the two states of boiling and melting, as well as (the development of] all other compounds whose nature and qualities are dependent on the proportions from which each is composed.[63]

But this does not mean that it is always necessary in all fields that the development take a leap in specific stages, so that it be a qualitative development. Giving a number of examples is not sufficient for demonstrating scientifically or philosophically the necessity of these leaps in the history of development, especially when Marxism selects such examples and neglects those examples that it used for clarifying another dialectical law, only because they are not in agreement with this new law.

Marxism had represented the contradictions of development in the living germ inside the egg that tends to become a chick,[64] and in the seed that involves its contradictory, thus developing and becoming a tree due to its internal conflict.

Is it not our right to ask Marxism to reconsider these examples, so that we would know how it can

explain for us the leaps of development in these examples? Is the seed's becoming a tree or the germ's becoming a chick (the development of the thesis into an antithesis) or the chick's becoming a chicken (the development of the antithesis into a synthesis) produced by one of the dialectical leaps, thus changing the germ at once into a chick, the chick into a (p. 284) chicken, and the seed into a tree, and that such transformations occur by a gradual linear motion?

Even in the chemical elements that are liable to melt, we find both kinds of changes together. As change occurs in these elements by a leap, it may also occur in a gradual manner. We know, for example, that the crystal elements change from the state of solidity to the state of fluidity suddenly, such as the ice that melts at a temperature of 80 degrees [centigrade]. At that point, the ice changes immediately into a fluid.

The non-crystal elements, such as glass and honey wax are the converse of this; they do not melt and do not change qualitatively at once. Rather, their melting occurs gradually. Thus, the temperature of the wax, for example, rises during the process of melting, so that if it reaches a certain degree, the solidity of wax is weakened. The wax begins to become, gradually and independently of other things, more flexible and malleable. In the state of flexibility, it [changes] gradually; it is neither solid nor fluid. This continues until it becomes a fluid element.

Let us take another example from social phenomena – namely, language as a phenomenon that develops and changes and that is not subject to the law of the dialectic. The history of language does not tell us anything about the immediate qualitative changes of language in its historical march.

Instead, it expresses gradual transformations of language with respect to quantity and quality. If language were subject to the law of leaps, and if the gradual quantitative changes were transformed into a decisive and immediate change, we would have been able to grasp decisive points in the life of language, in which language changes from one form to another due to the slow quantitative changes. But this is something not true of any language that people have adopted and employed in their social life.

Therefore, in light of all the natural phenomena, we are able to know that a leap and immediacy are not necessary for qualitative development. Further, as development may be immediate, it may also be gradual. (p. 285)

Let us now take the previously mentioned scholastic example – of water in its freezing and boiling [states]. We notice the following. First, the developmental movement in the example is not dialectical, for experimentation does not demonstrate that this development is a result of the internal contradictions of water, as the contradictions of the dialectical development require. We all know that were it not for the external temperature, water would remain water and would not change to vapor. Thus, the conversional development of water is not achieved in a dialectical fashion. If we wish to consider the law that governs the social conversions as the same law according to which the immediate conversion of water or of all chemical compounds occurs (as Marxism assumes), this would lead to a result different from that

intended by Marxism.

The reason is this. The developmental leaps in the social system become conversions caused by external factors, and not. by the mere contradictions contained in the same system. The attribute of inevitability would no longer pertain to those leaps. Those leaps would not be necessary if the external factors are unavailable.

It is clear that as we can preserve the state of the fluidity of water, and distance the water from the factors that make it leap to the state of vapor, we can also preserve the social system and distance it from the external factors that necessitate its destruction. Therefore, it becomes clear that the same application of the law of tire dialectic to the immediate development of water in its boiling and freezing, and to society in its conversions, registers conclusions contrary to those expected by the dialectic.

Second, the developmental movement of water is not linear. Rather, it is a circular movement in which water changes into vapor and vapor returns to its original state, without producing a quantitative or a qualitative completion. If this movement is considered (p. 296) dialectical, this would mean that it is not necessary for the movement to be linear and always progressive. Also, is would rust be irritable that the dialectical development in the natural or social realm be ore of completion and progression.

Third, the same leap of water to vapor achieved by the temperature's reaching a certain degree must not cover all the water at once. Every human being knows that various quantities of the waters of the seas and oceans evaporate gradually. It is not the case that all of such waters make a one–time leap to the state of vapor.

This shows that the qualitative development in the areas in which this development is immediate does not necessarily cover the developing being as a whole. Rather, this development may begin in the parts of that being leaping with them to the state of vapor. The leaps follow consecutively, and the drives are repeated until the whole is transformed. The qualitative transformation may not be able to cover the whole, thus remaining limited to ate parts in which the external conditions of the conversion are met.

If this is all that is meant by the dialectical law with respect to nature, why then should the leap in the social sphere be imposed on the system as a whole? Also, why should it be necessary, according to the natural law of society, to destroy the social structure at every stage through a comprehensive and an immediate conversion?

Further, why should it be that the alleged dialectical leap in the social sphere cannot adopt the same method is adopts in the natural sphere – thus not affecting anything other than the aspens in which the conditions of the conversion are met, and then moving gradually, until the general transformation is at last achieved?

Finally, the charge of quantity into quality cannot be faithfully applied to the example of the water chat is transformed into vapor or ice, in accordance with the rise or fat in the degree of the temperature of

water, as Marxism thought. This is because Marxism considered temperature as a quantity and vapor and ice as qualities. Thus, it affirmed that quantity in this example changes into quality.

This Marxist notion of temperature, vapor and ice has no (p. 287) foundation, for the quantitative expression of temperature used by science in its assertion that the temperature of water is 100 degrees or 5 degrees, (for example,) is not the essence of temperature. Rather, it is an expression of the scientific method for reducing the natural phenomena to quantities, in order to facilitate their regulation and determination.

Thus, on the basis of the scientific method of expressing things, it is possible to consider temperature as a quantity. But the scientific method does not only consider temperance as a quantitative phenomenon.

Rather, the transformation of water into vapor, for example, is also expressed quantitatively. It is exactly like temperature in being a quantitative phenomenon in the scientific language. This is because science determines the transformation from the state of fluidity to that of vapor by a pressure that can be measured quantitatively, or by relations and properties of atoms that can also be measured quantitatively, as is the case with temperature.

Therefore, from the point of view of science, the above example does not have anything but quantities that change to one another. From the empirical point of view, on the other hand – that is, the idea of temperature that sense perception provides when we immerse our hand in water, or the idea of vapor that sense perception provides when we see water change into vapor –temperature is a qualitative state as is vapor, this state disturbs us when the temperature is high. Hence, quality changes into quality.

Therefore, we find that water in its temperature and evaporation cannot be given as an example of the transformation of quantity into quality, except if we contradict ourselves, thus considering temperature from the scientific point of view, and the state of vapor from the empirical point of view.

Finally, it is appropriate for us to close this discussion of the leaps of development with the example of this kind of development given by Marx in his book Capitalism. Marx mentions that not every quantity of money can be transformed haphazardly into capital. Indeed, in order for such transformation to occur, it is necessary that the individual owner of the money had acquired prior to that point a minimum amount of money that gives him the opportunity for a life twice [as comfortable as] that of the ordinary worker.

This depends on his ability to employ eight workers. (p. 288) Marx cried to clarify this point in light of his main economic notions of the surplus value, the transformable capital and the fixed capital. Thus, he took as an example the worker who works eight hours for himself – that is, for producing the value of his salary – and, subsequent to that, works four hours for the capitalist to produce the surplus value that the owner of the money gains.

The capitalist is necessitated under such a circumstance to have at his disposal a certain amount of money sufficient to enable him to supply two workers with the raw material, tools for work and salaries,

so that he can make a daily surplus value sufficient to enable him to have the same kind of food that one of his workers has.

However, since the purpose of the capitalist is not only to have food but also to increase his wealth, this producer with two workers remains a non–capitalist. In order for him to have a life twice [as comfortable as] that of the ordinary worker, he must be able to employ eight workers in addition to transforming half the resulting surplus value into capital.

Finally, Marx comments on this, saying that in this, as in the natural science, the soundness of the law discovered by Hegel – namely, the law of the transformation of quantitative changes into qualitative changes – is confirmed when the quantitative changes reach a certain limit.65

This Marxist example shows clearly the extent of tolerance exhibited by Marxism in presenting examples of its alleged laws. Even though tolerance in every area is a good and a virtue, it is an unforgivable shortcoming in the scientific field, especially when the purpose is to discover the secrets of the universe, in order to construct a new world in light of such secrets and laws. (p. 289)

Indeed, we do not wish at the present to discuss the actual economic issues on which the above example rests, such as the issue that is related to the surplus value and the Marxist notion of the capitalist profit. Rather, we are concerned with the philosophical application of the law of leaps to capital. Let us, therefore, close our eyes to other aspects, directing our attention to a study of this aspect [only].

Marx holds that money passes through simple and gradual quantitative changes. If the capitalist profit reaches a certain limit, an essential conversion or a qualitative transformation occurs immediately. The money becomes capital. This limit is twice as much as the salary of the ordinary worker, after half [the surplus value] is transformed once again into capital.

Unless the money reaches this limit, it will not have the basic qualitative change, nor will it be capital. 'Capital', therefore, is an expression given by Marx to a specific amount of money. Every human being is completely free to have his own application and usage [of language].

Thus, let us take this Marxist usage as correct. Still, it is incorrect and does not make sense philosophically to consider the money's attainment of this specific limit as a qualitative change of the money and a leap from one quality to another. The money's attainment of this limit does not mean anything other than a quantitative increase. No qualitative transformation of the money is produced other than what is always produced by the gradual quantitative increases.

If we wish, we can go back to the previous states of the development of the elements of money in its consecutive quantitative changes. If the individual owner has had the money that would make it possible for him to supply seven workers with their equipment and salaries, then what would his profit be according to Marx?

According to the Marxist calculations, his profit would be a surplus value equal to the salaries of three-and-a-half workers; that is, what is equal to twenty-eight hours of work. Because of this, he is not a capitalist, for if half the surplus value is transformed into capital, not enough of it remains that can secure for him twice the salary of one of the workers.

If we suppose an increase in the simple value of the money that the owner has, such that it becomes within his ability to purchase, in addition (p. 290) to what he had already owned, the efforts of half a day of a worker who works for him six hours, and for somebody else another six hours, he would then gain from this worker half what he gains from the work of every one of the other seven workers. This means that his profit will be equal to thirty hours of work and will enable him to have a salary better than what he had before.

Again, we repeat the assumption. We can imagine the owner, who can as a result of the new additional amount of his money, purchase from the eighth worker three-quarters [of an hour], thus leaving the worker with no relation to another employer, except in the amount of three hours. Do we face at this point any increase in the amount of profit and in the owner's living standard other than what we had faced at the point of the occurrence of the above quantitative change?

Suppose that the owner is able to enlarge his money by adding a new amount that allows him to purchase from the eighth worker all his daily input. What would happen then to the increase in the surplus value and living standard other than what used to happen as a result of the previous quantitative increases? Indeed, one thing occurs to the money that had not occurred on the previous occasions.

This is something related only to the aspect of utterance – namely, that Marx had not given this money the name of capital. But now it is appropriate to call it by this name. Is this the change in kind and the transformation in quality that occurs to the money? Further, is the whole distinction between this stage of the money and the previous stages a point of pure utterance, such that if we had applied the expression 'capital' to a previous stage, then a qualitative change would have occurred at that time?

The General Linkage

Stalin asserts the following:
Contrary to metaphysics, the dialectic does not consider nature as an accidental accumulation (p. 291) of things or events, of which some are separate, isolated, or independent from some others. Rather it considers nature as one firm whole in which things and events are linked together organically and dependent on one another. Some of these things and events serve as mutual conditions for some others.[66]

Nature, with its various parts, cannot be studied in accordance with the dialectical method when these parts are separated from one another and stripped of their circumstances and conditions, as well as of any past or present thing that pertains to their reality, contrary to metaphysics that does not view nature as a net of linkage and conjunction, but from a purely abstract perspective. Thus, according to the

dialectical notion, no event makes sense if isolated from the other events that surround it, and if studied in a purely metaphysical fashion.

Indeed, if unjustified accusations against a certain philosophy were sufficient to eliminate that philosophy, then the accusations that Marxism makes against metaphysics in this new point would suffice to destroy metaphysics and refute its isolationist view of nature that contradicts the spirit of firm linkage among the parts of the universe.

But let Marxism tell us who is in doubt about this linkage, and which metaphysics does not accept it, if it is stripped of the points of weakness that represent it as having a dialectical character, and if it rests on a firm philosophical basis of the principle of causality and its laws, for the study of which we have reserved the third chapter of this investigation.

According to the general view of the universe, events cannot be except one of three kinds:
First, they are either an assembly of accumulated coincidences, in the sense that every event occurs by pure chance, without there being (p. 292) any necessity that requires its existence. This is the first perspective. Second, the parts of nature are essentially necessary. Every one of them exists by virtue of its own essential necessity without need for, or influence, by anything external. This is the second perspective. Neither of the above perspectives is in harmony with the principle of causality, according to which every event is linked in its existence to its specific causes and conditions. The reason is that this principle rejects the coincidence and chance of events, as it rejects their essential necessity.

Consequently, according to this principle, there is another perspective of the world. It is this. Third, the world is considered as completely linked together in accordance with the principle and laws of causality. Every part of the world occupies the specific place in the universe required by the conditions of its existence and the assembly of its causes.

This is the third perspective that establishes metaphysics on the basis of its own understanding of the world. That is why it is asked: 'Why does the world exist?' This is one of four questions67 the proper answer to which is required, according to the metaphysical logic, for the scientific knowledge of anything. (p. 293)

This clearly means that metaphysics does not at all admit the possibility of isolating the event from its environment and conditions, or not extending the question to the event's relations to other events.
The assertion of general linkage is not, therefore, dependent on the dialectic. Rather, it is one of those things to which the philosophical principles established by metaphysics in the investigation of causality and its laws necessarily lead.

The designs of this linkage among the parts of nature and the disclosure of its details and secrets are matters that metaphysics leaves for the various kinds of science. The general philosophical logic of the world lays out the main point only. It establishes its linkage theory on the basis of causality and its philosophical laws. It remains for science to explicate the details of the fields that are accessible to the

scientific methods, and to clarify the kinds of actual linkage and the secrets of these kinds, thus giving every point its due.

If we wish to be just to both the dialectic and metaphysics, we must point out that the novelty that the Marxist dialectic introduced is not the general law of linkage itself, of which metaphysics had already spoken in its own way and which is at the same time clear to all and is not subject to discussion; rather, Marxism was the first to advocate the political aims or the political applications of that law which gave Marxism the possibility of carrying out its plans and designs. Thus, the point of innovation is related to the application and not to the law, with respect to its logical and philosophical aspect.

On this occasion, let us read what was written by the Marxist author Emile Burns[68] concerning the linkage according to the Marxist view.

He says: (p. 294)
Nature or the world, including human society, was not formed out of distinct things that are completely independent of one another. Every scientist knows this and finds it extremely difficult to determine the causes even of the main factors that affect the specific things chat he studies. Water is water; but if its temperature is raised to a certain degree, then water is transformed into vapor. If, on the other hand, its temperature is lowered [to a certain degree], then it becomes ice. There are also other factors that affect water.

Further, every common person realizes, if he or she experiences things, that there is nothing which is completely independent by itself, and that everything is influenced by other things.

[He continues]:
This linkage among things may appear intuitive, such that every cause that turns one's attention to it is evident. However, the truth is this. People do not always apprehend the linkage among things, nor do they apprehend that what is real under specific circumstances may not be so under other circumstances.

They always apply notions that they have formed under specific circumstances to other circumstances that are completely different from the former circumstances. The best example that one can give in this regard is the point of view concerning the freedom of speech. Freedom of speech in general serves the purpose of democracy and helps people express their will. That is why it is useful for the development of society.

However, the freedom of speech of fascism (the foremost principle that attempts to suppress democracy) is something very different, since is stops the progress of society. Regardless of the repetition in calling for the freedom of speech, what is true of it under normal circumstances with respect to the parties that seek democracy, (p. 295) is not true with respect to the fascist parties.[69]

This Marxist text admits that the general linkage is understood by every scientist, indeed by every common person who has experienced things, as Emile Burns asserts, and is not something new in the

general human understanding.

Rather, the novelty is what Marxism sought from this (linkage], by virtue of the extent of the solid linkage between the issue of the freedom of speech and other issues that it considered. The same is true of a number of other similar applications that we can find in a group of other Marxist texts. Where then is the powerful logical disclosure of the dialectic?

Two Points concerning the General Linkage

In pursuing this discussion about the theory of general linkage in metaphysics, it is necessary to point out two important points. The first is that, according to the metaphysical view, the linkage of every part of nature or the universe to the causes, conditions and circumstances relevant to it does not mean that one cannot notice it in an independent manner, or posit a specific definition of it.

That is why definition is one of the subjects with which metaphysical logic is concerned. Most likely, this is what led Marxism to accuse metaphysics of not accepting the general linkage and of not studying the universe on the basis of such linkage.

The reason is chat Marxism found that a metaphysician takes up one thing, and tries to identify it and define it independently of other things. Owing to this, Marxism thought chat the metaphysician does not accept the linkage among things and does not study things except when some of them are isolated (p. 296) from others.

Thus, when the metaphysician defines 'humanity' as 'life and thought', and 'animality' as 'life and will', he has isolated 'humanity' and 'animality' from their circumstances and attachments and viewed them as independent.

However, in face the definitions that the metaphysical logic is accustomed to give to any specific thing are not at all incompatible with the principle that asserts the general linkage among things, nor are they intended to indicate the disentanglement among things or the sufficiency of studying these things by giving them those specific definitions.

When we define 'humanity' as 'life and thought', we do not seek by this a denial of the linkage of humanity to the external factors and causes. Rather, by this definition, we intend to give an idea of the thing that is linked to those factors and causes, in order for us to investigate the factors and causes that are linked to that thing.

Even Marxism itself considers definition as a method for achieving the same purpose. Thus it defines the dialectic, matter and so on. Lenin for example, defines the dialectic as 'the science of the general laws of motion'.[70] He also defines matter as 'the objective reality which is given to us by the senses'.[71]

Can one understand from these definitions that Lenin isolated the dialectic from the other parts of human scientific knowledge, and did not accept the linkage of the dialectic to such parts? Similarly, can one

understand that he viewed matter as independent, and studied it without attention to its links (p. 297) and interactions? The answer is no.

A definition does not mean, either as a whole or in part, bypassing or disregarding linkage among things. Rather, it determines for us the notion whose various links and relations we attempt to discover, so that it facilitates the discussion and study of those links and relations.

The second point is that linkage among the parts of nature cannot be circular. By this we mean that the two events, such as warmth and heat that are linked cannot each be a condition for the existence of the other. Thus, since heat is a condition for the existence of boiling, boiling cannot also be a condition for the existence of heat.72

In the records of the general linkage, every part of nature has its own rank that determines for it the conditions that affect its existence and the phenomena whose existence it affects. But if each of the two parts or events is a cause for the existence of the other and at the same time indebted to the other for its own existence, this will make the causal linkage circular, returning to the point of its departure. But this is impossible.

Finally, let us study for a moment Engels' statements about general linkage and the abundance of scientific proofs for it. He says:
In particular, there are three discoveries that helped advance (p. 298) the steps of giant thinkers with regard to our knowledge of the linkage of the natural progressive processes.

The first is the discovery of the cell as the unit from which the whole organic plant and animal element grows by way of multiplicity and distinctiveness. We had not known that the development of all the primary organic elements and what resembles them follow one another in accordance with one general law only.

But also the capacity of the cell to change points to the way according to which the organic elements can change their kinds. By means of this, they achieve a larger development than that which every one of them can achieve separately.

The second is the discovery of the transformation of energy which shows that all 'the forces having primary influence on nature are other than the organic elements. This indicates that all such forces are different manifestations of a general motion. Every one of these manifestations passes to the other by specific quantitative proportions.

The third is the comprehensive proof of which Darwin73 was the first to speak and which states that all the products of nature, including people, that surround us at the present time are nothing but products of a long process of development.74

In fact, the first discovery is one of the scientific discoveries in which metaphysics scored a victory,

because this discovery proved that the source of life is the living cell (the protoplasm). Thus, it removed the delusion according to which it is possible to have life in any organic element in which specific material factors are available.

It also drew a distinction between living beings and non–living beings, by virtue of the fact that the specific germ of life is alone responsible for carrying its own great secret.75 Therefore, the discovery of the living cell, which pointed to a unified origin of living beings, also showed us at the same time the degree (p. 299) of difference between living and non–living beings.

The second discovery is also considered a great victory for metaphysics since it proved scientifically that all the forms that energy takes, including the material quality, are accidental qualities and characteristics. Thus, they are in need of an external cause, as we will point out in the fourth chapter of this investigation. Add to this that the present discovery is incompatible with the laws of the dialectic.

It assumes that energy has a fixed and a limited quantity not subject to the dialectical motion that the Marxist disputation claims to be true of all the aspects and phenomena of nature. If science proves that a certain aspect of nature is an exception to the laws of the dialectic, then the necessity and absolute character of the dialectic is discarded.

Darwin's theory of the development of species and the evolution of some of them from some others is also not consistent with the dialectical laws. It cannot be taken as a scientific support of the dialectical method of explaining events. Darwin and others who contributed to the construction and emendation of this theory explained the development of a species into another on the basis that some individuals of the former species acquire attributes and characteristics, either by mechanical coincidence or by defined external causes, such as the community and environment.

Every attribute that an individual acquires remains fixed in him and is transferred by heredity to his offspring. With this, a strong generation76 is produced due to such acquired attributes. The law of the struggle for survival fulfills its function in the midst of a struggle for food and survival between the strong members of this generation and the weak individuals77 of the species who have not acquired such attributes.

The weak individuals are destroyed, while the strong survive. The characteristics are gathered by having every generation transmit to the succeeding generation by way of heredity the characteristics it had acquired due to the circumstances and community in which it had lived. This goes on, until a new species is formed that enjoys all the characteristics that its ancestors had acquired with the passage of time. (p. 300)

We can clearly see the extent of contradiction between this Darwinian theory and the general dialectical method. The mechanical character of this theory is made clear in Darwin's explanation of the animal's development due to external causes. The individual characteristics and differences which the strong generation of the individuals of a species acquires are not the result of a developmental process nor the

fruit of an internal contradiction.

Rather, they are the product of a mechanical occurrence or of external factors, such as the community and environment. It is the objective circumstances which the strong individuals live that provide them with the elements of their strength and the characteristics that distinguish them from others, and not the internal struggle in their innermost being, as the dialectic assumes.

Further, the characteristic that the individual acquires mechanically– chat is, by means of external causes that are of the [environmental] circumstances he lives –does not develop by a dynamic motion and does not grow by an internal contradiction, so that it transforms the animal into a new kind. Rather, it remains fixed, and is transferred by heredity and without development. It continues by a fixed and simple form of change.

After this, another characteristic is added to the previous one that, in turn, is produced mechanically by means of objective circumstances. Thus, another simple change takes place. This is how the characteristics are produced mechanically. They continue their existence in their offspring by way of heredity. They are stable and fixed. When they are gathered, they finally constitute a loftier form of the new kind.

There is also a big difference between the law of the struggle for survival in Darwin's theory and the idea of the struggle of opposites in the dialectic. The idea of the struggle of opposites, according to the dialecticians, expresses a struggle between two opposites that, in the last analysis, leads to their union in a loftier composition consistent with the triad of the thesis, antithesis and synthesis. (p. 301)

In the class struggle, for example, the battle is waged between two opposites in the internal structure of society, these two opposites being the capitalistic class and the working class. The struggle ends with the absorption of the capitalistic class by the working class. The two classes are united in a classless society, all of whose individuals are owners and workers.

On the other hand, the struggle for survival or the strife between the strong and the weak in Darwin's theory is not dialectical, since it does not lead to the union of opposites in a loftier composition. Instead, it leads to the destruction of one of the two opposites and the retention of the other.

It completely eliminates the weak individuals of the species and retains the strong. Further, it does not result in a new composition in which both the weak and the strong (the two opposites in struggle) are united, as the dialectic assumes in the triad of the thesis, antithesis and synthesis.

If we discard the idea of the struggle for survival or the law of natural selection as an explanation of the development of the species, replacing it by the idea of the struggle between the animal and his community, a struggle which helps form the organic system in accordance with the conditions of the community, and if we say that the latter kind of struggle (instead of the struggle between the weak and the strong) is the source of development, as Roger Garaudy asserts[78] – I say that if we develop this

theory and explain the progress of the species in light of the struggle between the animal[79] and his environment, we will not reach a dialectical conclusion either.

This is because the struggle between the community and the organic system does not result in the meeting and union of the two in a loftier composition. Rather, the thesis and the antithesis remain separate. In this case, even if the two opposites in struggle – that is, the animal[80] and the environment – remain in existence at the end of the struggle, with neither of them being destroyed in the conflict, still they do not unite in a new composition, as the capitalistic and the working classes unite in a new social composition. (p. 302)

Finally, where is the Darwinian immediacy and biological perfection? The dialectic asserts that the qualitative transformations occur immediately in contrast to the quantitative changes that occur slowly. Further, it asserts that motion is continously heading in the direction of perfection and ascent.

Darwin's theory or the biological idea of development demonstrates the possibility of the exact opposite. Biologists have shown that in the living nature, there are cases of gradual motion, as there are cases of motion by sudden leaps.[81]

Moreover, the interaction that Darwin points out between a living being and nature need not secure the perfection of the developing being. Rather, due to it, the living being may lose some of the perfection that it had acquired, in accordance with the laws specified by Darwin in his theory of interaction between life and nature. This is exemplified in the animals who had a long time ago to live in caves and to abandon the life of light.

Thus, according to Darwin, they lost their sight due to their interaction with their specific environment and their disuse of the organ of sight in the fields of life. For this reason, the development of their organic composition led to regression. This is contrary to the Marxist view that asserts that the developmental processes that are interconnected in nature and that arise from internal contradictions always seek perfection, since they are linear progressive processes.

1. Al-Maddiyya wal-Mithaliyya fi al-Falsafa, p. 83.
2. Ibid.
3. Add to this that the alleged contradiction in the triad of existence rests on another confusion between the idea of a thing and the objective reality of that thing. The notion of existence is nothing but the idea of existence in our minds.

   It is other than the objective reality of existence. If we distinguish between the idea of existence and the reality of existence, the contradiction will disappear. The reality of existence is determined and limited. One cannot at all strip it from the attribute of existence. Our idea of existence, on the other hand, is not a real existence. Rather, it is a mental notion taken from the real existence.

4. Al-Maddiyya ad-Dialaktikiyya wal-Maddiyya at-Tarikhiyya, p. 7.
5. Hadhih Hiya ad-Dialaktikiyya, pp. 97-98.
6. Zeno of Elea, Greek philosopher (490-430 B.C.). A student and a defender of Parmenides. He is known for his paradoxes of space, time, motion and change. Some fragments of his work in which he presented his paradoxes are still extant.

7. Potentiality is the possibility of a thing, while actuality is the real existence of a thing.
8. In other words, motion is for the sake of acquiring these stages of development or completion. Therefore, when such stages are attained, motion, ceases.
9. Sadr ad-Din ash-Shirazi, better known as Mulla Sadra (A.D. 1572-1641). He was born in Shiraz where he held a teaching position at a religious school. He is said to have made the pilgrimage to Mecca on foot seven times. He believed that ancient philosophy combined with revealed truth gives the highest form of truth.

He wrote commentaries on as-Suhra Wardi's wikmat al-Ishraq and on parts of Ibn Sina's ash-Shifa'. He also wrote a number of original works, the best of which is Kitab al-Hikma al-Muta'aliya, the other title of thin work is Kitab al-Asfar al-Arba'a (The Four Journeys, i.e. of the soul).

10. The main evidence for the substantial movement may be summed up in the following two points. First, the direct cause of the accidental and outermost motion of bodies – whether mechanical or natural – is a specific power in the body.

This idea is true, even of the mechanical motion that at first appears as if proceeding from a separate power. For instance, if you force a body in a horizontal or a vertical line, the primitive notion of this motion is that it is an effect of the external force and the separate agent. But this is not true. The external agent is just one of the conditions for the motion. As for (p. 234) the real mover, it is the power that exists in the body. Because of this, the motion continues after the separation of the moving body from the external force and the separate agent; and the moveable mechanical system continues moving for a while, after the moving instrumental agent seizes. On this basis, modern mechanics posited the law of essential limitation (ganun al-qusur adhdhatiyy).

This law states that if a body is moved, is continues moving, unless something external stops it from continuing its moving activity. However, this law was misused, since it was considered as a proof that when motion begins, after that, it does not need a specific reason or a particular cause. It was taken as a means for rejecting the principle of causality and its laws. But the truth is that scientific experiments in modern mechanics show only that the separate external agent is not the real cause of motion; otherwise, the motion of a body would not continue after that body is separated from the independent external agent. Due to this, the direct cause of [continued] motion must be a power existing in the body [known as momentum], and the external agents must be conditions for, and influences on that power.

Second, the effect must be appropriate to the cause in stability and renewability. If the cause is stable, the effect must also be stable; and if the effect is renewable and progressive, the cause must also be renewable and progressive. In light of this, it is necessary that the cause of motion be moveable and renewable, in accordance with the renewal and progression of the motion itself. For, if the cause of motion is stable and fixed, anything it produces will be stable and fixed. Thus, motion becomes rest and fixedness. But this contradicts the meaning of motion and development.

On the basis of the above two points, we conclude the following, First, the power that exists in a body and that moves it is a moveable and progressive power. Owing to its progression, this power is a cause of all the accidental and outermost motions. Further, it is a substantial power, since it inevitably leads to a substantial power; for an accident exists by virtue of a substance. This demonstrates the existence of substantial motion in nature.

Second, a body is always composed of a matter made evident by motion, and a progressive substantial power by virtue of which the outermost motion occurs in the phenomena and accidents of the body.
At the present, we cannot touch upon the substantial motion and its proofs at greater length.

11. The problem of the relation of the new to the old is this. Since the cause is old and eternal, it must be a cause of what is appropriate to it and agrees with it in oldness and eternity. On the basis of this, a number of metaphysicians imagined that belief in the Eternal Creator philosophically necessitates belief in the oldness and eternity of the world, so that the effect will not be separated from its cause.

Ash-Shirazi solved this problem in light of the substantial motion, according to which the following holds. The realm of matter is in a continuous state of renewal and development. Thus, on this ground, the world's coming into being was a

necessary effect of its own renewable nature, and not the effect of the coming into being and the renewal of the First Creator.

12. Ash-Shirazi offered a new explanation of time, in which time is attributed to the substantial motion of nature. Thus, time becomes in this philosophical view of ash-Shirazi a constitutive element of the body, and no longer separate and independent from it.
13. We will discuss the separability of matter and the relation of the soul to the body in the last chapter of this investigation.
14. Did Duharnak al-Falsafa, p. 202.
15. Fakhr ad-Din ar-Razi, Muslim theologian and philosopher of religion (1149-1209). He was an Ash'arite and had many debates against the mu'tazilites. However, at the end of his life he saw no value in the dialectic method. Early in his career, he wrote Lubab al-Isharat (a commentary on Ibn Sina's al-Isharat wat-Tanbihat. This commentary was the subject of criticism by Nasir ad-Din at-Tusi). Other early works are: al-Mabahith al-Mashriqiyya and a somewhat autobiographical work, Munazarat al-'allama, Fakhr ad-Din (a description of his encounters with certain scholars). His most important theological work is a commentary on the Qur'an, Mafatih al-Ghayb. Another important work is Manaqib al-Imam ash-Shafi'i.
16. Marx, Engels wal-Marxiyya, p. 24.
17. Ma Hiya al-Madda, p. 56.
18. Al-Mantiq ash-Shakliyy wal-Mantiq ad-Dialaktikiyy, p. 9.
19. Ibid., p. 12.
20. See p. 172 [of the original text].
21. See p. 172 [of the original text].
22. Louis Pasteur, French chemist and microbiologist (1822-95). Pasteur showed that fermentation and certain diseases are caused by microorganisms. He was a pioneer in the use of vaccines. He was the first, for example, to use a vaccine for rabies. He is said to have saved the wine, beer and silk industries of a number of European countries. To him we owe our knowledge of pasteurization. His principal publication is Studies on Beer (1876). In 1879, this was translated into English under the title Studies on Fermentation.
23. Al-Mantiq ash-Shakliyy wal-Mantiq ad-Dialaktikiyy pp. 12-13.
24. Text: ath-thiql (weight).
25. Text: ath-thiql (weight).
26. Fa-asbahat al-quwwa al-mikanikiyya khassat handasa lil-'alum.
27. Compare what we have mentioned with the Marxist explanation of transformation in the mechanical sciences. This explanation was offered by Dr Taqi Arni in his book, Materialism Diyalaktic, p. 28. He bases this explanation on the presence of truth in both Newton's mechanics and relativity mechanics, and on the development of the truth in both of these mechanics, in accordance with the dialectic.
28. Al-Maddiyya ad-Dialaktikiyya wal-Maddiyya at-Tarikhiyya, p. 12.
29. Hawl at-Tanaqud, p. 4.
30. Al-Mantiq ash-Shakliyy wal-Mantiq ad-Dialaktikiyy, p. 9.
31. One notices that all Marxist texts misuse the terms 'contradiction' and 'opposition'. Thus, Marxism considers both of these terms in the same sense, even though they are not synonymous in philosophical traditions. Contradiction is the state of negation and affirmation; while opposition means two contrary affirmations.

The straightness and the non-straightness of a line are contradictions, since they are an affirmation and a negation [respectively]. However, the straightness of a line (p. 258) and the curvature of a line are two opposites. Contradiction in the philosophical sense is not applicable to the last pair, for neither of them is a negation of the other. Rather, it is an affirmation parallel to the affirmation of the other.

Similarly, Marxism misunderstood opposition, or misused the term 'opposition'. It considered a thing which is different from another as its opposite. Thus [according to it], a chick is the opposite of an egg, and a chicken is the opposite of a chick, even though opposition in the philosophical sense is not just a difference among things. Rather, opposition is an attribute

which cannot unite with another attribute in one thing. In this work, we [use these terms] in accordance with the Marxist sense for the purpose of facilitation and clarification.

32. Text: wa-khuluwwihima (the emptiness of these two principles).
33. Al-Kawn wal-Fasad, pp. 168-9.
34. Ibid., p. 154.
35. Georges Lefebvre, French historian (1874-1959). His contribution is mainly in the socio-economic field. He studied the agrarian history of the French Revolution. His main writings are: The Agrarian Question during the Reign of Terror (translated into Russian in 1936), The French Revolution and A Study of the French Revolution.
36. Karl Marx, p. 58
37. Hawl at-Tanaqud, p. 13.
38. Karl Marx, p. 60
39. Did Duharnak, p. 203.
40. Ibid., pp. 203-4.
41. Hawl at-Tanaqud, p. 14
42. Ibid., pp. 14-15.
43. Ibid.
44. Ayyam.
45. Al-Mantiq ash-Shakliyy wal-Mantiq ad-Dialaktikiyy, pp. 20-1.
46. Ibid.
47. Text: Ubulidas. We have not been able to identify any author by this name. We suspect though that the reference here is to Chrysippus who is said by Diogenes to have given the argument of the veiled father (Life of Diogenes, VII, ch. 44 and 82).
48. Text: Ubulidas.
49. Al-Mas'ala al-Falsafiyya, Muhammad 'Abd ar-Rahman Marhaba, p. 103.
50. It never reaches 2, it approaches 2.
51. Karl Marx, p. 21; Hadhih Hiya ad-Dialaktikiyya, p. 78.
52. Did Duharnak: al-iqtisad as-siyasiyy, p. 193.
53. Our Economics has already been issued. It includes one of the most extensive studies of historical materialism, in light of the philosophical principles and the general course of human history in real life.
54. See Our Economics, by the author.
55. Al-Maddiyya ad-Dialaktikiyya wal-Maddiyya at-Tarikhiyya, pp. 8-9.
56. i.e., to the original state.
57. Al-Bayan ash-Shuyu'i, p. 8.
58. Usus al-Lininiyya, p. 66.
59. It must be mentioned that this is so only under normal pressure (76 centimeters of mercury).
60. i.e., only if water is not completely pure and is under constant normal pressure.
61. Did Duharnak, pp. 211-12; al-Maddiyya ad-Dialaktikiyya wal-Maddiyya at-Tarikhiyya, p. 10.
62. Did Duharnak, p. 214.
63. But these phase changes from solid to liquid to vapor are not strictly we in any of the compounds cited.
64. Hadhih Hiya ad-Dialaktikiyya Mabadi' al-Falsafa al-Awwaliyya, George Politzer, p. 10.
65. Did Duharnak, p. 210.
66. Al-Maddiyya ad-Dialaktikiyya wal-Maddiyya at-Tarikhiyya, p. 6.
67. The four questions are as follows: 'What is it?' 'Does it exist?' 'What is it like?' 'Why is it?' For the sake of clarification, we will apply these questions to one of the natural phenomena.

Let us take heat and apply these questions to it. 'What is heat?' By this question, we seek an explanation of the specific notion of heat. Thus, we answer this question, for example, (by saying) that heat is a form of power. 'Does heat exist in nature?' Our answer is of course in the affirmative. 'What is heat like?' In other words, what are the phenomena and

properties of heat?

The answer to this question is given by physics. Thus, it is said, for example, that among the properties of heat are warming, expanding, contracting, changing some natural characteristics of matter, etc. Finally, 'Why does heat exist?' This question is attributed to an interest in understanding the factors and causes that lead to heat, and the external conditions on which heat depends. The answer, for example, is that the earth derives the power of heat from the sun, and then emits it, etc.

With this, you know that the metaphysical logic places the issue of the linkage of a thing to its causes and circumstances in the same class as the other main issues concerned with reality, existence, and properties of this thing.

68. Emile Burns, British Marxist (1899–).
69. Ma Hiya al–Marxiyya, pp. 75–6.
70. Marx, Engels wal–Marxiyya, p. 24.
71. Ma Hiya al–Madda, p. 29.
72. One cannot take the interaction between external opposites as a proof for the possibility of this, for the interaction between external opposites does not mean that each of these opposites is a condition and a cause for the existence of the other. Rather, this interaction is actually due to the fact that each opposite acquires an attribute which it did not have and which pertains to the other opposite. Thus, the negative and the positive charges interact, not in the sense that each of the two charges comes into existence as a result of the other, but in the sense that the negative charge produces a specific state of attraction in the positive charge. The converse of this is also true.
73. Charles Robert Darwin, English naturalist (1809–82). One of the strongest and best–known defenders of organic evolution. His most important work is The Origin of Species by Means of Natural Selection (1859).
74. Ludwig Feuerbach, p. 88.
75. It must be noted, though, that this distinction is no longer recognized.
76. i.e., an adapted generation.
77. i.e., unadapted.
78. Ar–Ruh al–Hizbiyya fi al–'Ulum, p. 43.
79. Text: al–bi'a (community)
80. Text. al–bi'a (community).
81. Ibid., p. 44.

Chapter 3: The Principle of Causality

The principle of causality is one of the primary propositions known to people in their ordinary lives. This principle states that for everything there is a cause. It is one of the necessary rational principles; for (p. 808) a human being finds at the heart of his nature a motive that causes him to attempt to explain the things he encounters and to justify the existence of such things by disclosing their causes. This motive is inborn in human nature.

Also, is may be present in a number of animals. Thus, such animals instinctively pay attention to the source of motion in order to know its cause. They search for the source of a sound, again in order to know its cause.

That is why human beings are always confronted with the question: 'Why...?' This question is raised concerning every existence and every phenomenon of which they are aware, so that if they do not find a specific cause [of such an existence or such a phenomenon], they believe that there is an unknown cause that produced the event in question.

The following things depend on the principle of causality: (1) demonstration of the objective reality of sense perception; (2) all the scientific theories and laws that are based on experimentation; and (3) the possibility of inference and its conclusions in any philosophical or scientific field. Were it not for the principle and laws of causality, it would not be possible to demonstrate the objectivity of sense perception, nor any scientific theory or law.

Further, it would not be possible to draw any inference in any field of human knowledge on the basis of any kind of evidence. This point will soon be clarified.

Causality and the Objectivity of Sense Perception

In 'The Theory of Knowledge', we pointed out that sense perception is nothing but a form of conception. It is the presence of the form of the sensible thing in the sense faculties. It does not have the character of a true disclosure of an external reality.

That is why, in the case of certain illnesses, a human being may have sense perception of certain things, without assenting to the existence of those things. Therefore, sense perception is not a sufficient ground for assent, judgement or knowledge concerning the objective reality. (p. 304)

As a result of this, the problem we face is that if sense perception is not in itself evidence for the existence of the sensible thing that lies outside the limits of awareness and knowledge, then how can we assent to the existence of the objective reality? The answer is revealed in light of our study of the theory of knowledge. It is as follows. The assent to the existence of an objective reality of the world is a primary necessary assent. For this reason, it does not require evidence.

However, this necessary assent indicates only the existence of an external reality of the world in general. But the objective reality of every sense perception is not known in a necessary manner. Therefore, we need evidence to prove the objectivity of every specific sense perception. This evidence is the principle and laws of causality.

The occurrence [in the senses] of the form of a specific thing under specific circumstances and conditions reveals, in accordance with this principle, the existence of an external cause of that thing. Were it not for this principle, sense perception or the presence of a thing in the senses could not reveal the existence of that thing in another sphere.

Because of this, in a specific case of illness, a human being may perceive certain things, or imagine that he sees them, without discovering an objective reality of those things. This is because the principle of

causality does not prove the existence of that reality, as long as it is possible to explain a sense perception by the specific case of the illness.

Rather, it proves the objective reality of sense perception if there is no explanation of it in light of the principle of causality except by an objective reality that produces the sense perception. From this one can draw the following three propositions.

First, 'Sense perception by itself does not disclose the existence of an objective reality, since it is conception, and it is not the task of conception (regardless of its kind) to give a true disclosure'. Second, 'Knowledge of the existence of a reality of the world in general is a necessary and primary judgement that does not require evidence; that is, it does not require prior knowledge'– this is the point separating idealism from realism. (p. 305) Third, 'Knowledge of an objective reality of this or that sense perception is acquired only in light of the principle of causality'.

Causality and Scientific Theories

Scientific theories in the various experimental and observational fields are in general primarily dependent on the principle and laws of causality. If causality and its proper order are eliminated from the universe, it becomes very difficult to form a scientific theory in any field. For the clarification of this, we must point out a number of causal laws from the philosophical group [of laws] on which science rests.

These laws are the following:

- The principle of causality that asserts that every event has a cause;

- The law of necessity that asserts that every cause necessarily produces its natural effect, and that it is not possible for effects to be separate from their causes;

- The law of harmony between causes and effects that asserts that every natural group that is essentially in harmony must also be in harmony with respect to [its] causes and effects.

Thus, in light of the principle of causality, we know, for example, that the radiation emitted from the radium atom has a cause, which is the internal division in the content of the atom. Further, in light of the law of necessity, we find that this division necessarily produces the specific radiation when the necessary conditions are fulfilled. The presence of these conditions and the production of this radiation are inseparable.

The law of harmony is the basis of our ability to generalize the phenomenon of radiation and its specific explanation to all the radium atoms.

Thus, we say that as long as all the atoms of this element are essentially in harmony, they must also be in harmony with respect to (p. 306) their causes and effects. If scientific experimentation discloses

radiation in some of the radium atoms, it becomes possible to assert this radiation as a common phenomenon of all similar atoms, given the same specific circumstances.

It is clear that the last two laws – that is, the law of necessity and the law of harmony – are the result of the principle of causality. If there were no causality in the universe between some things and some other things – (that is,] if things happened haphazardly and by chance – it would not be necessary that, when there is a radium atom, radiation exists at a specific degree.

Also, it would not be necessary that all the atoms of this element share the specific radiational phenomena. Rather, as long as the principle of causality is excluded from the universe, it would be possible that radiation pertains to one atom and not to another, just because of haphazardness and chance. Thus, both necessity and harmony are attributed to the principle of causality.

After having clarified the three main points (causality, necessity– and harmony), let us go back to the sciences and scientific theories. We see with clarity that all the theories and laws involved in the sciences are in truth established on the above main points, and depend on the principle and laws of causality. If this principle were not taken as a fixed philosophical truth, it would not be possible to establish a theory and to erect a general and comprehensive scientific law.

The reason is that the experiment performed by the natural scientist in his laboratory cannot cover all the parts of nature. Rather, it covers a limited number of parts that are essentially in harmony. Thus, such an experiment discloses that such parts share a specific phenomenon. When the scientist is certain of the soundness, precision and objectivity of his experiment, he immediately postulates a theory or a general law applicable to all the parts of nature that resemble the subject of his experiment.

This generalization, which is a basic condition for establishing a natural science, is not justified except by the laws (p. 307) of causality in general – particularly, the law of harmony which [as mentioned,] asserts that every group that is essentially in harmony must also be in harmony with respect to [its] causes and effects.

Therefore, had there not been causes and effects in the universe, and had things occurred by pure chance, it would not have been possible for the natural scientist to say that what is confirmed in his own laboratory is applicable with no restriction to every part of nature. Let us illustrate this by the simple example of the natural scientist who proved by experimentation that bodies expand when heated.

Of course, his experiments did not cover all the bodies in the universe. Rather, he performed his experiments on a number of various bodies, such as the wooden car wheels on which iron frames smaller than they are placed when heated.

Thus, as soon as these frames cool off, they contract and clasp the wood firmly. Let us suppose that the scientist repeats this experiment on other bodies a number of times. At the end of the experimental course, he cannot escape the following question: 'Since you have not covered all the particular bodies,

how then can you believe that new frames other than those you have tried will also expand by heat?'

The only answer to this question is the principle and laws of causality. Since the mind does not accept haphazardness and chance, but explains the universe on the basis of causality and its laws, including those of necessity and harmony, it finds in limited experiments a sufficient ground for accepting the general theory that asserts the expansion of bodies by heat.

This expansion that experiments disclosed did not occur haphazardly. Rather, it was the result or effect of heat. Since the law of harmony in causality dictates that a single group in nature is in harmony with respect to its causes and effects, or agents and results, it is no wonder then that all the reasons of securing the applicability of the phenomenon of expansion to all bodies are met.

Thus, we know that the positing of the general theory was not possible (p. 308) without starting from the principle of causation. Hence, this principle is the primary foundation of all the experimental sciences and theories. In short, the experimental theories do not acquire a scientific character unless they are generalized to cover fields beyond the limits of particular experiments, and are given as a general truth.

However, they cannot be given as such except in light of the principle and laws of causality. Therefore, the sciences in general must consider the principle of causality and the closely related laws of necessity and harmony as fundamentally admitted truths, and accept them prior to all the experimental theories and laws of the sciences.

Causality and Inference

The principle of causality is the foundation on which all attempts of demonstration in all the spheres of human thought rest. This is because demonstration by evidence for a certain thing means that if the evidence is sound, it is a cause of the knowledge of the thing that is the object of demonstration. When we prove a certain truth by a scientific experiment, a philosophical law or a simple sense perception, we only attempt to have the proof as a cause of the knowledge of that truth.

Thus, were not for the principle of causality and [the law of] necessity, we would not he able to do so. The reason is that if we discounted the laws of causality and did not accept the necessity of the existence of specific causes of every event, there would not be any link between the evidence on which we rely and the truth that we attempt to acquire by virtue of this evidence. Rather, it becomes possible for the evidence to be sound without leading to the required result, since the causal relation between the pieces of evidence and the results, or between the causes and the effects, is broken off.

Thus, it becomes clear that every attempt at demonstration depends on the acceptance (p. 309) of the principle of causality; otherwise, it is a wasteful and useless attempt. Even the demonstration of the disproof of the principle of causality, which is attempted by some philosophers and scientists, also rests on the principle of causality.

For those who attempt to deny this principle by resorting to a certain evidence would not make this attempt had they not believed that the evidence on which they rely is a sufficient cause of the knowledge of the falsehood of the principle of causality. But this is in itself a literal application of this principle.

Mechanics and Dynamics

This leads to the following conclusions. First, it is not possible to prove or to demonstrate empirically the principle of causality, since the senses do not acquire an objective quality except in light of this principle. We prove the objective reality of our sense perceptions on the basis of the principle of causality.

Therefore, it is not possible that for its demonstration, this principle depends on the senses and relies on them. Rather, it is a rational principle that people accept independently of the external senses.

Second, the principle of causality is not an experimental scientific theory. Rather, it is a rational philosophical law above experimentation, for all scientific theories depend on it. This became fully clear after having learned that every scientific conclusion that relies on experimentation faces the problem of generality and comprehensiveness.

This problem is that the experiment on which the conclusion rests is limited. How then could it by itself be evidence for a general theory? We learned that the only solution for this problem is the principle of causality, since it is evidence for the generality and comprehensiveness of the conclusion.

Thus, if we assume that the principle of causality itself rests on an experiment, it becomes necessary that (p. 310) we face the problem of generality and comprehensiveness once again. An experiment does not cover the universe; how then would it be considered evidence for a general theory? When encountering this problem with respect to the various scientific theories, we used to solve it by resorting to the principle of causality, since this principle is sufficient evidence for the generality and comprehensiveness of the conclusion.

But if this principle itself is considered experimental and the same problem is encountered with respect to it, we will be totally unable to solve this problem. It is necessary, therefore, that the principle of causality be above experiments and a fundamental principle of the experimental conclusions in general.

Third, it is not possible to give any kind of evidence for the disproof of the principle of causality. The reason is that every attempt of this kind entails an admission of this principle. Therefore, this principle is fixed prior to any evidence given by human beings.

These conclusions can be summarized as follows. The principle of causality is not an experimental principle. Rather, it is a necessary rational principle. In light of this, we can distinguish between mechanics and dynamics, and between the principle of causality and the principle of indeterminacy.

The mechanical explanation of causality rests on the basis of causality as an experimental principle.

According to mechanical materialism, this principle is nothing but a material relation between material phenomena in the experimental field and is discovered by scientific methods.

That is why it is natural that mechanical causality collapses if experimentation fails in some scientific fields to disclose the causes and agents behind the phenomenon in question. That is because this kind of causality is not attained except on an experimental basis. If experimentation works against it, and practical application does not prove it, then it falls short of scientific confidence and consideration.

However, according to our view of causality, which asserts that causality is a rational principle above experimentation (p. 311) the situation is completely different with regard to various aspects. First, causality is not limited to the natural phenomena that appear in the experiment.
Rather, it is a general law of existence at large, which includes the natural phenomena, matter itself, and the various kinds of existence that lie beyond matter, Second, the cause whose existence is confirmed by the principle of causality need not be subject to experimentation, or be a material thing.

Third, the fact that experimentation does not disclose a specific cause of a certain development or of a certain phenomenon does not mean a failure on the part of the principle of causality, for this principle does not rest on experimentation, which can be shaken in the case of the absence of experimentation. In spite of the failure of experimentation to discover the cause, philosophical confidence in the existence of such a cause remains strong, in accordance with the principle of causality.

The failure of experimentation to discover the cause is due to two things: either to the fact that experimentation is limited and does not extend to the material reality and occurrence of specific attachments, or to the fact that the unknown cause lies outside empirical thought, and is beyond the world of nature and matter.

By virtue of the above, we can distinguish the basic differences between our idea of the principle of causality and the mechanical idea of this principle. We can also see that the doubt raised concerning this principle was only due to the interpretation of it in accordance with the deficient mechanical notion.

The Principle of Causality and Microphysics

In light of the conclusions drawn above regarding the principle of causality, we can defeat those strong attacks that were waged in microphysics against the law of (p. 312) necessity, and consequently, against the principle of causality itself. In atomic physics, there was the tendency that asserts that the necessary regularity stressed by causality and its laws cannot be true on the level of microphysics.

Thus, it may be true that the causes themselves produce the effects themselves on the level of scholastic physics or on the level of the physics of the naked eye. Furthermore, the influence of causes acting on the same particular circumstances must necessarily lead to the saint results, such that we can be sure of the nature and necessity of the results due to a study of the causes and natural conditions.

However, everything appears different if we try to apply the principle of causality to the atomic world. That is why the physicist Heisenberg[1] declared that it is impossible for us to measure with precision the quantity of the motion of a simple body and to determine at the same time the position of this body in the wave related to it, in accordance with the positive mechanics called for by Louis de Broglie.[2] The more precise the measurement of this body's position, the more is this measurement a factor in the readjustment of the quantity of motion, and consequently in the readjustment of the velocity of the small body in an unpredictable manner. Further, the more precise the measurement of the motion, the more indeterminate does the position of the small body become.[3]

Thus, physical events in the atomic sphere cannot be measured unless they involve some unmeasurable disorder. The more profound our precision of the scientific measurements, the more distant do we become from the objective reality of those events. This means that it is not possible to separate a thing observed in microphysics from the scientific instrument used by the scientist to study that thing.

Similarly, it is not possible to separate chat thing from the observer himself, since different observers working on the same subject with the same instrument [may] achieve different measurements. With this, the idea of indeterminacy arose; this idea is in full contradiction against the principle of causality (p. 313) and against the basic rules that governed physics previously.

Attempts were made to replace necessary causality by what is called 'uncertainty relations' or 'laws of probability', advocated by Heisenberg who insisted that the natural sciences, such as the human sciences, cannot make predictions with certainty when considering a simple element. Rather, the utmost they can do is to form a probability.

In fact, all these scientific doubts and suspicions that the scientists raised in microphysics are based on a specific notion of the principle and laws of causality that is in disagreement with our option of this principle and these laws. We do not wish to disagree with these scientists over their experiments, or to ask them to overlook and abandon the discoveries made by means of these experiments.

Furthermore, we do not intend to minimize the value and importance of such discoveries. Rather, we differ from those scientists in our general notion of the principle of causality. On the basis of this difference, all the above–mentioned attempts to destroy the principle and laws of causality become insignificant.

Put in more detail, if the principle of causality were a scientific principle that rests on experimentation and observation in the ordinary fields of physics, it would be dependent on experimentation for its demonstration and generality.

Thus, if we do not achieve clear applications of it in the atomic field and cannot discover a necessary order in this field that rests on the principle and laws of causality, then it would be our right to doubt the value of this principle itself and the extent of its soundness and generality.

But we have already shown (1) that the applicability of the principle of causality to the ordinary fields of physics and the belief that causality is a general order of the universe in these fields are not the result of a pure experimental evidence; and (2) that the principle of causality is a necessary principle above experimentation.

If this were not so, no natural science at all would be possible. If this becomes clear to us, and we give the principle of causality its natural place in the chain of human thought, (p. 314) our inability to apply it experimentally in some natural fields and our failure to discover by scientific methods the complete necessary order in these fields cannot shake this principle.

All the observations gathered by scientists in light of their microphysical experiments do not show that scientific evidence has proved the falsity of the principle and laws of causality in this exact field, which is one of the many natural fields.

It is clear that the lack of scientific and experimental capabilities does not affect the principle of causality, neither in part nor as a whole, since this principle is necessary and above experimentation. There are, then, two explanations of the failure of the scientific experiments in the attempt at grasping the mysteries of the necessary order of the atom.

The first is a deficiency in the scientific methods and an unavailability of the experimental instruments that give the scientist the opportunity to look over all the material conditions and circumstances. A scientist may work on the same subject with the same instrument on a number of occasions.

Yet, he [may] reach different results, not because the subject of his work is free from any necessary order, but because the available experimental instruments are insufficient to disclose to him the exact material conditions whose differences lead to the differences among the results. It is natural that the experimental instruments concerning the atomic fields and events are more deficient than the experimental instruments employed in other physical fields that are less concealed and clearer.

The second is the effect produced in the subject by the scientific measurements and instruments, due to the subject's delicacy and smallness. This effect is critical and not subject to scientific measurements and study. The scientific instruments may reach the highest level of precision, perfection and profundity, yet in spite of this the scientist still faces the same problem.

This is because he finds himself confronted with physical events that he cannot measure without introducing in them an unmeasurable disorder. With this, his position regarding these events is different from his position regarding experiments of physics measured by the naked eve. The reason is that in those experiments, he can apply his measurements without (p. 315) any readjustment in the thing to be measured.

Even when he makes some readjustment in that thing, this readjustment itself will be measurable, in microphysics, on the other hand, the minuteness and strength of the instrument may itself be the cause

of that instrument's failure, since it causes a change in the observed subject. Therefore, that subject cannot be studied in an independent objective manner.

That is why John–Louis Destouches[4] says regarding a small body chat instead of the intensity of light being what is important, it is the length of the light wave that matters. Whenever we light that small body by a short wave – that is, by a wave of a large frequency – the motion of that body becomes subject to disorder.

Both causes are attributed to the failure of the scientific experimental instruments and observations either to regulate the observed subject by all its material conditions and circumstances, or to measure with precision the effect that the experiment itself produces in that subject. All of this confirms one's inability to view the necessary order governing, for example, the small bodies and their motion, and to predict with precision the path that these bodies will follow. Further, this does not prove their freedom, nor does it justify the introduction of indeterminacy in the material realm and the elimination of the causal laws from the universe.

Why Things Require Causes

We will now discuss a new aspect of the principle of causality – namely, the response to the following questions: 'Why do things require causes or agents without which they cannot come to exist; and what is the real cause that makes them dependent on those causes and agents?' These are questions that we face, of course, after having accepted the principle of causality.

As long as the things that are contemporaneous with us in this universe are in general subject to the principle of causality (p. 316) and exist in accordance with the laws of causality, we must inquire about the secret of their subjugation to this principle. Can this subjugation be attributed to something essential in those things of which they cannot at all be free? Or is it attributable to an external cause that makes them in need of causes or agents? Whether this or that is true, [the question remains] as to the limits of this secret on which the principle of causality rests. Further, is it or is it not common to all the various kinds of existence?

Four theories resulted from attempts made to respond to these questions.

A. The Theory of Existence

This theory states that an existent requires a cause for its existence. This requirement is essential to the existence. We cannot conceive an existence free from this requirement. The reason behind the requirement for a cause is a secret hidden in the innermost being of existence. The consequence of this is that every existence is caused.

Some Marxist philosophers adopt this theory, relying in their scientific justification of it on experiments, which indicate in the various fields of the universe that existence in its different forms and kinds

disclosed by experimentation cannot be free from its cause and cannot dispense with its agent. Causality is a general law of existence as confirmed by scientific experiments. The assumption of an existence without a cause is contradictory to this law. That is why such an assumption is a kind of belief in haphazardness for which there is no room in the general order of the universe.[5]

By way of this, they have attempted to accuse theology of upholding haphazardness because it upholds the existence of a first cause not caused, or not preceded by an agent. Since this existence, which theology is alleged to accept, is an exception to the principle of causality, (p. 317) it is, therefore, the result of haphazardness. But science has proved that there is no haphazardness in existence. Hence, one cannot admit this divine cause that metaphysics advocates.

Once again, these thinkers were at error for wishing to discover the secret of the requirement for a cause, and to know by means of scientific experiments the limits of causality and the extent of the broadness of such limits. They erred earlier when attempting to infer the principle of causality itself, particularly, from experiments and scientific induction about the universe.

Scientific experiments are not applicable except in their own sphere, which is a limited material realm. The most they disclose is the subjugation of things in that realm to the principle of causality. Thus, explosion, boiling, burning, heat, motion, as well as other similar natural phenomena do not exist without causes. It is not within the scientific possibilities of experiments to indicate that the secret of the requirement for a cause lies at the heart of existence in general. It is possible that this secret is fixed in specific forms of existence, and that the things appearing in the experimental field are of those specific forms.

Therefore, it is incorrect to consider experimentation as evidence that existence in general is subject to agents or causes, as long as experimentation is not directly in touch with anything except the material realm of existence.

Further, as long as its activity is in this realm with which it is directly in touch, it will not extend beyond the clarification of the causes and effects that proceed from those causes to a discovery of the cause that makes those effects in need of those causes. If experimentation and its limited means fall short of forming a clear answer to this issue, then one must study this issue on the basis of rational principles and in an independent philosophical manner. As the principle of causality itself is one of the purely philosophical principles, as you have already learned, so also are the investigations concerning it and the theories that treat its limits.

We must point out that the accusation that the idea of the first cause is a kind of a (p. 318) belief in haphazardness implies a misunderstanding of this idea and the notions on which it rests. This is because chance is nothing but the existence, without a cause, of something with respect to which existence and non-existence are the same.

Thus, anything that includes the possibility of existence and the possibility of non-existence to the same

degree, and then comes into existence without a cause is chance. But the idea of the first cause proceeds from the assertion that existence and non-existence are not equal in the first cause. Therefore, this cause is not both possible of existence and possible of non-existence. Rather, its existence is necessary, and its nonexistence is impossible. It is intuitive that a belief in a necessary being characterized as such does not at all imply an assent to haphazardness.

B. The Theory of Creation

This theory considers the need of things for their causes as based on the creation of these things. Explosion, motion and heat, for example, require causes for themselves, only because they are things that exist after they had not existed.

Thus, it is the coming into existence that requires a cause, and is the main reason for our raising the following question regarding every reality contemporaneous with us in this universe: 'Why did it exist?' In light of this theory, the principle of causality becomes limited to events in particular. Thus, if a thing exists continuously and always, and has not come into existence after not having existed, there will be no need in it for a cause, nor will is enter the specific realm of causality.

The present theory went too far in restricting causality, as the previous theory went too far in generalizing causality. From a philosophical point of view, there is nothing to justify the present theory. In fact, the attribution of the coming into existence to the thing's existing after not having existed is like the existence of warmth in a certain water that had not been warm. It does not matter to the mind whether this warmth comes into existence after non-existence, or whether it exists continuously. In either case, the mind requires a specific cause for it. (p. 319)

Extension of a thing's age and history to the furthest times would not justify that thing's existence, nor would it make it dispense with a cause. In other words, since the coming into existence of the warmth requires a cause, extending the warmth [over time] would not be sufficient to free it from this requirement. This is because its extension makes us pursue further the question about its cause, regardless of the length of the extension process.

C- D. The Theories of Essential Possibility and Existential Possibility

These two theories assert that what makes things need their causes is possibility. However, each of the two theories has its own notion of possibility that differentiates it from the other theory. The difference between them is a manifestation of a deeper philosophical difference concerning quiddity and existence. Since the scope of this book does not permit a discussion and a study of this difference, we will limit ourselves in our investigation to the theory of existential possibility, due to the fact that this theory rests on the view that asserts the fundamentality of existence – that is, the correct view concerning the deeper philosophical difference mentioned above.

The theory of existential possibility was advanced by the great Islamic philosopher, Sadr ad-Din ash-

Shirazi, who begins this theory by the analysis of the principle of causality itself. This analysis led to his attainment of the secret. His grasp of the real cause behind the need of things to have their causes did not require of him anything other than a deep philosophical understanding of the principle of causality.

Now, we begin, as he began, by studying and scrutinizing causality. There is no doubt that causality is a relation between two existences: the cause and the effect. Therefore, it is a kind of link between two things. But links are of various kinds and types. (p. 320) The painter is linked to the tablet on which he draws. The writer is linked to the pencil with which he writes. The reader is linked to the book that he reads. The lion is linked to the iron chain that surrounds his neck. The same is true of the remaining relations and links among [other] things.

However, an obvious fact appears clear in all the examples of linkage presented above. It is this: each of the two linked things has a specific existence prior to its link with the other thing. The tablet and the painter are both in existence before the act of painting comes into being. Similarly, the writer and the pencil are both in existence before each of them is linked to the other.

Again, the reader and the book both exist independently, and later, linkage occurs to them. Thus, in all these examples, a link is a relation that occurs to the two things after they had both existed. That is why a link is one thing, while the existence of the two linked things is another. In its essence, the tablet is not a link to the painting, nor is the painter in essence a mere link to the tablet. Rather, linkage is a quality that happens to both of them after each had existed independently.

This difference between the reality of the link and the independent existence of each of the two linked things is evident in all kinds of links, to the exclusion of one kind – namely, the link between two things by means of the link of causality. If, for example, B is linked to A causally, and if B is an effect or product of A, we will have two things one of which is an effect (this being B), while the other is a cause (this being A). The causality between the two, on the other hand, is the kind of link that one of them has to the other.

But the question is this: does B have an existence independent of its link to A, and then experiences linkage, as is the case with the tablet in relation to the painter? It does not take much examination to answer in the negative. If B has a real existence prior to its link with its cause, it will not be an effect of A. This is because as long as it exists independently of its link to A, (p. 321) it is not possible for it to be the effect or product of A.

Causality by nature requires that the effect does not have a reality prior to its link with its cause; otherwise, it will not be an effect. This makes it clear that the existence, which is an effect, has no reality except the very link and relation to the cause. This is the main difference between the link of the effect to the cause and the link of the tablet to the painter, the pencil to the writer, or the book to the reader. The tablet, the pencil and the book are things characterized by linkage to the painter, the writer and the reader. But B is not something that has a link or a relation to the cause, for to suppose it as having such

a link requires that it has an independent existence to which linkage occurs as it occurs to the tablet in the hands of the painter. But with this, B would cease to be an effect.

Rather, it becomes the very linkage, in the sense that its being and existence become a conjunctive being and a relational existence. That is why the discontinuity of its linkage to its cause is a destruction of it and an end to its being, for its being is represented in that linkage. On the contrary, if the tablet is not linked to the painter in a specific act of painting, it will not lose its specific being and existence.

If we can draw this important conclusion from the analysis of the principle of causality, we can immediately give an answer to our basic question and know the secret of the things' need for their causes. In light of the preceding discussion, [it becomes clear that] the secret of this is that the external realities on which the principle of causality operates are nothing in fact other than relations and links.

Therefore, relations and links are constitutive of the being and existence of these things. It is clear that if a reality is relational – that is, if it is the very relation and link– it cannot be detached from the thing to which it is essentially linked or related. That thing is its cause or agent, for it cannot exist independently of it.

Thus, we know that the secret of these external realities that are contemporaneous with us for requiring a cause is not their coming into existence nor the possibility of their quiddities. Rather, this secret (p. 322) lies hidden in their existential structure and in the heart of their being. Their external reality is the very relation or link, and the relation and link cannot dispense with the thing to which they are related or linked.

At the same time, we also know that if the external reality is not one of conjunction and relation, the principle of causality will not be applicable to it. Therefore, external existence is not, as a whole, governed by the principle of causality. Rather, this principle governs the relational existents whose reality expresses linkage and relation.

Fluctuation between Contradiction and Causality

In spite of the fact that Marxism takes the dialectical contradictions as its model in its analytic investigations of the various aspects of the universe, life and history, still it does not completely escape wavering between the dialectical contradictions and the principle of causality. Since it is dialectical, it emphasizes that growth and development result from the internal contradictions, as was explained in earlier discussions.

Thus, the internal contradiction is sufficient as an explanation of every phenomenon in the universe, without need for a higher cause. But, on the other hand, Marxism admits the cause–effect relation, and explains this or that phenomenon by external causes, and not by the contradictions that are stored in the innerness of that phenomenon.

Let us take an example of this wavering from the Marxist historical analysis. On the one hand, Marxism insists that the presence of internal contradictions in the innermost being of the social phenomena is sufficient for the development of such phenomena in a dynamic motion. But it also asserts that the formidable social edifice is established as a whole on one principle – namely, the productive forces –and that the intellectual conditions, the political conditions and the like are nothing but superstructures in that edifice and reflections, in another form, of the productive method on which edifice is erected. This means that the relation between these superstructures and the productive forces is the relation of an effect (p. 323) to a cause. There is no internal contradiction but causality.6

It is as if Marxism realized that its position oscillates between internal contradictions and the principle of causality. Thus, it attempted to reconcile both sides. It imposed on the cause and effect a dialectical sense, and rejected its mechanical notion. On the basis of this, is allowed itself to use in its analysis the cause–effect procedure in a Marxist dialectical fashion.

Thus, Marxism rejects the causality that takes a straight course in which the cause remains external to its effect, and the effect negative in relation to its cause; for such causality is in conflict with the dialectic (that is, with the process of essential growth in nature). This is because the effect in accordance with this causality cannot be richer and more developed that its cause, for increase in richness and development would be inexplicable.

But what Marxism intends by the cause and effect is this. The effect is the product of its contradictory: thus it develops and grows by an internal motion, in accordance with the contradictions it involves, so that it returns to the contradictory from which it sprang, in order to interact with it and, by means of its union with it, form a new composition more self–sufficient and richer than the cause and effect separately. This notion is in agreement with the dialectic and expresses the dialectical triad (the thesis, antithesis and synthesis).

The cause is the thesis, the effect is the antithesis, and the union which is a link between the two is the synthesis. Causality here is a process of growth and completion by way of the production of the effect from the cause (that is, the antithesis from the thesis). The effect in this process is not produced negatively. Rather, it is produced accompanied by its internal contradictions that support its growth and preserve its cause in a loftier and more complete composition.

In our previous discussion of the dialectic, we expressed our view regarding these internal contradictions (p. 324) whose union and struggle in the interior of a being lead to the growth of that being. In light of the Marxist deeper notion of the cause–effect relation, we can know the error of Marxism in its notion of causality and the growth of the effect to which this form of causality leads, as well as the completion of the cause by union with its effect.

Since the effect is a kind of relation and link to its cause, the cause cannot be completed in a loftier composition by means of the effect. In the work Our Economy, p. 23, we discussed some of Marx's

applications of his dialectical notion of causality on a historical level, where he tries to prove that the cause is completed by its effect and unites with it in a richer composition. In that discussion of ours, we were able to show that these applications were the product of philosophical inexactitude and lack of precision in defining cause and effect.

Two causes and two effects may exist, where each of the two effects completes the cause of the other. When we are not careful in distinguishing the two causes it will appear as if the effect completes its own cause. Also, the effect becomes a cause of the availability of one of its conditions for existence. But the conditions for existence are other than the cause that produces that existence. For further clarification, see the discussion in Our Economy.

Contemporaneity between Cause and Effect

Since we now know that the existence of the effect is essentially linked to the existence of the cause, we can understand that the cause is necessary for the effect and that the effect must be contemporaneous with the cause, so that its being and existence will be linked to chat cause. Thus, it cannot exist after the non-existence of the cause or cannot continue after the cause discontinues. This is what we wish to express by 'the law of contemporaneity between the cause and the effect'. (p. 325)

Concerning this law, two arguments intended to prove that it is possible for the effect to continue after its cause discontinues were made. One of them was given by the theologians, and the other by some modern mechanists.

A. The Theological Argument

This argument rests on two ideas. The first is that coming into existence is the cause of the need of things for their causes. A thing needs a cause in order for it to come into existence. If it comes into existence, its existence after that will not require a cause. This is based on the theory of coming into existence (the falsehood of this theory was pointed out earlier). There, we learned that the need of a thing for a cause is not for the purpose of coming into existence, but because its existence is essentially linked to its specific cause.

The second is that the law of contemporaneity between the cause and the effect is not consistent with a certain group of phenomena in the universes pat disclose with clarity the continuity of the existence of the effect after the discontinuity of the cause. The high building erected by builders and constructed by the participation of thousands of workers continues to exist after the operation of building and construction is over, even when the workers depart from it and none of them remains alive.

Also, the car that is produced by a special factory with 'the help of technicians continues functioning, and may retain its mechanical system, even if that factory is destroyed and those technicians die. Again, the memoirs recorded by the hand of a certain person survive for hundreds of years after that person ceases

to exist, revealing to others that person's life and history. These phenomena prove that the effect enjoys its freedom after it comes into existence and no longer needs its cause.

But in fact, giving these phenomena as illustrations that the effect is free from its cause after it comes into existence (p. 326) results from the lack of distinction between the cause and other things. If we understand the real cause of such phenomena – for example, the building of a house, the I construction of a] car system, and the writing of memoirs – we find that these things do not dispense with their causes at any moment of their existence, and that every natural effect is destroyed as soon as it loses its cause.

What then is the effect of the employees' work to construct a house? It is the very operation of building. This operation is nothing but a number of motions made by the employees for the purpose of gathering raw material for construction, including brick iron, wood and similar things. These motions require the employees for their existence. Indeed, they definitely cease to exist at the time the employees cease to work.

The condition that occurs to the construction material as a result of the operation of construction is in its existence and continuity an effect of the properties of that material and of the general natural forces that impose on the matter the preservation of its condition and position. The same is true of the remaining examples.

Thus, the above-mentioned illusion disappears when we relate every effect to its cause, and no longer make an error with regard to the relation of the effects to their causes.

B. The Mechanical Opposition

This is the opposition raised by modern mechanics in light of the laws of mechanical motion posited by Galileo[7] and Newton. On the basis of these laws, modern mechanics claimed chat if motion occurs due to a cause, it necessarily continues. Its continuity would not require a cause, contrary to the philosophical law already mentioned.

If we study this opposition carefully, we find that in fact it immediately leads to the cancellation of the principle of causality. This is because the reality of motion, as explained in earlier discussions, is just a change or substitution.

Therefore, it is a continuous coming into existence, i.e., a coming into existence linked to a coming into existence. Every one of its stages is anew coming into existence (p. 327) and a change following another change.

Thus, if it were possible for motion to continue without a cause, then it would be possible for is to occur without a cause, and for things to begin existing without a cause. The reason is that continuity of motion always involves a new coming into existence. Its dispensing with a cause means that the coming into

existence also dispenses with a cause.

In order to clarify the inexplicability of this opposition from a scientific point of view, we must mention to the reader the law of essential powerlessness (*qanun al-qusur adh-dhati*) in modern mechanics on which this opposition rests.

Before Galileo, the common opinion concerning motion was that motion follows the moving force in the extent of continuity and existence. Thus, motion continues as long as the moving force remains in existence. If this force is removed, the body comes to rest. Modern mechanics, however, posited a new law of motion.

The idea of this law is that bodies at rest or in motion remain at rest or in motion until they are subjugated to the influence of another force, which is great in relation to them and which forces them to change their state.

The scientific evidence of this law is the experiment which shows that if a mechanical system moving in a straight street with a specific force it isolated from the [external] moving force, it continues after chat to move with a certain measure of motion, before it comes to a full rest. It is possible to increase the length of this motion that occurs after the isolation of the system from the external moving force by polishing the parts of the system, repairing the road and reducing the external pressure. However, these things cannot do anything other than reduce the impediments in the way of motion, such as the stalling and so on.

Thus, if we are able to double these things that reduce the impediments, we will ensure the doubling of motion. If we suppose the removal of all impediments and the complete elimination of the external pressure, this would mean the endless continuity of (p. 328) motion in a specific speed.

One learns from this that if motion is produced in a body without being hampered by an external force that collides with it, it continues at a certain speed, even if the [external moving] force ceases. External forces affect the natural limit of the change of the speed, thus decreasing it or increasing it. For this reason, the degree of speed – with respect to intensity, weakness or slowness – depends on the external pressure which acts either in its direction or in the opposite direction. But the motion itself and its continuity in its natural speed do not depend on external factors.

Clearly, if this experiment is sound, it does not mean that effects continue without causes, nor is it incompatible with the above-mentioned philosophical law. The experiment does not make clear the real cause of motion, so that we can know whether that cause has discontinued while motion continues.

Those who have tried to use such an experiment as evidence for the falsehood of the philosophical law claimed that the real cause of motion is the external moving forces. Since the link of this force to motion was disrupted while, nevertheless, motion continued, this would show that motion continues after the discontinuity of its cause.

However, the experiment does not actually show that the external moving force is the real cause, so that they can draw this conclusion. Rather, it is possible that the real cause of motion is something that had existed all along. Muslim philosophers believe that accidental motions, including the mechanical motion of a body, are all produced by a force within the same body. This force is the real moving force. External causes, on the other hand, act to activate this force and prepare it as a cause.

On the basis of this, the principle of substantial motion explained in an earlier chapter of this investigation was established. We do not wish at the present to exhaust this subject; rather, (p. 329) our purpose is to clarify that scientific experimentation on which the law of essential powerlessness was based is not incompatible with the laws of causality, nor does it prove the opposite of these laws.

C. Conclusion

In order for us to draw a conclusion, we need only to add to the above the law of finitude (*qanun an-nih'ya*). This law states that some of the causes that ascend philosophically proceed from some others that must have a beginning: that is; a first cause which does not proceed from a prior cause. The succession of causes cannot go on to infinity. This is because, as mentioned, every effect is nothing but a sort of relation or link to its cause.

Therefore, all existing effects are links or relations. Links require an independent reality at which they stop. If there is no beginning to the chain of causes, all the parts of this chain will be effects. But if they are effects, they will be linked to other things. The question arises then as to what thing is it to which all these parts are linked. Put differently, if the chain of causes involves a cause not subject to the principle of causality and not in need of a cause, this would be the first cause which constitutes the beginning of the chain, since this cause does not proceed from another cause prior to it. If every existent in the chain, with no exception, requires a cause in accordance with the principle of causality, then ail existents would require a cause. But the question remains as to why this is so.

This necessary question is concerned with existence in general. We cannot rid ourselves of it except by supposing a first cause free from the principle of causality. With this, we attribute the existence of things to that first cause, without encountering the same question regarding why this cause exists. The reason is that this question is encountered with regard to the things that are subject to the principle of causality in particular. (p. 330)

Let us take boiling as an example. It is a natural phenomenon requiring a cause, in accordance with the principle of causality. We consider the warmth of water as its cause. Like boiling, this warmth requires a prior cause. If we take boiling and warmth as two parts of the chain of existence or of the succession of agents and causes, we find that it is necessary to add to this chain another part; for each of the two parts is in need of a cause.

Therefore, they require a third part. Also, the three parts together face the same problem. They need a

cause of their existence, since every one of them is subject to the principle of causality. This is constantly and always the case with the chain of cause, even if it includes infinite parts. So, since every part of it requires a cause, the chain as a whole requires a cause.

The question 'Why does it exist?' extends as far as the parts of the chain extend. No decisive answer to this question is possible, as long as the succession in the chain does not lead to a part that is self-sufficient and not requiring a cause, so that this part can put an end to the succession and give the chain its first eternal beginning.8

With this, we have gathered [evidence] sufficient for proving that this world proceeds from a being necessary in essence, self-sufficient and not requiring a cause. This is necessitated by the application of the principle of causality to the world, in accordance with the laws of causality mentioned earlier. If causality is a necessary principle of the universe, and if its infinite regress is impossible, it must, therefore, be applied to the universe in a comprehensive and ascending fashion, so that the universe can stop at a necessary first cause.

It is a good idea to point out at the end of this discussion a kind of material consideration (p. 331) that some modern writers give of the present issue for the purpose of refuting the first cause or the first agent. According to this consideration, the question about the first cause is nonsensical. The scientific or causal explanation always requires two terms, one of which is linked to the other –these being the cause and the effect, or the agent and the product.

Therefore, the expression 'first cause' is a contradiction in terms, since the word 'cause' requires two terms, as we have seen, while the word 'first' requires one term. Thus, a cause cannot be both first and a cause at the same time. It is either first without being a cause or a cause without being first.

I do not know who told these writers that the word 'cause' requires a cause prior to it. It is true that the causal explanation always requires two terms, the cause and the effect, and it is also true that it is contradictory to think of a cause without an effect produced by it; otherwise, it would not be a cause but a sterile thing. Similarly, it is false to think of an effect without a cause. Each the cause and the effect requires the other next to it. However, the cause as a cause does not require a cause prior to it. Rather, it requires an effect.

Thus, both terms are available in the assumption of 'the first cause'. This is because the first cause has its effect which proceeds from it, and the effect has its first cause. The effect does not always require an effect that proceeds from it, for a phenomenon may proceed from a cause without a new thing proceeding from that phenomenon. Similarly, the cause does not require a cause prior to it. Rather, it requires an effect of itself.9

1. Werner Heisenberg, German philosopher and physicist (1901–76). Heisenberg won the Nobel Prize for physics in 1932. His most important contributions are in the area of quantum mechanics. He is known for the notion of 'uncertainty relations', which is also known as 'Heisenberg's principle of indeterminacy'. According to this notion, microscopic things cannot be

measured quantitatively by space–time coordinates. One cannot simultaneously specify the position and momentum of a particle. His principal writings arc: The Physical Principles of Quantum Theory and Physics and Philosophy.

2. Prince Louis–Victor de Broglie, French physicist (1892–). In 1929, he received the Nobel Prize for physics. He demonstrated that any particle is accompanied by a wave. Such a wave has a wave length that is inversely related to the momentum of the particle that depends on the mass and velocity of the particle.

3. Hadhih Hiya ad–Dialaktikiyya, p. 192.

4. Destouches, John–Louis.

5. Jabr wa–Ikhtiyar, p. 5.

6. For the purpose of clarification, review the discussion of historical materialism in the work Our Economy, by the author.

7. Galileo Galilei, Florentine astronomer (1564–1642). He studied falling bodies, and decided that the velocity of the fall of a body is not proportional to the body's weight, as Aristotle had taught. Rather, it is proportional w the time the fall takes. His principal work is Dialogue concerning the Two Chief World Systems. In this work, the views of Ptolemy and Copernicus are expounded. Copernicus' views are presented in a more favorable light than those of Ptolemy.

8. In a precise philosophical phrase, a thing does not exist except if all the aspects of non–existence are impossible for it. Among all the aspects of non–existence, is the non–existence of a thing, due to the non–existence of all its causes. This aspect is not impossible except if a being necessary in itself is among all the causes of that thing.

9. Dr Muhammad 'Abd ar–Rahiman Marhaba, al–Mas'ala al–Falsafiyya, Manshurat 'Uwaydat, p. 80.

Chapter 4: Matter or God

In the previous chapter1, we reached the conclusion that the highest and most primary principle of the universe or the world in general is a cause necessary in essence, to which the chain of causes leads. Now, the new question is this: 'Is that which is necessary in essence and which is considered the first source of existence matter itself or something else beyond the limits of matter?' Putting this question in a philosophical form, we say: ' Is the efficient cause of the world the same as the material cause, or it is not?'

For the purpose of clarification, we take the chair as an example. The chair is just a specific quality or form produced by a specific organization of a number of material parts. That is why the chair cannot exist without a matter of wood, iron or the like.

Because of this, the wood is called a material cause of a wooden chair, since it is impossible for the wooden chair to exist without it. But it is very clear chat this material cause is not the real cause which is responsible for making the chair. The real agent of the chair is something other than its matter. it is the carpenter.

For this reason, philosophy gives the carpenter the name 'efficient cause'. The efficient cause of the chair is not the same as its material cause, be that wood or iron. Thus, if we are asked about the matter of the chair, we answer that it is the wood. If, (p. 988) on the other hand, we are asked about the maker of the chair (the efficient cause), we do not answer that it is the wood. Rather, we say that the carpenter makes it with his tools and by his own methods.

Therefore, the difference between the matter and the agent of the chair (philosophically speaking, between the material cause and the efficient cause) is fully clear. Our main purpose with respect to this issue is to show the same difference between the world's primary matter (the material cause) and its real agent (the efficient cause).

Is the agent or maker of this world something external to the limits of matter and different from matter, as the maker of the chair is different from the wooden matter; or is it the same as the matter of which the existents of this world are composed? This is the issue that will determine the last stage of the philosophical conflict between theology and materialism. The dialectic is nothing but one of the unsuccessful attempts that materialism makes to unite the efficient cause and the material cause of the world, in accordance with the laws of dialectical contradiction.

In keeping with the procedure of this work, we will discuss the present issue in a philosophical study of matter in light of scientific facts and philosophical rules, avoiding philosophical depth in the discussion and details in the presentation.

Matter in Light of Physics

There are two scientific notions of matter that scientists have investigated and studied for thousands of years. One of these notions is that all the material things that are known to exist in nature are composed of nothing but a limited number of simple matter called 'elements'. The other notion is that matter is formed (p. 334) of very small or minute things called 'atoms'.

The first notion was accepted by the Greeks in general. The common view was to consider water, air, earth and fire as simple elements, and to reduce all composite things to them, since these elements are the primary matters of nature.

Later, some Arab scientists tried to add to these four elements three more elements: sulfur, mercury and salt. According to the ancients the properties of the simple elements are marks that distinguish these elements from one another. Thus, no simple element can change to another simple element.

As for the second notion – namely, that things are composed of small atoms – it was the subject of disagreement between two theories: the theory of discrete matter [or the atomistic theory] (*an-nazariyya al-infisaliyya*),[2] and the theory of continuous matter (*an-nazariyya al-itisalliyya*).[3] The disjunctive theory is the atomistic theory of the Greek philosopher Democritus. It asserts that a body is composed of small parts permeated by void.

Democritus called these parts 'atoms' or 'indivisible parts'. The continuum theory is more predominant than the disjunctive theory. It was adopted by Aristotle and members of his school. According to the claims of this theory, a body does not have atoms, and it is not composed of small units. Rather, it is one solid thing that can be divided into parts, separated by division. It is not the case that prior to division it

has such parts.

After this, modern physics played its role [with regard to this issue]. It studied scientifically the above two notions in light of its discoveries in the atomic world. Basically, it confirmed the two notions, the notion of simple elements and the notion of atoms. But it disclosed new facts in the sphere of each of them that were unattainable earlier.

Regarding the first notion, physics discovered around one hundred (p. 335) simple elements of which the primary matter of the universe or nature in general is composed. Thus, even if the world appears at first sight as a stupendous assembly of realities and various species, still this varied, stupendous mass is reduced by scientific analysis to this limited I number', of elements.

On the basis of this, substances[4] are divided into two kinds: (1) a substance[5] which is simple, consisting of one of those [simple] elements, such as gold, brass, iron, lead or mercury; (2) a substance[6] composed of two [simple] elements or of a number of simple elements, such as water, which is composed of one atom of oxygen and two atoms of hydrogen, or wood which, on the whole, is composed of oxygen, carbon and hydrogen.

With regard to the second notion, modern physics scientifically proved the theory of discrete matter, and that simple elements are composed of small or minute atoms, such that one millimeter of matter involves millions of atoms. The atom is the minute part of an element. The division of such a part leads to the disappearance of the properties of that simple element.

An atom has a central nucleus and electrical charges that move around the nucleus at a great speed. These electrical charges are the electrons. An electron is the unit of a negative charge. Also, the nucleus has protons and neutrons. A proton is a small particle. Every single proton unit carries a positive charge equal to the negative charge of an electron. A neutron is another kind of particle also contained in the nucleus, and it carries no electrical charge.

In light of the clear difference in the wave length of the rays (p. 336) produced by the bombardment of chemical elements by means of electrons, it was noticed that this difference among the elements had occurred just because of their difference with respect to the number of electrons that their atoms have.

Their difference in the number of electrons also requires their difference in the quantity of positive charge present in the nucleus. This is because the electric charges of the atom are equal. The positive charge of the atom is of the same quantity as that of its negative charge.[7] Since an increase in the number of electrons in some elements over the number of electrons in some other elements means an increase in the units of the negative charge in the former elements, the nuclei of such elements must also contain a corresponding [increase in] positive charge. On this basis, numbers in an ascending order were assigned to the elements.

Hence, the atomic number of hydrogen is 1. Thus, in its nucleus, hydrogen contains one positive charge

carried by one proton and around which revolves one electron having a [unit negative charge. Helium is situated higher than hydrogen in the atomic table of elements, since fits atomic number] is equal to 2; for it contains in its nucleus twice the positive charge which is centered in the hydrogen nucleus. That is, the helium nucleus contains two protons around which orbit two electrons. The number 3 is assigned to lithium.

The atomic numbers continue ascending until they reach uranium, which is the heaviest of all elements discovered to the present day. The atomic number of uranium is equal to 92. This means that its central nucleus contains 92 units of the positive charge. Also an equal number of electrons – that is, units of the negative charge surround its nucleus.

The neutrons in the nucleus do not seem to have the slightest effect on this chain of atomic numbers, since they do not carry any charge. Rather, they affect the atomic weight of elements, for they are equal in weight to the protons.

Due to this, the atomic weight of helium, for example, is equal to the weight of four hydrogen atoms. This is because the helium nucleus contains two neutrons and two protons, while the hydrogen nucleus contains only one proton. (p. 387)

One of the truths that science was able to determine is the possibility of the transformation of the elements into one another. Some processes of such transformation occur in nature, while some others occur by scientific means.

It has been observed that the element of uranium produces three types of rays: alpha rays, beta rays and gamma rays. When Rutherford[8] examined these types, he found that alpha rays are composed of small particles to which negative electrical charges are attached. As a result of scientific tests, it became evident that alpha particles are nothing but helium atoms. This means that helium atoms proceed from the uranium atoms. In other words, the element helium is produced from the element uranium.

Similarly, after the element uranium emits alpha rays, beta rays and gamma rays, it changes gradually into another element, which is the element radium. Radium has a lighter atomic weight than that of uranium. In turn, radium undergoes a number of elemental transformations, until it reaches the element lead.

After chat, Rutherford made the first attempt to transform one element into another. He performed this by colliding the nuclei of helium atoms (alpha particles) with the nuclei of nitrogen atoms, thus producing neutrons. That is, a hydrogen atom was produced from a nitrogen atom, and the nitrogen atom was transformed into oxygen. Moreover, it was shown that it is possible for some part of the atom to change into another part. Thus, during the process of atomic division, a proton can cut into a neutron, and via versa.

Thus, the transformation of elements became one of the basic processes in science. But science did not

stop at this. Rather, is began an attempt to transform matter into (p. 338) pure energy – to strip the element completely of the quality of materiality, in light of an aspect of the relativity theory of Einstein, who asserted that the mass of an object is relative and not fixed. It is increased with the increase in velocity.

This was confirmed by the experiments chat scientists of atomic physics made on the electrons that move in a strong electrical field and on the beta particles that are emitted from the nuclei of radioactive substances. Since the mass of a moving body is increased by an increase in the motion of that body, and since motion is nothing but–one of the manifestations of energy, the mass which is increased in that body is that body's increased energy.

Therefore, there are no two distinct elements in the universe as scientists had believed earlier, one of which being sensible matter which is represented to us in a mass, and the other energy which is invisible and has no mass. Rather, it became known to science that mass is nothing but concentrated energy.

In his equation, Einstein says that energy is equal to the mass of muter times the velocity of light squared (E = mc2 where E is energy, m mass, and c velocity of light). The velocity of light is equal to 816,000 miles per second. Also, the mass is equal to the energy divided by the velocity of light squared (m= E/c2).

With this, it became established that the atom with its protons and electrons is nothing in reality but concentrated energy that can be analyzed and reduced to its primordial state. Thus, according to the modern analysis, energy is the substratum9 of the world. It is manifested in various shapes and in numerous forms, whether sonic, magnetic, electrical, chemical or mechanical.

In light of this, the duality between matter and radiation, between particles and waves, and between the appearance of electrons sometimes as matter and some other times as light was no longer strange. (p. 339) Rather, it became somewhat understood; since all these phenomena are [but] forms of one reality, namely, energy.

Experiments confirmed in practice the soundness of these theories, since scientists were able to change matter into energy and energy into matter. Matter changes into energy by way of the union between the nucleus of the hydrogen atom and the nucleus of the lithium atom. The result of this is two nuclei of helium atoms plus energy, which is in fact the difference between the atomic weight of two helium nuclei and the atomic weight of a hydrogen nucleus and a lithium nucleus.

Energy also changes into matter by way of the transformation of gamma rays (this is the kind of ray chat has energy, but is weightless) into material particles of negative electrons and positive electrons which, in turn, are transformed into energy, if the positive particles among them clash with the negative ones.

The mightiest explosion from [any known] substance that science has been able to effect is that which the atomic and the hydrogen bombs can achieve. By means of these two explosions, a part of matter is

transformed into enormous energy. [The key] concept [behind] the atomic bomb rests on the possibility of the destruction of matter having heavy atoms, such that each of these atoms divides into two or more nuclei of lighter elements. This is accomplished by the destruction of the nucleus in some isotopes of the uranium element (uranium 235), as a result of the collision of the neutron with the nucleus.

The idea of the hydrogen bomb rests on the union of the nuclei of light atoms; so that, after their fusion, they become nuclei of atoms that are heavier chart the light atoms [they originated from], such chat the new mass of these nuclei is less than the initial formative mass. It is this difference in mass that appears in the form of energy.

One of the methods for [reaching this result] is to fuse four (p. 340) hydrogen atoms by means of incense pressure and heat to produce a helium atom plus [some] energy, which is the difference in weight between the resulting atom and the atoms that were fused.[10] This [corresponds to] a very small fraction [of loss] in atomic weight.

A. The Conclusions of Modern Physics

The scientific fact presented above lead to a number of conclusions.

The original matter of the world is one reality common to all things existent and all phenomena of the world. This common reality appears in different shapes and takes on various forms.

All the qualities of material compounds are accidental in relation to the primary matter. Thus, the quality of the fluidity of water is not essential to the matter of which water consists. Rather, it is an accidental quality. This is evidenced by the fact that water, as we have learned earlier, is composed of two simple elements that can be separated from each other, and thus return to their state of vapor. At that point, the character of water completely disappears. It is clear that the qualities that are removable from a thing cannot be essential to that thing.

The qualities of the simple elements themselves are not essential to matter either, let alone the qualities of composites. The scientific evidence for this is the previously mentioned transformation of some elements into some other elements, and the transformation of some atoms of these elements into some other atoms, whether naturally or artificially.

This shows that the qualities of the elements are only accidental qualities of matter, which is common to all simple elements. The qualities of radium, lead, nitrogen and oxygen are not essential to the matter represented in these elements, since it is possible to transform them into one another. (p. 341)

Finally, in light of the above-mentioned facts, the quality of materiality itself also becomes accidental. It is nothing more than a kind or form of energy since, as mentioned, it may substitute this form for another; thus, matter changes into energy and the electron into electricity.

B. The Philosophical Conclusion to This

If we take these scientific conclusions into consideration, we must explore them philosophically in order to know whether or not it is possible to assume that matter is the first cause (the efficient cause) of the world. We do not hesitate to assert that the philosophical answer to this issue is absolutely in the negative.

This is because the primary matter of the world is a single reality common to all the phenomena and beings of the world. It is not possible that one reality has various effects and different actions. Scientific analysis of water, wood, earth, iron, nitrogen, lead and radium leads, in the final analysis, to one matter which we find in all these elements and in all those composites. The matter of every one of these things is not different from the matter of the other.

That is why it is possible to transfer the matter of one thing to something else. How then can we ascribe the variety of things and the difference in the movements of things to chat primary matter that we find in all things? If this were possible, it would mean that a single reality may have contradictory manifestations and different orders.

But this will definitely overthrow all the natural sciences with no exception; for all these sciences are based on the idea that a single reality has the same specific manifestations and laws. This was studied in detail in the previous chapter of the present investigation. We had said that the natural scientist's experiments are carried on specific subjects only. (p. 342) In spite of this, the natural scientist postulates his general scientific law, which applies to anything whose reality is concordant with the subjects of the experiments.

This is only because the subjects to which he extended the applicability of the law involve the same reality that he studied in his particular experiments. This amounts to saying that a single, common reality cannot have contradictory manifestations and different effects. If any of this were possible, it would not be possible for the scientist to posit his general law.

From this we know that the material reality which is common to the world, as science has shown, cannot be the agent or efficient cause of the world, due to the fact that the world is full of different phenomena and various developments.

The above treats one point. Another point is this. In light of the above scientific conclusions, we learn that the properties or qualities that matter manifests in the various spheres of its existence are accidental to the primary matter or the common material reality. The properties of composites, for example, are accidental to the simple elements. Also, the properties of simple elements are accidental to the atomic matter.

Further, the property of materiality itself is also accidental, as has been stated. This is made evident by the fan that it is possible to remove every one of these properties and to detach the common reality from

them. Thus, matter cannot be dynamic and an essential cause of the acquisition of these properties or qualities.

Concerning Experimentalists

Let us for a short while inquire about those who glorify experimentation and scientific understanding, and who declare with full pride that they do not adopt any view unless confirmed by experiments and demonstrated empirically. (They continue saying) that since the theological position is concerned with invisible things beyond the limits of the senses and experimentation; we must case it aside, concentrating on the truths and knowledge that can be grasped in the experimental field.

We would (p. 343) ask the experimentalists, 'What do you intend by "experiment", and what do you mean by rejecting every doctrine not confirmed by the senses?'

If what is meant by their words is that they do not accept the existence of anything except if they have direct sense perception of chat thing, and they reject any idea except if they grasp its objective reality by one of their senses, then this will be a blow to the whole scientific edifice and a falsification of all the major truths that are demonstrated by the experiments they glorify. A demonstration of a scientific truth by experimentation does not mean a direct sense perception of that truth in the scientific field.

When Newton, for example, put forth the law of general gravity in light of experimentation, he had not perceived this gravity force by any of his five senses. Instead, he discovered it by way of another perceptible phenomenon for which he found no explanation except by supposing the gravity force. He noticed that the planets do not move in a straight line. Rather, they have a circular motion.

According to Newton, this phenomenon could not occur had there not been a gravity force. The reason is that the principle of essential deficiency (*mabda' al-qu,,rur adh-dhatiyy*) requires chat a body move in a straight direction unless another manner [of movement] is imposed on it from an external force. From this, Newton obtained the law of gravity that asserts that the planets are subject to a central force, which is gravity.

If these experimentalists who advocate and glorify experimentation intend the same method by means of which the forces and secrets of the universe are discovered scientifically – namely, the study of a fixed perceptible phenomenon by experimentation and the rational inference of another thing from that phenomenon as the only explanation of the existence of that phenomenon – then this is exactly the method of demonstrating the theological position. Empirical and scientific experiments have shown chat all the qualities, developments and varieties of primary matter are not essential; (p. 344) rather, they are accidental.

This is exemplified in the motion of the solar planets around the center. As the motion of these planets around the center is not essential for them – indeed, they naturally require a straight direction of motion,

in accordance with the principle of essential deficiency – so also are the qualities of the [simple] elements and composites [not essential to these elements and composites]. Further, since the motion of the planets [around the center] is not essential, it made is possible to demonstrate an external force of gravity.

Similarly, the variation and difference in the qualities of the common matter also reveal a cause beyond matter. The result of this is that the efficient cause of the world is other than the material cause of the world. In other words, the cause of the world is different from its raw matter that all things share.

Concerning the Dialectic

In Chapter 2 of the present investigation, we discussed the dialectic and pointed out the main errors on which it rests, such as its discarding the principle of non–contradiction, and the like. Now we wish to prove that it failed once again to solve the problem of the world[11] and to form a sound view of the world, without attention to the errors and negligence in the principles and fundamentals of the dialectic.

According to the dialectic, things are the result of motion in matter, and the motion of matter is an essential product of matter itself, since matter contains contradictions that undergo internal struggle. Let us examine this dialectical explanation by applying it to the scientific truths that we have already learned about the world, so that we can see the consequence.

Simple elements are of different kinds. Every simple element has an atomic number that pertains to it. The higher the element, the larger is its number. This goes on until the progression reaches uranium, which is the highest and most superior element. Science has also shown that the matter of these (p. 345) simple elements is one and common to all [of them]. That is why it is possible to transform these elements into one another. But then how did the numerous kinds of elements arise in that common matter?

On the basis of dialectical change, the answer can be summed up as follows. Maser developed from one stage to a higher stage, until it reached the level of uranium. In light of this, the hydrogen element must have been the starting point in this development, since it is the lightest of simple elements. Hydrogen develops dialectically by virtue of the contradiction that is involves internally.

By means of the dialectical development, it becomes a higher element – that is, the helium element which, in turn, contains its contradictory. Thus, the struggle between negation and affirmation, the negative aspect and the positive aspect, ignites once again, until matter enters a new stage where a third element is produced. This is how matter continues its progression in accordance with the atomic table.

With regard to this issue, this is the only explanation that the dialectic can offer as a justification of the dynamism of matter. However, it is very easy to see why this explanation cannot be adopted from a

scientific point of view. If hydrogen were to contain its contradictory essentially and to develop due to this fact, in accordance with the alleged dialectical laws, then why is it that not all the hydrogen atoms were completed? [In other words], why did the essential completion pertain to some atoms and not to others?

Specification is foreign to essential completion. If the factors that lead to development and progression were present in the innermost nature of the eternal matter, the effects of these factors would not be different, or would they be limited to a specific group of hydrogen [atoms], transferring them into helium, while leaving aside other hydrogen [atoms].

If the hydrogen nucleus (the proton) were to carry within itself its own negation, and if it were to develop in accordance with this, until it becomes two protons instead of one, water would have been completely eradicated from the face of the earth. This is because if nature loses the nuclei of the hydrogen atoms, (p. 846) and if all these nuclei become nuclei of helium atoms, it will not be possible to have water after this.

What then is the cause that makes the development of hydrogen to helium limited to a specific quantity [of hydrogen atoms], while setting the rest free from the fetters of this inevitable development?

The dialectical explanation of composites is no more successful than the dialectical explanation of simple elements. If water had come into existence in accordance with the dialectical laws, this would mean that hydrogen can he considered as an affirmation, and that this affirmation produces its own negation by its production of oxygen.

Later, the negation and the affirmation come together in a unity that is water. We can also reverse the consideration, thus supposing oxygen as an affirmation, hydrogen as a negation, and water as a union that involves both the negation and the affirmation, and that emerged as a progressive product of the dialectical struggle between the two. Can the dialectic show us that if this dialectical progression were to come about in an essential and dynamic form, why then is it limited to a specific quantity of the two elements, and does not occur to every hydrogen and oxygen [atom]?

By this, we do not mean to say that the invisible hand is what starts all the natural processes and varieties, and that there is no room for natural causes. Rather, we believe that such varieties and developments are the product of natural factors which are external to the essential content of matter. These factors run in a chain until, in the final philosophical analysis, they reach a cause beyond nature and not matter itself.

The conclusion is that the unit of the primary matter of the world which, on the one hand, science demonstrates and, on the other hand, shows that its different varieties and tendencies are accidental and not essential, discloses the secret of the philosophical position and shows that the highest cause of all these varieties and tendencies does not lie in (p. 347) matter itself; rather, it is a cause outside the limits of nature. All the external natural factors that cause variety in, and determination of, the tendencies of nature are attributed to that highest cause.

Matter and Philosophy

In our demonstration of the theological position, our starting point was matter, in the scientific sense, whose common and accidental qualities in relation to it were proved by science. Now, we wish to study the theological position in light of the philosophical notion of matter. For this purpose, we must know what matter is, and what its scientific and philosophical notions are.

By 'the matter of a thing', we mean the principle of which the thing is constituted. Thus, the matter of a bed is wood, the matter of a robe is wool, and the matter of paper is cotton, in the sense that wood, wool and cotton are the things of which the bed, the robe and the paper are constituted. We often specify the matter of a thing, and then go back to that matter, trying to know its matter – that is, the principle of which it is constituted,. In turn, we take up this principle, and also discuss its matter and principle.

Thus, if we are asked about the constituents of a village, we answer that they are a number of buildings and yards. Therefore, the buildings and yards are the matter of a village. The question then is repeated as to what the matter of those buildings and yards is. The answer is that they are composed of wood, brick and iron. Thus, we posit a matter for everything, and then we posit a principle for that matter out of which that matter is constituted. In this progression, we must stop at a primary matter. This is the matter for which no matter can be posited.

Due to this, the question arose in philosophical and scientific circles as to the primary and fundamental matter of the world at which the analysis of the principles and matters of things stops. (p. 348) This is considered one of the most important questions in human thought, whether scientific or philosophical.

By 'scientific matter' is meant the most primary matter discovered by experimentation. It is the most primary principle [attained] in scientific analyses. By 'philosophical matter', on the other hand, is meant the most primary matter of the world, whether or not its appearance in the experimental field is possible.

We have already discussed scientific matter. We learned that the most primary matter attained by science is the atom with its nucleus and electrons that are a specific density of energy. In the scientific sense, the matter of a chair is wood, and the matter of wood is the simple elements that constitute the wood. These are oxygen, carbon and hydrogen.

The matter of these elements is the atoms. The matter of the atoms is their specific parts of protons, electrons and other [subatomic particles].[12] This atomic assembly, or dense electric charges, is the most primary scientific matter that science demonstrated by experimental methods.

Regarding philosophical matter, let us see whether the atom is in reality the most primary and the simplest matter of the world, or whether, in turn, it is also composed of matter and form. As we learned, the chair is composed of matter that is the wood, and form that is its specific shape. Also, water is composed of matter that is oxygen and hydrogen atoms, and form that is the quality of fluidity that

occurs at the point of the chemical composition between the two gases. Thus, are the minute atoms also the philosophical[13] matter of the world?

The common philosophical view is that philosophical matter is more primary than scientific matter, in the sense that the former matter in scientific experiments is not the most (p. 349) fundamental matter from the philosophical point of view. Rather, it is composed of a matter simpler than it, as well as of a form. This simpler matter cannot be demonstrated by experimentation; but its existence can be demonstrated philosophically.

Correction of Errors

In light of what has preceded, we can know that the Democritean atomistic theory, which asserts that the primary principle of the world is nothing but indivisible fundamental atoms, is two-sided: one side is scientific and the other philosophical. The scientific side is that the structure of bodies is composed of small atoms permeated by void.

Bodies are not continuous masses, even though they may appear as such to our senses. Those small units are the matter of all bodies. The philosophical side is that Democritus claimed that those units or atoms are not composed of matter and form, since they have no matter that is more primary and simpler than they. Therefore, those units or atoms are the philosophical matter – that is, the most primary and the simplest matter of the world.

These two sides of the theory were confused by many thinkers. It seemed to them that the atomic world discovered by modern science through experimental methods demonstrates the soundness of the atomistic theory. Thus, after the new atomic world was revealed to science, it was not possible to find Democritus at fault in his explanation of bodies, as earlier philosophers believed, even though modern scientific thought differs from chat of Democritus with regard to the estimation of the size of the atom and in portraying its structure.

However, the fact is that modern scientific experiments concerning the atom demonstrate only the soundness of the scientific side of the Democritean theory. They show that a body is composed of atomic units permeated by void. The body, therefore, is not continuous as sense perception indicates. This is the scientific aspect of (p. 350) the theory. Experimentation can disclose this aspect. Philosophy has no say in this subject, since, from a philosophical point of view, a body may be continuous as it may involve a void permeated by minute parts.

As for the philosophical side of the Democritean theory, it is not at all touched by scientific discoveries, nor is its soundness proved by them. Rather, the issue of the existence of a matter simpler than the scientific matter remains the responsibility of philosophy. This means that philosophy can take the most primary matter that science attained in the experimental field (namely, the atom and its specific aggregate), and prove that it is composed of a simpler matter and of a form. This is not incompatible with

the scientific facts for this type of philosophical analysis and synthesis cannot be displayed in the experimental field.

As these thinkers erred in claiming that scientific experiments demonstrate the soundness of the whole theory, even though such experiments are only concerned with its scientific side; so also did a number of ancient philosophers err in rejecting the philosophical side of the theory – thus extending the rejection to the scientific side as well. They claimed without any scientific or philosophical evidence that bodies are continuous, and rejected the atom and the void in the interior of bodies.

The position that we must hold with respect to this issue is one of accepting the scientific side of the theory, which insists that bodies are not continuous and that they are composed of extremely minute atoms. Atomic physics disclosed this side with certitude. But we reject the philosophical side of the theory, which asserts the simplicity of those units that are disclosed by atomic physics. The reason is that philosophy proves that regardless of the minuteness of the unit disclosed by physics, it is nevertheless composed of form and matter. We call this matter (p. 351) by the name of philosophical matter, since it is the simplest matter whose existence is demonstrated by a philosophical and not a scientific, method. It is time for us to study this philosophical method.

The Philosophical Notion of Matter

Since the issue under consideration is philosophical and to some extent sensitive, we must move carefully and slowly in order for the reader to follow our move. That is why we will begin first of all with water, a chair and the like, so that we know why philosophy is correct (in asserting) that such things are composed of matter and form.

Water is represented in a fluid matter. At the same time, it is receptive to being a gas. The basis of this receptivity is not the fluidity, for the quality of fluidity cannot be a gas. Rather, this basis is the matter contained in the fluid water.

Therefore, water is composed of the state of gas and of a matter characterized by this state. This matter is also receptive to being a gas. Again, the chair is represented in certain wood given a specific shape. It is also receptive to being a table. It is not the shape but the matter of the chair that is receptive to being a table.

From this, we learn that the chair is composed of a specific shape and of a wooden matter that can be a cable, as it had the capacity to be a chair. The same is true in every field. If one notices that a specific being is capable of receiving the contradictory of its proper quality, philosophy proves by means of this that that being has a matter, which is the thing receptive to the quality that is contradictory to its proper quality.

Let us explore our issue in light of this. We had learned that science has shown that a body is not a

single thing. Rather, it is composed of primary units swimming in a void. Since these units are the remainders at the end of the scientific analysis, they are not, in turn, composed of atoms that are smaller than they; otherwise, they will not be the ultimate units (p. 352) of matter. This is true.

Philosophy gives science full freedom in assigning the ultimate units that are not permeated by a void and that have no parts. When science assigns these units, it becomes time for philosophy to play its role. Philosophy proves that such units are composed of form and matter, which are simpler than [the unit]. We do conceive a discrete material unit, for if such a unit were not truly continuous, it would be similar to a body in having a void permeated by parts.

The meaning of a unit is that it is continuous; it cannot be a real unit without continuity. At the same time, it is also receptive to division and separation. But it is clear that that which is receptive to division and separation is not the same as continuity which is essential to the material unit. This is because continuity cannot be characterized by separation, as it is not possible for fluidity to be characterized by gaseousness.

Therefore, the unit must have a simple matter which is receptive to division and separation. This leads to the consideration of the unit as composed of matter and form. Matter is that which is receptive to division and separation that are destructive of unity. Similarly, matter is also receptive to continuity that holds the unit together. The form, on the other hand, is this very continuity without which no material unit can be conceived.

The problem that faces us at this point is this: 'How can philosophy determine that the primary units of matter are receptive to division and separation, and is there a way to this determination other than through scientific experimentation?' But scientific experimentation has not proved the receptivity of the primary units of matter to division and separation.

Once again we stress the necessity of not confusing scientific matter with philosophical matter. This is because philosophy does not claim that the division of the unit is something accessible to the scientific tools and methods available to human beings. Such a claim is the sole prerogative of science. Rather, philosophy proves that every unit is receptive (p. 353) to division and separation, even though it is not possible to attain this division externally with scientific methods. It is not possible to conceive a unit without the receptivity to division; that is, it is not possible to conceive an indivisible part.

Physics and Chemistry as Concerned with the Part

The issue of the indivisible part is not a scientific issue. Rather, it is purely philosophical. From this, we realize that the scientific methods and facts adopted for responding to this issue and for demonstrating the existence or non-existence of indivisible parts are not at all sound. We will now point out some of these unsound methods and facts.

a. The law of proportions that Dalton[14] put forth in chemistry for the purpose of explaining that the chemical union of elements occurs in accordance with specific proportions. Dalton[15] based this law on the idea that matter is composed of small, indivisible particles.

It is clear that this law operates only in its special field as a chemical law. It is not possible to solve a philosophical problem with it, for the utmost it shows is that chemical reactions and combinations cannot take place except among specific quantities of elements and under specific circumstances and conditions. If there are no specific quantities and proportions, there will be no reaction and no combination.

However, this law does not show whether or not these quantities are as such receptive to division. We must, therefore, distinguish between the chemical aspect of this law and the philosophical aspect of it. With respect to the chemical aspect, it affirms that the property of chemical reaction occurs among specific quantities and cannot occur among smaller quantities. With respect to the philosophical aspect, on the other hand, the law does not affirm whether or not those quantities are indivisible parts. This has no relation at all to the chemical aspect of the law. (p. 354)

b. The first stage of atomic physics in which the atom was discovered. It seemed to some that physics at that point had put an end to disputation concerning the issue of the indivisible part, since it disclosed this part by scientific methods. But in light of the above, it is clear that this disclosure does not confirm the indivisible part, in the philosophical sense. The fact that scientific analysis arrived at the atom that it cannot divide does not mean that the atom as such is indivisible.

c. The second stage of atomic physics which, contrary to the first stage, was considered as absolute evidence for the non-existence of the indivisible part. This is because at the second stage, science was able to divide and split the atom. With this, the idea of the indivisible part disappeared. This stage was the same as the previous one in that it was not related to the issue of the indivisible part from the philosophical point of view.

The reason is that the division of the atom or the destruction of its nucleus changes nothing except our idea about the part, but does not completely overthrow the theory of the indivisible part. The atom, which cannot divide, in the sense inconceivable to Democritus, or in the sense on the basis of which Dalton[16] posited the law of proportions in chemistry, has disappeared as a result of the splitting of the atom.

This does not mean that the problem has ended. The primary units in the material world (that is, the electric charges, whether in the form of atoms or material bodies, or in the form of waves) are subject to the philosophical question as to whether or not they are receptive to division. (p. 355)

Philosophy as Concerned with the Part

Thus, our study has made it clear that the problem of the part must be solved by a philosophical method.

Philosophy has many methods for demonstrating philosophically that every unit is receptive to division, and that there is no indivisible part. One of the clearest methods is to draw two circles like a stonemill, one of which is inside the other, with the middle point of the stonemill being the center of the two circles.

Then we put a point at a specific place on the circumference of the big circle and a point parallel to it on the circumference of the small circle. It is clear that if we move the stonemill, the two circles also move. Let us move the stonemill, making the point which is placed on the big circle move in accordance with that movement. But we do not allow, this point to move except as much as one of the material units moves.

Then we observe the parallel point on the small circle, asking whether it has crossed the same distance that was crossed by the parallel point on the big circle –namely, one whole unit. Or has it just crossed some of that distance? If it has crossed the same distance, this would mean that the two points moved the same distance. But this is impossible, because we know that the more remote a point is from the main center of a circle, the faster is the speed of its movement. That is why in every turn, it crosses a longer distance than that which a point closer to the center crosses in the same turn.

Therefore, it is not possible for the two points to cross an equal distance. If, on the other hand, the closer point crosses a part of the distance that is crossed by the remote point, this would mean that the unit crossed by the remote point may be divided and separated and is not an indivisible unit.

This makes it clear that those advocating the indivisible unit are in a difficult position, for they cannot consider the remote (p. 856) and the close points either as equal or as different in the quantity of motion. The only thing that remains for them is to claim that the parallel point on the small circle was at rest and motionless. But all of us know that if the circle close to the center was at rest when the big circle moved, this would necessitate the dismantling and breaking of the parts of the stonemill.

This proof shows that any supposed material unit is receptive to division. The reason is that when the point chat is remote from the center traverses this unit in its motion, the close point would have traversed a part of it [only].

If the material unit is receptive to division and separation, it is, therefore, composed of a simple matter which is the center of the receptivity to division and of continuity which is constitutive of its unity. Hence, it is clear that the units of the material world are composed of matter and form.

The Philosophical Consequence

When the philosophical notion of matter, which requires that matter be composed of matter and form, is crystallized, we know that the philosophical[17] matter cannot itself be the first cause of the world, since it is composed of matter and form. Further, neither matter nor form can exist independently of the other. Therefore, there must be an agent prior to the as of composition that ensures the existence of the material units.

Put differently, the first cause is the first point in the chain of existence. The chain of existence must begin with that which is necessary in essence, as we learned in the previous chapter of this investigation. Thus, the first cause is that which is necessary in essence. (p. 857) Being so, the first cause must need nothing else in its being and existence.

As for the primary units of matter, they are not without need in their material being for an external agent, since their being is composed of matter and form. They require both, matter and form together, and each, matter and form, requires the other for its existence. The result of all this is the knowledge that the first cause is external to the limits of matter, and that the philosophical matter of the world, which is receptive of conjunction and disjunction, is in need of an external cause that determines its continuous or discontinuous existence.

Matter and Motion

Matter is in continuous motion and constant development. This is a fact on which we all agree. Further, matter requires a cause that moves it. This is another fact admitted with no disputation. The most basic issue regarding the philosophy of motion is this. Can the matter in motion be the cause or agent of its motion? In other words, that which moves is the subject of motion, while the mover is the cause of motion. Can the same thing in the same respect be simultaneously a subject of motion and a cause of it?

Metaphysical philosophy responds to this question by insisting that the multiplicity of that which moves and the mover is necessary. This is because motion is a gradual development and completion of a deficient thing. A deficient thing cannot by itself develop and complete itself gradually, for it cannot be the cause of completion.

On the basis of this, a dual principle of the mover and the moving thing was posited in the philosophical notion of motion. In light of this principle, we can know that the cause of the developmental motion (p. ?358) of matter is not at heart and in substance matter itself, but a cause beyond matter that provides matter with continuous development, and that emits to matter linear motion and gradual completion.

Dialectical materialism is the contrary of this. it does not admit a duality between the moving matter and the cause of motion. Rather, it considers matter itself as a cause of its own motion and development.

Thus, there are two explanations of motion. In the dialectical explanation, which considers matter itself as a cause of motion, matter is the most primary source of the development of completion. This imposes on the dialectic the view that matter essentially involves the stages and completions that motion attains in its renewable march.

The secret behind the fact that the dialectic is required to adopt this view is [its need to] justify the material explanation of motion, for the cause or source of motion cannot but essentially involve development and completion chat it provides and extends to motion.

Moreover, since, according to the dialectic, matter is the cause of its own motion and the driving force behind matter in the field of development, it becomes incumbent on the dialectic to acknowledge that matter has the properties of causes or agents, and to consider it as essentially involving all the contradictions that motion gradually attains; so that it can be a source of completion and a primary provider of motion.

That is why the dialectic admitted contradiction as a necessary consequence of its philosophical progression. It rejected the principle of non-contradiction and claimed that contradictories always come together in the internal content of matter, and that by virtue of this internal resource, matter is a cause of motion and completion.

As for the theological explanation of motion, it begins with an inquiry about these contradictories which the dialectic alleges to be contained in matter. Are all these contradictories in matter in actuality, (p. 359) or are they in it in potentiality? The former option is completely rejected, for contradictories cannot, due to the principle of non-contradiction, come together in actuality. If they come together in actuality, matter will come to a standstill and rest.

There remains the latter option: namely, that these contradictories are [in matter] in potentiality. By 'their potential presence' is meant that matter has the capacity to receive gradual developments, and the possibility for linear completion by motion. This means that the internal content of matter is empty of everything other than receptivity and capacity.

In light of this, motion is a gradual departure from potentiality to actuality in the field of continuous development. Matter is not the cause behind motion, for matter is empty of the levels of completion attained by the stages of development and motion, and has nothing but the possibility and capacity for these levels of completion. It is, therefore, necessary to search for the cause of the substantial motion of matter and for the primary source of this motion outside the limits of matter. It is also necessary that this cause be God, the exalted, Who contains essentially all the ranks of completion.

Matter and Sentiment [al-wijdan]

Our position regarding nature, which is rich in evidence for intention, purpose and governance, is similar to the position of a worker who discovers in his excavations sensitive systems hidden in the earth. This worker will not doubt that there is an artistic hand that put those systems together with all precision and care for the purpose of realizing certain aims by means of them.

The more this worker knows new facts about the precision with which these systems were made, and the signs of art and innovation in them, the more highly does he think of the artist who constructed them, and the more appreciative of that artist's brilliance and intellect does he become. Similarly, we take the same position that human nature and sentiment suggest with regard to nature in general, seeking from (p. 360) the secrets and signs of nature inspiration about the greatness of the wise Creator Who created

it, and about the sublimity of the intellect from which it proceeded.

Nature, therefore, is a marvelous artistic portrait, and the natural sciences are the human instruments that uncover the types of innovation in this portrait, that raise the curtain to show its artistic secrets, and chat supply the general human heart with one evidence after another for the existence of the governing and wise Creator, and for His greatness and perfection.

Whenever these instruments achieve a victory in their various fields or disclose a secret, they supply metaphysics with a new force and provide the human race with a new evidence for the innovative, creative greatness that created and organized this eternal portrait with what calls for astonishment, wonder and glorification.

Thus, the facts declared by modern science leave no room for doubt concerning the issue of God, the omnipotent and the wise. If the philosophical proofs fill the mind with certainty and acceptance, modern scientific discoveries fill the soul with confidence and faith in the divine providence and the metaphysical explanation of the first principles of existence.

Matter and Physiology

Take, [for example,] the human physiology with its astonishing facts. You see in it the Creator's greatness and precision in all the details that this physiology reveals and the secrets that it shows. The digestive system, for instance, is the greatest chemical factory in the world for its various methods of analyzing chemically the different nutrients in a manner that brings wonder, and for justly distributing the proper nutritive elements to billions of living cells of which the human body is composed.

Every cell receives the amount of nutrients it needs. These nutrients are then transformed into bone, hair, teeth, nails, nerves, (and so on,] in accordance with a given plan for the functions imposed on these cells in a system no more precise than which, or greater than which, is known to humanity. (p. 361)

One glance at these living cells, which carry the secret of life, fills the soul with astonishment and wonder over the cells' adaptation to the requirements of their position and circumstances. It is as if every cell knows the structure of the organ whose preservation it sustains by the help of other cells sharing with it that organ, and comprehends that organ's function, and how that organ must be.

The system of the visual sense, which is small and insignificant in size, is no less beautiful and precise than the digestive system, and it is no less of a sign of a conscious will and a creative intellect. It is composed with full exactitude. Sight cannot be attained in the absence of any part of this system.

The retina, for example, on which the lens reflects the light is composed of nine separate layers even though it is no thicker than thin paper. The last of these layers is also composed of thirty million rods[18] and three million cones.[19] These rods and cones are organized in an accurate and magnificent manner. However, the light rays are represented on the retina in an inverse position. That is why the creative

Providence willed that the visual system behind the retina must be provided with millions of nerve sacs that are responsible for some chemical changes that finally lead to grasping the image in its proper position.

Can this colossal planning, which ensures that the act of vision falls among the best acts of matter, be without guidance and purpose, even though the mere discovery of it requires strong intellectual efforts?

Matter and Biology

Now, consider biology, or the science of life. You will find another great divine secret: namely, the vague secret of life, which fills the human heart with confidence in the theological notion and with solid conviction about it. In night of the science of life, the theory of self-procreation collapsed. (p. 362) This theory prevailed in the materialistic mentality and was accepted by the superficial and the vulgar in general.

They illustrated this theory by many examples of insects (sic], such as the worms that are formed in the intestines or in a piece of meat subjected to air for a while, as well as other examples inspired by the naiveté of materialistic thinking. Such things, according to them, appear to be reproduced by themselves under specific natural circumstances, and without proceeding from other living beings. However, decisive scientific experiments proved that this theory is false, and that worms are reproduced by the germs of life that are contained in the piece of meat.

Materialism attempted once again to establish the theory of self-procreation when Anton van Leeuwenhoek20 invented the first composite microscope. By means of this microscope, Leeuwenhoek discovered a new world of small organisms. This microscope succeeded in showing that a raindrop has no germs. Rather, the germs are produced after the raindrop touches the earth.

The materialists raised their voices and rejoiced in the new victory in the field of microbiology, after they had failed to discount the sperm, and to establish the theory of self-procreation with regard to animals visible to the naked eye. Thus, they returned to the battleground, but [this time, their disputation was] on a lower level.

The debate between the materialists and others concerning the formation of life continued up to the nineteenth century, when Louis Pasteur put an end to his conflict. By his scientific experiments, he proved that the germs and microbes that live in water are independent organic beings that come to water from the outside, and then reproduce in it.

Once more, the materialists tried to cling to a thread of illusory hope. (p. 363) Thus, they abandoned the fields in which they failed and moved to a new field: namely, the field of fermentation. In this field, some of them attempted to apply the theory of self-procreation to the microscopic organic beings that are the cause of fermentation.

However, soon enough this attempt, like those before it, was also shown to be a failure at the hands of Pasteur, when he showed that fermentation does not take place in matter if matter is kept by itself and in isolation from the outside. Rather, fermentation occurs due to the transmission of specific organic beings to it and their reproduction in it.

Thus, in the final analysis, it was shown to be true of all kinds of animals, including the minute animals that were recently discovered and that cannot lx seen by the regular microscope, that life does not proceed except from life and that it is the sperm, and not self-procreation, which is the general law that prevails in the realm of living beings.

The materialists are in a difficult position with regard to this decisive conclusion. The reason is this. If the theory of self-procreation is dropped, in light of scientific research, how then can they explain the arising of life on the face of the earth? Further, would there be a way for the human heart after that to shut off its eyes in the light and to overlook the clear, divine reality that trusted the secret of life to the primary cell or cells? If this were not so, why then did nature turn away forever from the act of self-procreation?

This means that if the materialistic explanation of the primary cell of life by self-procreation were correct, how could materialism then explain the non-recurrence of self-procreation in nature with the tong passage of tune? Indeed, this is a perplexing question for the materialists.

It is curious that the Soviet scientist Obern,21 responds to this question as follows. [Even] if the production of life by way of along material interaction is still possible in planets other than ours (the earth), there is no room for it on this planet, since reproduction here (p. 364) began to occur at a faster and a shorter [rate than that of production of life by way of material interaction], this being human reproduction by way of marriage. The reason is chat the new interaction replaced the biological and chemical primitive interaction, rendering it unnecessary.22

This is Obern's complete answer to the question. It is indeed a strange answer. Reflect on how he judges that nature has no need for the operation of self-procreation, since this operation became unnecessary once nature found a faster and a shorter way for reproducing life. It is as if he speaks of a conscious rational power that abandons a difficult operation after its attainment of the goal was made available to it by means of an easier way. But when did nature abandon its decrees and laws for this purpose?

Further, if self-procreation took place at first, in accordance with certain laws and decrees, as water is produced due to a certain chemical composition between oxygen and hydrogen, it becomes necessary for it to be repeated in accordance with those laws and decrees, as the existence of water is repeated whenever certain chemical factors are present, whether or not water is necessary; for necessity in the natural sense is merely the necessity produced by the laws and decrees of nature. What then made those laws and decrees different?

Matter and Genetics

Let us leave this issue to genetics, which captivates human thought, and to which mankind bows with respect and admiration. It is rather astonishing to know that the whole organic heritage of an individual is contained in living nuclear matter (protoplasm)23 of the reproductive cells, and that all the inherited traits are produced by very small microscopic segments [of this matter]. (p. 365) These are the genes which are contained in that living matter with precision and order. Science has shown that this matter is not produced from bodily cells, but from the protoplasm of the parents, grandparents and so on.

In light of this, the Lamarckian24 illusion collapsed. On the basis of this illusion, Lamarck established the theory of evolution and progress. This theory states that the changes and traits acquired by the animal during his life – whether as a result of experience and training or as a result of interaction with the environment or a certain kind of nourishment – may be transferred by heredity to his offspring.

This is so because, on the basis of the distinction between bodily cells and reproductive cells, it was proved that acquired traits cannot be inherited. That is why the defenders of the theory of evolution and progress were obliged to denounce almost all the Lamarckian principles and details, and to offer a new hypothesis in the field of organic development. This is the hypothesis that species develop by means of mutations.

As to the present day, scientists do not have scientific support for this theory other than the observation of some manifestations of sudden change in a number of cases. This called for the assumption that animal species develop from mutations of this sort, in spite of the fact that the observed mutations in animals did not reach the point of forming the various basic changes, and that some of the sudden changes were not inherited.

We are not concerned with discussing this kind of theory. Rather, our purpose is to point out the precise hereditary system and the astonishing power in the minute genes, which gives direction to all the cells of the body and provides an animal with its personality and traits. Is it possible, according to human sentiment, that all of this occurs haphazardly and by chance? (p. 366)

Matter and Psychology

Finally let us examine psychology for a moment, in order to overview another field of divine creativity. In particular, let us pay attention to one of the psychological issues, namely, that of the instincts that light the animals' way and guide their steps.

These instincts are clear signs in the heart that the providing of such instincts to animals is the action of a wise governer and is not a fleeting coincidence. If this were not so, then who taught the bee to build hexagonal beehives, the shark to build river dams, and the ants to do marvelous things in setting up their homes? Indeed, who taught the eel not to lay her eggs except in a certain spot at the bottom of the sea, where the ratio of salt is almost 35 percent, and the distance from the surface of the sea is no less than

1 200 feet? The eel makes sure to deposit her eggs on such a spot, since her eggs cannot grow except when the above two conditions are met.

An interesting story is told about a scientist who made a specific system which he supplied with appropriate heat, water vapor, and other conditions necessary for the natural process of producing chicks from eggs. He placed in this system some eggs that could give him chicks, but he did not obtain the desired result. He learned from this that his study of the conditions of natural reproduction was not complete.

Thus, he carried out further experiments on the hen when incubating the eggs. After very careful observations and tests, he discovered that, at specific times, the hen changes the position of the eggs and switches them from one side to the other. Once again, he performed the experiment in his specific system, accompanying it with what he learned from the hen. The experiment then was met with splendid success.

By your conscience, tell me who taught the hen this secret that is concealed from this (p. 367) great scientist? Or who inspired her with this wise act without which reproduction cannot occur?

If we wish to study instincts more profoundly, we must exposit the most important theories, interpret and explain them. There are many such theories.

The first theory is chat animals were led to instinctive acts after many trials and experiences. They became addicted to them; thus, such aces became inherited habits transmitted from parents to children, without there being room in learning them for supernatural providence.

This theory consists of two parts, the first of which is that animals, to begin with, reached instinctive acts by way of trial and experience. The second is chat such acts were transmitted to successive generations, in accordance with the law of heredity.

But neither part can be accepted. The first is incorrect, because the animal's discarding of an erroneous trial and his adoption and retention of a successful one means that he comprehends the success of the latter and the erroneousness of the former. But this is something that cannot be granted to animals, especially if the success of a trial does not appear except after their death, as is the case with butterflies reaching the third stage of their lives. [Before this stage,] they lay their eggs on green leaves in circles.

The eggs only hatch in the third season. They come out in the form of small worms at a time when the mother has already died. How it is possible for the butterflies to comprehend their success in what they have done and know that by their actions they have prepared a large source of nourishment for the young, even though the butterflies did not witness that? Add to this that if instincts were the product of experience, this would necessitate the development, completion and strengthening of animal instincts (p. 368) in light of other trials and experiences throughout history. Yet, none of this has happened.

The second part of the above theory is based on the idea that asserts the transmission of traits acquired by heredity. But this idea collapsed in the face of new theories in genetics, as we remarked earlier. But suppose that the law of heredity covers acquired habits. How then can the instinctive acts be inherited habits, even though some of them are performed by animals only once or a few times in their lives?

The second theory begins where the first one also begins. It supposes that animals were led to instinctive acts by repeated trials. Such acts were transmitted to successive generations, however, not by means of heredity, but by means of a kind of instruction and teaching accessible to animals.

The objection we raised to the first part of the previous theory is also applicable to the theory under consideration. But the objection that pertains to it exclusively is concerned with its claim concerning the transmission of instinctive acts by way of instruction and teaching. This claim is inconsistent with reality, even if we grant animals the power of understanding. This is because a number of instincts appear in animals at the beginning of their formation; [that is,] before there is any opportunity for teaching them. Indeed, young animals may be born after their mothers' death; nevertheless, they enjoy the same instincts enjoyed by their species. Take the eels, for example.

They emigrate from various pools and rivers to the unfathomable depths in order to lay their eggs. In their migration they may travel thousands of miles just in order to choose the appropriate spot. Later, they lay their eggs and then die. The young grow up and return to the shore from which their mothers had come. It is as if they fully study and scrutinize the world map. At whose hand did the young eels receive (p. 369) geography lessons?

The third theory was advocated by the behavioristic school of psychology that attempted to analyze animal behavior in general into units of reflexive action. It explained instincts as complex compounds of such units – that is, a chain of simple reflexive actions. Thus, an instinctive [act] is something like the withdrawal of the hand when pinched by a pin, or the contraction of the eye when encountering a strong light. But these two acts are simple and reflexive; while an instinct is composite and reflexive.

This mechanical explanation of instincts cannot be adopted either. The reasons are many, but there is no room for elaborating them here. One of these reasons is that a mechanically reflexive movement is produced by an external cause only, as in the eye contraction that is caused by the intensity of light.

However, some instinctive acts have no external cause. What is it, for example, that causes animals at the beginning of their existence to search for their food and to make an effort to find it? Add to this that the mechanically reflexive acts cannot involve comprehension and awareness, while observation of instinctive acts gives us decisive evidence of the comprehension and awareness involved in them.

One piece of such evidence is an experiment performed on the behavior of a hornet that builds its nest from a certain number of beehive cells. The experimenter had expected that the hornet would complete its work at a certain beehive cell. At that point, the experimenter pinched that cell with a pin. If the hornet returned to make another beehive cell and found that a human being had spoiled his work, he went back

and fixed it. Thereafter, the hornet moved to make the next beehive cell.

The experimenter repeated his experiment a number of times. He then realized that a succession of performing instinctive behaviors is not mechanical. He noticed that when the hornet came back and found that the completed beehive had been destroyed, it made a certain motion and emitted certain sounds that indicated the anger and despair it felt. (p. 370)

After discounting this materialistic theory, two explanations of instinct remain. One of them is that instinctive acts are the product of intention and awareness. However, the purpose of animals is not the accurate benefits that result from such acts, but the direct pleasure in these acts themselves, in the sense that animals are composed in such a way that they derive pleasure from performing such instinctive acts, which at the same time give them the greatest utility and benefits.

The other explanation is that an instinct is a mysterious, divine, supernatural inspiration. Animals were supplied with it as a substitute for the intelligence and mind that they lack.

Whether this or that explanation is true, the signs of intention and management are clear and evident to the human heart; otherwise, how does the complete correspondence between the instinctive acts and the most accurate benefits that are hidden from animals occur?

We stop here, but not because the scientific pieces of evidence for the theological position have been exhausted. Not even large volumes can exhaust them. Rather, we stop in keeping with the procedure of the book.

After this presentation of all the evidence in the heart for the existence of the creative, wise power, let us turn our attention to the material hypothesis in order to see the extent of its naiveté and triviality in light of such evidence.

When this hypothesis asserts that the universe, including its wealth of mysterious order and beauty of creation and formation, was produced by a cause that does not enjoy a bit of wisdom and purpose, it exceeds thousands of times in its naiveté and oddity [the naiveté and oddity of] him who finds a large divan[25] of the most beautiful and the finest poetry, or a science book full of mysteries and discoveries, and then claims that an infant has been playing with a pencil on paper, thus, the letters happened to get organized and formed a volume of poetry or a book of science.

We shall show them our signs in the horizons and in themselves, so that it becomes clear to them that this is the truth. Is it not sufficient that your God is a witness to all things?[26]

1. This chapter deals with the question 'Is it matter or God that is the ultimate source of the universe?' Neither the outline at the beginning of the book in the section titled 'The Nature of the Work', nor the present title makes it clear that the discussion in this chapter is intended to center on this issue. However, as soon as one reads the first paragraph of this chapter, it becomes clear that this is exactly what is intended
2. Literally, the discrete or disjunctive theory.

3. Literally, the continuous theory.
4. Text: al-ajsam (bodies)
5. Text: jism (body).
6. Text: al-jism (body)
7. This is so because the atom has the same number of positive and negative charges, and so is electrically neutral.
8. Ernest Rutherford, British physicist and chemist (1871-1937). In 1908, he was awarded the Nobel Prize in chemistry. Rutherford studied radioactivity, and decided that the rays emitted by radioactive substances are of various kinds. He called the positively charged rays 'alpha rays' and the negatively charged rays 'beta rays'. He also showed that the radiations that are not affected by a magnetic field consist of electromagnetic rays. He called them 'gamma rays'. Rutherford is known for developing the theory of the nuclear atom. According to this theory, the atom has a small nucleus at the center. The protons, the positively charged particles that give the atom its weight, are in the nucleus. The electrons, the negatively charged particles that are light and that constitute no barrier to the alpha rays, lie outside the nucleus. It is obvious that this theory is in disagreement with the Democritean view of the atom as indivisible. Finally, it should be mentioned that Rutherford was the first to transform one element into another and the first to show that an artificial nuclear reaction can be made.
9. Text: al-asl al-'Ilmi (the scientific foundation).
10. i.e., the initial atoms that were originally unfused.
11. That is, the problem of the first cause of the world.
12. Such as the neutrons.
13. Text: al-madda al-'ilmiyya (scientific matter).
14. Text: waltun. Even though there is an Irish physicist by the name of Ernest Walton (1903-) who won the Nobel Prize in physics in 1951, the physicist intended here must no doubt be Dalton and not Walton. The theory of proportions in chemistry discussed here was introduced by Dalton and not by Walton.
15. Text: waltun.
16. Text: waltun.
17. Text: al-'ilmiyya (scientific).
18. A rod is one of the rod-shaped sensory bodies of the retina used in dim light.
19. A cone is any of the sensory bodies of the retina used in color vision.
20. Anton van Leeuwenhoek, Dutch biologist and microscopist (1682-1723). He is best known for constructing many microscopes, for discovering the one-celled animals tailed 'protozoa', and for being the first to see the bacteria.
21. Obern: we are unable to identify this scientist.
22. Qissat al-Insan p. 10.
23. Protoplasm is a complex of protein, organic and inorganic material, and water that constitutes the living nucleus of a cell.
24. Text: Darwinian. "Progress" is not part of Darwins theory of evolution nor is "inheritence of acquired traits". Darwin himself wrote extensively against these 2 notions to refute them in his "Origin of species". Therefore what is obviously being referred to here by Ayatullah as-Sadr is instead Lamarck's theory of evolution which preceded Darwin's. Ayatullah Baqir As-Sadr accidently wrote "Darwin" instead of "Lamarck" here.
25. In Arabic, diwan (divan) is a collection of Arabic or Persian poems. This word is used in several senses, such as 'council chamber', but it is obvious that here it is used in the sense indicated above.
26. Al-Quran, XLI, 58.

Chapter 5: Knowledge

The largest philosophical issue regarding knowledge is the casting of knowledge in a philosophical form that reveals its reality and essence and shows whether it is a material phenomenon present in matter when matter reaches a certain stage of development and completion, as materialism claims, or a phenomenon free from matter and, together with its manifestations, supported by a certain kind of existence, as it is understood philosophically in metaphysics.

Since Marxism is a materialistic school, it of course emphasizes the materialistic notion of thought and knowledge. This is made clear in the following texts from Marx, Engels, Georges Politzer and Roger Garaudy, respectively:

Thought is inseparable from thinking matter. This matter is the substance of all changes.[1] (p. 372) Regardless of the apparent superiority of our consciousness and thought, they are nothing but a bodily or material organic product – this being the brain.[2]

Engels continues:
It is necessary that any driving force in people passes through their brains. This is true even of food and drink which begin by a sensation of hunger or thirst. This sensation is also felt in the brain. The influences of the external world on a human being are expressed in his brain, where they are reflected in the form of sensations, ideas, motives and intentions.[3]

The natural sciences show that a deficiency in the development of the brain of a certain individual is the biggest impediment in the face of the development of his consciousness and thought. This is the case with stupidity. Thought is a historical product of nature's development to a high degree of perfection represented in the sense organs and nervous system of the living species, especially in the highest central part which rules the whole organic being, i.e. in the brain.[4]

The material formation of thought presents us, as we will see, with proofs that deserve to be believed and accepted.[5]

The philosophical notion of knowledge is not the only notion of knowledge (p. 373) worthy of research and study, for knowledge is the meeting point of many [types of] research and studies.

Every scientific discipline has its own notion that treats one of the many problems concerning knowledge, and one aspect of the secrets of the intellectual life whose mysteriousness and complexity make it exciting. Behind all these scientific notions lies the philosophical notion in which conflict between materialism and metaphysics arises, as mentioned earlier. The present issue, therefore, is the subject of different types of philosophical and scientific discussions.

Many writers and researchers fell into error [by] not distinguishing between the aspects on whose scrutiny and analysis scientific studies must concentrate and the aspect in which philosophical consideration must have its say. On the basis of this error, the materialistic claim was established, this is the claim which asserts that knowledge in the philosophical notion of metaphysics is incompatible with knowledge in the scientific notions.

We have already seen how Georges Politzer attempted to prove the materiality of knowledge from a philosophical point of view by means of pieces of evidence drawn from the natural sciences. Others also made the same attempt.

For this reason, we find it necessary to determine the philosophical position with regard to this issue, so that we can thwart the attempts seeking to confuse the philosophical and the scientific fields, and to charge that the metaphysical explanation of knowledge is on the opposite side of science and that it rejects the scientific truths and assertions.

That is why we will isolate [our] general position regarding knowledge and shed some light on the various kinds of scientific research that will determine the points of difference between us and materialism in general, and Marxism in particular, as it will determine the aspects that scientific studies can take up and explore; so that this will make it clear (p. 374) that such studies cannot be considered in support of materialism in the intellectual battle it fights against metaphysics for the purpose of establishing the most complete philosophical notion of knowledge.

We have already remarked that the aspects of knowledge touched upon or treated by those scientific studies are many, owing to the relation of the sciences to the various aspects of knowledge, rather due to the fact that a science has a variety of scientific schools, every one of which investigates knowledge from its own specific point of view. Physical and chemical researches, for example, explore certain aspects of knowledge.

Physiology has its own share in exploring knowledge; also psychology, with its various schools, including the schools of introspectionism (*al-istibtaniyya*),6 behaviorism, functionalism (*al-wazifiyya*),7 and so on. Every one of these schools studies a various aspect of knowledge. After all of this, the role of philosophical psychology emerges to treat knowledge from its own perspective. It investigates whether knowledge in essence is a material state of the nervous system or a pure spiritual state.

In what follows, we will clarify those various aspects to the extent needed to light up the path of our investigation, and to show our position regarding materialism and Marxism.

Knowledge on the Level of Physics and Chemistry

On their own level of research, physics and chemistry treat the physical and chemical events that often accompany the acts of cognition. These events are exemplified in the reflection of light rays from visible

things, the influence of those electromagnetic vibrations on a healthy eye, the chemical changes that occur (p. 375) because of this, the reflection of sound waves from audible objects, the chemical particles that issue from odoriferous and flavored things, as well as other similar physical stimuli and chemical changes. All such events fall in the domain of the scientific application of physics and chemistry.

Knowledge on the Level of Physiology

In light of physiological experiments, a number of events and processes that occur in the sense organs and in the nervous system, including the brain; were discovered. Even though such events are of a physical and chemical nature, as are the above processes, nevertheless, they are distinguished from those processes in that they occur in a living body. Thus, they have a certain relation to the nature of living bodies.

By means of such discoveries, physiology was able to determine the vital functions of the nervous system and the role that its various parts play in the acts of cognition. Thus, according to physiology, the brains are divided into four lobes: the frontal lobe, the parietal lobe, the temporal lobe and the occipital lobe.

Each of these lobes has its specific physiological functions. The motor centers, for example, are in the frontal lobe. The sensory centers, which receive messages from the body, are in the parietal lobe. The same is true of the sense of touch and that of pressure. As for the specific centers of taste, smell and hearing, they are in the temporal lobe; while the visual centers are in the occipital lobe. There are further details [of the brain].

Usually, one of the two main physiological procedures, ablation (*al-isti'sal*) and stimulation (*at-tanbih*), is used to obtain physiological information about the nervous system. (p. 376) In the former procedure, various parts of the nervous system are ablated. Later, a study is made of the changes in the behavior that occur as a result of this ablation. In the latter procedure, on the other hand, specific centers in the cortex of the brains are stimulated by electrical means. The sensory or motor changes that result from this are then recorded.

It is very clear that by means of their scientific tools and experimental methods, physics, chemistry and physiology cannot disclose anything other than the events and contents of the nervous system, including whatever processes and changes it undergoes.

However, the philosophical explanation of the reality and essence of knowledge is not the prerogative of these sciences, since they cannot prove that such particular events are the same as the knowledge which we have as a result of our own experiences. The indubitable and indisputable truth is that such physical, chemical and physiological events and processes are related to knowledge and to the psychological life of a human being. They play an important role in this sphere.

However, this does not indicate the soundness of the materialistic claim that insists on the materiality of knowledge. There is a clear difference between knowledge as something preceded or accompanied by preparatory processes on a material level and knowledge as something that is in essence a material phenomenon or a product of matter at a specific stage of growth and development, as the materialistic school asserts.

The natural sciences, therefore, do not extend their study to the philosophical field – that is, the field of investigating knowledge in its reality and essence. Rather, they are negative in this respect. This is so in spite of the fact that the school of psychological behaviorism attempted to explain knowledge and thought in light of physiological discoveries, especially the conditioned reflexive act whose application to the psychological life leads to a purely mechanical view of mankind. This will be discussed later. (p. 377)

Knowledge in Psychological Research

Psychological research that addresses psychological problems and issues divides into two branches. One of them is the scientific research that constitutes experimental psychology; the other is the philosophical research for which philosophical psychology or the philosophy of psychology is responsible. Psychology and philosophy each has its own methods and procedures for research and exploration.

Psychology begins where physiology stops. Thus, it studies and scrutinizes the mental life and its psychological processes. In its practical studies, psychology employs two main procedures. One of them is introspection, which is used by many psychologists. In particular, this procedure is a distinguishing mark of the school of psychological introspectionism which adopts subjective experience as an instrument for its scientific research, and which advocates feeling as the subject of psychology.

The other procedure is objective experience. Lately, this procedure has occupied the most important position in experimental psychology. Its importance was particularly emphasized by behaviorism, which considers objective experience as a basic constituent of science. Because of this, behaviorism claims that the subject of psychology is external behavior, since it is the only thing to which outward experience and objective observation can be applied.

The facts addressed by psychology are chose that can be disclosed either by introspection or by outward experience. As for those facts that lie outside the limits of experience, they cannot be the subject of experimental psychology. This is to say that this school of psychology extends just as far as the experimental field extends and ends where this field ends. There, the philosophy of psychology begins, where the experimental science stops, as (p. 378) psychology begins its scientific march where physiology stops.

The most basic function of the philosophy of psychology is to endeavor to disclose those facts that lie outside the scientific and experimental field. Philosophy pursues this [end) by admitting the

psychological postulates given by experimental science, and studies them in light of general philosophical laws. With the guidance of such laws, philosophy gives the scientific results a philosophical interpretation, and posits a more profound explanation of mental life.

Thus, the relation between psychology and the philosophy of psychology is analogous to the relation between the experimental natural sciences and the philosophy of such sciences. The natural sciences investigate the various phenomena of electric currents and fields, electric exhaustion and velocity, as well as other physical laws of electricity. The different phenomena of matter and energy are also studied along the same lines.

The nature of electricity and that of matter or energy, on the other hand, are the concern of philosophical research. The same is true of mental life. Scientific research takes up the psychological phenomena chat fall in the sphere of subjective or objective experience. Discussion of the nature of knowledge and the reality of the internal content of the mental processes is entrusted to the philosophy of psychology or philosophical psychology.

In light of this, we can always distinguish between the scientific and the philosophical sides of the issue. Following are two examples of this, drawn from the subjects of psychological research.

The first is mental dispositions concerning which both the philosophical and the psychological sides meet. The philosophical side is represented in the disposition theory (*nazariyyat al-malakat*) that asserts that the human mind is divided into powers and numerous dispositions for various kinds of activities. These powers and dispositions are exemplified by attention, imagination, memory, (p. 379) cognition, will and similar features.

This idea falls under the scope of philosophical psychology. It is not a scientific idea in the sense that it is 'experientially scientific'. This is because whether experience is subjective, as is introspection, or objective, as is scientific observation of the external behavior of others, it cannot scientifically disclose the multiplicity or unity of dispositions; for neither the multiplicity of mental powers nor their unity can be subjugated to experimentation, regardless of its kind.

The scientific side of the disposition issue, on the other hand, points to the theory of formal training in education. This theory states that mental dispositions may be developed as a whole and, without exception, by training in one subject matter and one kind of facts. This theory has been admitted by a number of educational psychologists who accept the disposition theory that prevailed in psychological thought up to the nineteenth century.

They assumed that if a disposition is strong or weak in a certain individual, it is also strong or weak in every area [in that individual]. Clearly, this theory is subsumed under the scope of experimental psychology. It is a scientific theory, since it is subject to the scientific criteria. Thus, it is possible to try to find out how memory is influenced in general by training in memorizing a certain subject matter. With this, it becomes possible for science to assert its judgement in light of experiments of this sort.

Subsequently, the scientific result of the experiment is presented to the philosophy of psychology, so that this philosophy may study, in light of philosophical laws, the philosophical significance of this result and its meaning of the multiplicity or unity of dispositions.

The second example is drawn from the heart of the subject matter under consideration. It is the act of visual perception. This is one of the main subjects of research in both scientific and philosophical fields alike.

In scientific research, a sharp debate (p. 380) between the associationists (*al–irtibatiyyin*),[8] on the one hand, and the defenders of the doctrine of shape or form (the Gestalt),[9] on the other hand, centers on the explanation of the act of perception. Associationists are those who consider sensory experience as the only foundation of knowledge.

As chemists analyze chemical compounds into their primitive elements, associationists analyze the various mental experiences into primary sensations linked and composed by instrumental and mechanical processes, in accordance with the laws of association. There are two aspects to this theory of association.

The first is that the source of the composition of mental experiences is primary sensations, or simple ideas that are apprehended by the senses. The second is that this composition occurs mechanically and in accordance with the laws of association.

The first aspen has already been studied in the theory of knowledge when we discussed the primacy source of human conception and the empirical theory of John Locke, who is considered the founder of the school of associationism. There, we concluded that the source of some units of conception and rational thought is not the senses. Rather, such units are produced by the positive, efficient activity of the soul.

The second aspect, on the other hand, was addressed by the Gestalt school that rejected the analytic approach to a study of the conscious states. It responded to the mechanical, associationistic explanation of the acts of knowledge by insisting that it is necessary to study every experience as a whole, and that wholeness is not just the melting or composition of sensory experiences. Rather, it has the nature of a dynamic rational order that is in keeping with certain laws.

After having clarified the above two tendencies, let us see their scientific explanation of the act of visual perception. In light of the associationistic tendency, it is said that the image of a house, for example, that is formed on the retina is transported to the brain part by part. There, in a specific part of the brain, an image is found that resembles the image that occurs on the retina. The mind is then activated and supplies this brain image with ideas from previous experiences in the mind chat are mentally associated with a house. This is accomplished in accordance with the mechanical laws of association. (p. 381) The result of this is rational knowledge of the image of the house.

In light of the shape or form tendency, on the other hand, knowledge from the very beginning is dependent on things as wholes and on their general forms, since there are primary shapes and forms in the external world that correspond to the shapes and forms in the mind. Therefore, we can explain the order of mental life by the order of the laws of the external world themselves, and not by composition and association. A part in a form or a whole is known only in accordance with the whole, and is changed in accordance with the changes of the form.

We give the name 'scientific explanation' to the explanation of such a visual perception, since it is included in the experimental field, or organized observation. Hence, knowledge of the form and the change of a part in accordance with the change of the farm are empirical. That is why the Gestalt school proved its theory by experiments that show that human beings do not only perceive parts. Rather, they perceive something else, such as the shape or the tune. All puts may come together without that shape or tune being perceived.

Thus, the form reveals all the parts. We do not wish at this point to elaborate the scientific explanations and studies of the act of visual perception. Rather, the above presentation is intended to help us determine the position of the philosophical explanation that we attempt to give such an act.

With respect to this, we say that after all those scientific studies the mental perception of the visual image raises a question for both the Gestaltists and the associationists alike. This question concerns the image that is grasped by the mind and that is funded in accordance with the mechanical laws of association, or in accordance with the laws of shape or form: 'What is the essence of such an image, and is it a material or an immaterial image?' This basic question forms the philosophical problem that philosophical psychology must study and address. Materialism and metaphysics respond to this question (p. 382) by two contradictory answers.

By now, it is very clear that scientific psychology (experimental psychology) cannot insist on the materialistic explanation of knowledge in this area, and cannot deny the existence of anything in the mental life which lies outside matter, as the materialistic philosophy does; for psychological experiments, whether subjective or objective, do not extend to this mental field.

Knowledge in the Philosophical Sense

Let us now begin our philosophical study of knowledge, after having clarified its significance and relation to the various practical studies, in accordance with the philosophical method of psychological studies. This method can be summed up, as mentioned, in the adoption of scientific truths and experimental postulates, and in the discussion of these truths and postulates in light of the laws and principles accepted in philosophy, so that one can infer a new truth behind the truths already discovered by experiments.

Let us take the mental perception of a visual image as a living example of the general mental life whose

explanation is the subject of disagreement between metaphysics and materialism. Our philosophical notion of knowledge is based on the following: (1) the geometrical properties of the perceived image; and (2) the phenomenon of stability in the acts of visual perception.

A. Geometrical Properties of the Perceived Image

In the former, we begin from an intuitive truth which we draw from our daily lives and various ordinary experiences. This is the truth that the image given to us (p. 883) by the mental operation of visual perception involves the geometrical properties of length, width and depth and appears in various shapes and volumes.

Let us assume that we visit a garden that extends for thousands of meters, and that we cast one glance at it by means of which we are able to perceive the garden as one solid whole in which there are date palms, other kinds of trees, a large water pool, flowers and leaves bursting with various forms of life, chairs placed in order around the water pool, nightingales, as well as other kinds of birds singing on tree branches. The issue that faces us with regard to this beautiful image that we fully grasp in one glance is this. What is this image that we grasp? it is the same as the garden and its objective reality as such? Or is it a material image in a specific material organ of our nervous system? Or is it neither this nor that, but an immaterial image that resembles the objective reality and speaks of it?

An ancient theory of vision[10] advocated that the garden in its external reality is the image that is represented in our mental perception. This theory assumed that human beings perceive the very objective reality of things due to the fact that a certain kind of light rays emitted by the eyes fall on the visible object.

But this theory was dropped from philosophical consideration early on. The reason is that the deception of the senses that makes us perceive certain images in certain unreal forms proves that the perceived image is not the same as the objective reality. If this is not so, (the question arises as to) what the objective reality perceived in the deceptive sense perception is. This theory was later discarded from science, for science proved that light rays are reflected on the eye from visible things, and not vice versa; and that we have nothing from visible things other than the rays that are reflected on the retina. Science even proved that our vision of a thing may occur years after the destruction of that thing.

For example, we do not see Sinus in the sky (p. 884) except when the light rays it emits reach the earth a number of years after they had been emitted from their source. They fall on the retina of the eve; thus we say that we see Sirius. But these light rays that lead to our seeing Sirius give information about Sirius as it was a few years earlier. It is possible that Sirius had disappeared from the sky a long time before we saw it. This is a scientific proof that the image we now perceive is not the same as Sirius soaring in the sky –that is, as the objective reality of that star.

It remains for us to consider the last two assumptions. The second assumption, which states that the

perceived image is a material product in the perception organ of the nervous system, is the assumption that determines the philosophical doctrine of materialism. The third assumption, on the other hand, which states that the perceived image or the mental content of the act of perception cannot be material, but is a form of metaphysical existence outside the material world, is the assumption that represents the philosophical doctrine of metaphysics.

At this point of the discussion, we can consider the materialistic assumption as completely improbable. The reason is that the perceived image with its volume, geometrical properties, and extension – lengthwise and widthwise – cannot exist in a small material organ of the nervous system. Even if we believe that light rays are reflected on the retina in a certain form, and are then transferred in sensory nerves to the brain where an image resembling that which occurs on the retina is produced in a specific area of the brain, nevertheless, the material image is other than the mental image.

This is because the latter does not have the same geometrical properties that the perceptible image has. As we cannot take down on a small, plain piece of paper a photograph of the garden that we perceive in one glance equal to the garden in width, form and extension, (p. 385) so also we cannot take down on a small portion of the brain a mental or a perceptual picture of this garden that resembles the garden in width, form and geometrical properties. This is so because the imprinting of a large thing on a small thing is impossible.

Therefore, it is necessary to suppose the following. The perceived image, which is the real content of the mental operation, is a metaphysical form that has an immaterial existence. This is all that is meant by the metaphysical, philosophical notion of knowledge.

Here it may occur to some minds that the issue of perceiving an image with its shapes, volumes, dimensions and distances was responded to by science and treated by psychological research, which showed that there are a number of visual and muscular factors that help us grasp these geometrical properties. The sense of sight does not grasp anything other than light and color. The grasping of the geometrical properties of things is dependent on the link of the sense of touch to specific movements and sensations. If we free the visual sensation from all other sensations, we will see nothing but spots of light and color.

Moreover, we will not be able to perceive shapes and volumes. We will be unable even to distinguish between a circular thing and a cubic thing. This is because the primary qualities and forms are objects of the sense of touch. By repeating the touch experiment, a conjunction is produced between those tactile qualities and a number of visual sensations, such as specific differences in light and visible colors, as well as a number of muscular movements, such as the movement of adapting the eye to seeing proximate and distant things, and the movement of the meeting of eyes in the case of visual perception.

After this conjunction occurs, we can dispense with the tactile sensations in the perception of shapes and volumes, due to the muscular sensations and movements that are associated with them. If,

subsequent to this, we see a circular body, we will be able to identify its shape and volume without touching it. We do this by depending on (p. 386) the muscular sensations and movements that have been associated with the tactile objects. This is how we finally perceive things with their geometrical properties: that is, not merely by the visual sensations, but by vision accompanied by other kinds of sensory movements that have acquired a geometrical significance because they were associated with the tactile objects. However, habit prevents us from noticing this.

We do not wish to study the theory of muscular and visual factors from a scientific point of view, for this is not the concern of philosophical inquiry. Let us, therefore, admit it as a scientific postulate and assume its soundness. This assumption does not change our philosophical position at all. This must be clear in light of the above delineation of the philosophical inquiry in psychological research.

The theory is tantamount to the assertion that the mentally known image – with its geometrical properties, length, width and depth – does not exist due to a simple visual sensation only. Rather, its existence is the result of cooperation with other visual sensations and muscular movements that had acquired a geometrical significance by means of their relation to the sense of touch and their conjunction with it in repeated experiences.

After admitting this, we face the very first philosophical question – namely, that which concerns the mental image that is formed by the visual sensation plus other sensations and movements: 'Where is this image? Is it a material image existing in a material organ? Or is it a metaphysical image fret from matter?' Once again, we find ourselves required to adopt the metaphysical point of view. The reason is that this image with its properties and extension of thousands of meters cannot exist in a small material organ, as it cannot exist on a small paper. Therefore, it must be an immaterial image.

This is with respect to the phenomenon of the geometrical properties of the known mental image.

B. Stability in the Acts of Visual Perception

The second phenomenon on which our philosophical notion can rest (p. 887) is the phenomenon of stability. By this phenomenon we mean that the known mental image is inclined to stability and does not change in accordance with the changes of the image which is reflected in the nervous system.

If, for example, we place a pencil at a distance of 1 meter from us, a specific light image will be reflected from it. If we double the distance separating us from it and look at it at a distance of 2 meters, the image it reflects will be reduced [in size] to half what it was in the first case. This is in spite of the fact that the change in our perception of the volume of this pencil is minimal. This is to say that the mental image we have of the pencil remains stable in spite of a change in the reflected material image.

This is clear evidence that the mind and its knowledge are not material, and that the known image is metaphysical. It is clear that this philosophical explanation of the phenomenon of stability is not incompatible with any scientific explanation of it that may be offered in this respect. Thus, you may be

able to explain this phenomenon on the ground that the stability of known subjects in its various manifestations is ascribed to experience and learning. Similarly, you may, if you wish, say in light of scientific experiments that there are determined relations between stability in its various manifestations and the spatial organization of the external subjects that we know.

However, this does not solve the problem from a philosophical point of view, for the known image, which does not change in accordance with the material image but remains stable as a result of a previous experience or due to specific spatial arrangement, cannot be the image that is reflected on the matter of the nervous system from objective reality. The reason is chat such a reflected image changes in accordance with the increase in distance between the eye and reality, while that known image is fixed.

The philosophical conclusion we draw from this discussion is that knowledge is not material, as materialism claims; for the materiality of an object is one of two things: it is either that that object is essentially a matter, or that it is a phenomenon existing in a matter. Knowledge is not essentially a maser, nor is it a phenomenon existing in, or reflected on, a material organ, such as the brain; (p. 888) for knowledge is subject to laws different from the laws to which the material image that is reflected on a material organ is subject.

Knowledge primarily possesses geometrical properties, and secondarily possesses stability, something that no material image reflected on the brain possesses. On the basis of this, metaphysics holds that the mental life, with its knowledge and images is the richest and most superior form of life, since it is above matter and its qualities.

But the other philosophical issue stemming from the previous issue is that if the knowledge and images that form our mental life are not in a material organ, then where are they? This question called for the discovery of a new philosophical truth: namely, that such images and knowledge come together or move successively on the same level – that is, the level of thinking humanity. This humanity is not at all material, such as the brain or the medulla.

Rather, it is a certain level of immaterial existence that a living being attains through his development and completion. Thus, the knower or thinker is this immaterial humanity.

In order to make the evidence for this point very clear, we must know that we face three positions. One of them is that our knowledge of this garden or of that star is a material image existing in our nervous system. We have rejected this position and given reasons for its rejection. The other is that our knowledge is not material but immaterial images that exist independently of our existence. This is also an unreasonable assumption. If these images were independent of us, what is our relation to them then?

Further, how do they become our knowledge? If we eliminate both of the above views, the only remaining explanation of this will be the third position: namely, that knowledge and mental images are not independent in existence from a human being, as they are not independent states or reflections in a material organ. Rather, they are immaterial phenomena subsisting in the immaterial side (p. 889) of a

human being.

Therefore, the immaterial or spiritual humanity is that which knows and thinks; it is not the material organ that does this, even though the material organ prepares the cognitive conditions for a firm relation between the spiritual and the material sides of the human being.

The Spiritual Side of a Human Being

At this point, we reach an important conclusion – namely, that there are two sides to a human being. One of them is material; it is represented in his organic composition. The other is spiritual or immaterial. The latter is the playground for mental and intellectual activity. A human being, therefore, is not just a complex matter; rather, his personality is a duality of material and immaterial elements.

This duality makes it difficult for us to discover the kind of relation or link between the material and the immaterial sides of a human being. We know first of all that the relation between the two sides is solid, so that each of them constantly affects the other. If, for example, a person imagines that he sees a ghost in the dark, he experiences a shudder. Also, if a person is made to speak publicly, he starts to perspire.

Further, if any of us begins to think, a certain activity occurs in his nervous system. This is the influence of the mind or soul over the body. Similarly, the body has its own influence over the mind. If old age creeps upon the body, the mental activity is weakened. Again, if a wine drinker indulges in drinking, he may see one thing as two. How then can each of the body and the mind affect the other if they are different and have no quality in common? The body is a piece of matter that has its own qualities of weight, mass, shape and volume. It is subject to the laws of physics.

The mind or soul, on the other hand, is an immaterial existent that pertains to a world beyond that of matter. Taking into consideration this gulf that separates the two sides makes it difficult (p. 390) to explain their mutual influence. A piece of stone can crush a plant in the soil, since both are material; and two pieces of stone can touch and interact.

However, one must give some explanation as to how two beings from two (different] worlds can touch and interact. Most likely, the [difficulty of giving such an explanation] delayed modern European thinkers from adopting the notion of dualism, after they had rejected the ancient Platonic explanation of the relation between the soul and the body as a relation between a driver and the chariot he steers.[11]

Plato thought that the soul is an old substance free from matter and exists in a supernatural world. Later, it descends to the body in order to manage it, as a driver gets out of his home and enters the chariot in order to steer it and manage it. It is clear that Plato's explanation of this pure dualism or gulf that separates the soul and the body cannot explain the close relation between them that makes every human being feel that he is one, and not two, things that came from two different worlds and then met.

The Platonic explanation remained incapable of solving the problem in spite of the revisions made in is

by Aristotle, who introduced the idea of form and matter, and by Descartes, who introduced the theory of parallelism (*nazariyyat al-muwazana*) between the mind and the body. This theory states that the mind and the body (the soul and the matter) move along parallel lines. Every event occurring in one of them is accompanied by a parallel event in the other.

This necessary accompaniment between mental events and bodily events does not mean that either of them is a cause of the other. The mutual influence between a material thing and an immaterial thing makes no sense. Rather, this necessary accompaniment between these two kinds of events is due to the divine Providence that has willed the sensation of hunger always to be accompanied by the movement of the hand for reaching the food, without this sensation being a cause of this movement. It is clear that this theory of parallelism is a new expression of Plato's dualism and gulf that separates the mind and the body. (p. 891)

The problems resulting from the explanation of the human being on the basis of a union of soul and body led to the crystallization of a new inclination in European thought for explaining the human being on the basis of one element. Thus, materialism in philosophical psychology developed to assert that a human being is nothing but matter. Similarly, the idealistic tendency was generated; it tended to give a spiritual explanation of the whole human being.

Finally, the explanation of the human being on the basis of the two elements the spiritual and the material, found its best formulation at the hand of the Muslim philosopher Sadr al-Muta'allihin ash-Shirazi. This great philosopher apprehended a substantial movement at the heart of nature. This movement is the most primary source of all the sensible movements that occur in nature. It is the bridge that ash-Shirazi discovered between matter and soul.

Matter in its substantial movement pursues the completion of its existence and continues its completion, until it is free from its materiality under specific conditions and becomes an immaterial being -that is, a spiritual being. Thus, there is no dividing line between spirituality and materiality. Rather, they are two levels of existence. In spite of the fact that the soul is not material, yet it has material relations because it is the highest stage of the completion of matter in its substantial movement.

In light of this, we can understand the relation between the soul and the body. It seems familiar that the mind and body (the soul and the matter) exchange influences, since the mind is not separate from matter by a wide gulf, as Descartes imagined when he found it necessary to deny their mutual influence and to assert their mere parallelism. Rather, the mind itself is nothing but a material image made superior by the substantial movement. Further, the difference between materiality and spirituality is just a matter of degree, as is the difference between intense heat and lower heat.

But this does not mean chat the soul is a product of matter and one of its effects. Rather, it is (p. 392) a product of the substantial movement which does not proceed from matter itself. The reason is that every movement is a gradual emergence of a thing from potentiality to actuality, as we learned in our

discussion of development according to the dialectic. Potentiality cannot bring about actuality, and possibility cannot bring about existence. Therefore, substantial movement has its cause outside the matter that is in motion. The soul that is other than the material side of a human being is a product of this movement. As for this movement itself, it is the bridge between materiality and spirituality.

The Conditioned Reflex and Knowledge

Our disagreement with Marxism is not limited to its materialistic notion of knowledge, for even if the philosophical notion of the mental life were the main point of disagreement between us, we also remain in disagreement with it regarding the extent of the relation of knowledge and consciousness to social circumstances and external material conditions.

Marxism believes that the social life of a human being is what determines for him his conscious thoughts, and that such thoughts or ideas develop in accordance with the social and material circumstances. But since these circumstances develop in accordance with the economic factors, the economic factors, therefore, are the primary factors behind the intellectual development.

Georges Politzer attempted to establish this Marxist theory on the basis of a scientific principle. Thus, he established it on the basis of the conditioned reflexive action. In order for us to have a good grasp of his view, we must say something about the conditioned reflexive action. This kind of action was discovered by Pavlov when he once tried to collect a dog's saliva from one of the [dog's] saliva glands. He prepared a certain apparatus for this purpose. He then gave the dog food to make him salivate. He noticed that the saliva began to flow from the trained dog before the food was actually placed in his mouth. (p. 398)

This was only because the dog saw the plate of food, or sensed the approach of the servant who used to bring the plate of food. It is clear that the appearance of a person or his footsteps cannot be considered a natural stimulus for this response, as is the placing of food in the mouth. Indeed, these things must have been associated with the natural response during the long course of experimentation; so that they came to be used as initial signs of the actual stimulus.

According to this, the excretion of saliva when placing food in the mouth is a natural reflexive action produced by a natural stimulus. As for the excretion of saliva when the servant approaches or is seen, it is a conditioned reflexive action produced by a conditioned stimulus used as a sign of the natural stimulus. Were it not for its being conditioned by a natural stimulus, it would not cause a response.

Due to similar conditioning operations, living beings acquired their first system of signs. In this system, conditioned stimuli play the role of indicating natural stimuli, and eliciting the responses appropriate to the natural stimuli. After that, the second system of signs came into existence. In this system, the conditioned stimuli of the first system were replaced by secondary signs of themselves that they have conditioned in repeated experiences.

Thus, it became possible to elicit the response or the reflexive action by means of the secondary sign, due to the fact that this sign had already been conditioned by the primary sign. Similarly, the system of primary signs made it possible to elicit the same response by means of the primary sign, due to the fact that this sign had already been conditioned by the natural stimulus. Language is considered the secondary sign in the system of the secondary signs.

This is the theory of Pavlov, the physiologist. Behaviorism exploited this theory. (p. 394) It claimed that mental life is nothing more than reflexive acts. Therefore, thinking is composed of internal linguistic responses evoked by an external stimulus. This is how behaviorism explained thought as it explained the dog's act of secreting saliva when heating the footsteps of the servant; as the secretion is a physiological reaction to a conditioned stimulus that is the servant's footsteps, so also is thought a physiological reaction to a conditioned stimulus, such as a language, for example, that has been conditioned by a natural stimulus.

But it is clear that the physiological experiments on the conditioned reflexive action cannot prove that the reflexive action is the essence of knowledge and the real content of the acts [of knowledge], since it is possible that knowledge has a reality beyond the limits of experimentation.

Add to this that in adhering to the view that thoughts are conditioned responses, behaviorism destroys itself and eliminates [its] power to disclose the objective reality and value, not only of all thoughts, but also of behaviorism itself, since it is a notion subject to the behavioristic explanation.

This is because the behavioristic explanation of human thought has its significant influence on the theory of knowledge, the determination of the value knowledge, and the extent of the ability of knowledge to disclose reality. According to the behavioristic explanation, knowledge is nothing but a necessary response to a conditioned stimulus.

This is exemplified in the flow of saliva from the dog's mouth in Pavlov's experiments. Knowledge, then, is not the result of evidence and demonstration. Consequently, all knowledge becomes an expression of the presence of a conditioned stimulus of it, and not an expression of the presence of its content in external reality.

But the behavioristic notion itself is not an exception to this general rule and is not different from all other ideas in being influenced by the behavioristic explanation, the reduction in its value, and the inability to be a subject of inquiry in any foam. (p. 895)

However, the truth is exactly the opposite of what behaviorism intended. Knowledge and thought are not, as behaviorists claim, physiological acts reflecting conditioned stimuli, as is the excretion of saliva. Rather, the very excretion of this saliva indicates something other than a mere reflexive reaction; it indicates knowledge. This knowledge is the reason why the conditioned stimulus evokes the reflexive response.

Knowledge, therefore, is the reality behind the reactions to conditioned stimuli, and not a form of those reactions. We mean by this that the dog's excretion of saliva at the occurrence of the conditioned stimulus is not a mere mechanical action, as behaviorism holds. Rather, it is the result of the dog's knowledge of the significance of the conditioned stimulus. The servant's footsteps accompanied by the arrival of food in repeated experiments began to indicate the arrival of food.

Thus, the dog came to realize the arrival of food when hearing the servant's footsteps. Hence, he excreted his saliva in preparation for the situation whose approach was indicated by the conditioned stimulus. Similarly, the infant appears relieved when his nurse prepares to nurse him. The same thing happens when he is informed of her arrival – if he comprehends language. This relief is not a mere physiological action resulting from an external thing associated to the natural cause.

Rather it is the result of the infant's knowledge of the significance of the conditioned stimulus, since he then prepares himself to nurse and feel relieved. That is why we find a difference in degree of relief between the relief caused by the natural stimulus itself and the relief caused by the conditioned stimulus. This is because the former is an authentic relief, while the latter is the relief of hope and expectation.

We can prove scientifically the inadequacy of the behavioristic explanation of thought. We can do this by the experiments on which the Gestalt doctrine in psychology was based. These experiments proved that it is impossible for us to explain the essence of knowledge on a purely behavioristic basis, and as a mere response to material stimuli whose messages are received by the brain in the form of a number of separate neurological stimuli. (p. 396)

Rather, in order for us to give a complete explanation of the essence of knowledge, we must accept the mind and the positive, active role it plays behind the neurological reactions and responses that are evoked by stimuli. Let us take sense perception as an example. The Gestalt experiments have proved that our vision of the colors and properties of things depends greatly on the general visual scene we encounter and the background surrounding those things.

Thus, we may see two lines as parallel or as equal within a group of lines that we encounter as a situation and as a whole whose parts are held together. Then within another group, we see them as not parallel or unequal. This is because the general situation that our visual perception encounters here is different from the previous situation. This shows that our perception is first concentrated on the whole.

We visually perceive the parts in our perception of the whole. That is why our sense perception of the part varies in accordance with the whole or the group including it. Therefore, there is an order of the relations among things that separates things into groups, determines the place of everything in relation to its specific group, and develops our view of a thing in accordance with the group to which it belongs.

Our knowledge of things within this order is neither subject to the behavioristic explanation, nor is it possible to say chat it is a material response or a bodily state produced by a specific stimulus. If it were a bodily state or a material phenomenon produced by the brain, we would not be able to perceive things

visually as an orderly whole whose parts are linked in a specific manner, so that our perception of such parts would be different when we perceive them within other relations.

This is because all that reaches the brain in knowledge consists of a group of messages divided into a number of separate neurological stimuli that come to the brain from the various organs of the body.

How then can we know the order of relations among things, and how is it possible for knowledge to be concentrated first of all on the whole, so that we do not know things except within a firmly knit whole, instead of knowing them in isolation, as they are transported to the brain?

How would all of this be possible had there not been an active, positive role (p. 397) played by the mind behind the reactions and divided bodily states? In other words, external things may send different messages to the mind.

According to behaviorism, these messages are our responses to external stimuli. Behaviorism may wish to say that such responses or material messages that pass through the nerves to the brains are by themselves the real content of our knowledge.

But what would behaviorism say about our knowledge of the order of relations among things which makes us perceive first of all the whole as united in accordance with chose relations, even though this order of relations is nothing material that can produce a material reaction in the thinker's body, or a specific bodily response or state? Thus, we cannot explain our knowledge of this order, and consequently our knowledge of things within this order on purely behavioristic grounds.

Marxism adopted Pavlov's theory and drew from it the following conclusions. First, consciousness develops in accordance with external circumstances. This is because it is the product of conditioned reflexive actions that are evoked by external stimuli.

Georges Politzer makes the following point:
By this method, Pavlov proved that what primarily determines the human consciousness is not the organic system. But, on the contrary, this determination is made by the society in which human beings reside and by the knowledge that human beings acquire from this society. Therefore, the social circumstances in life are the real organizers of the mental, organic life.[12]

Second, the birth of language was the fundamental event that transported (p. 398) human beings to the stage of thought. This is because the thought of a thing in the mind is the mere result of an external conditioned stimulus. Therefore, it would not have been possible for a human being to have a thought of anything were it not for the fact that some instrument, such as language, played the role of a conditioned stimulus.

The following is a passage from Stalin:
It is said that thoughts arise in the soul of a human being before they are expressed in language, and

that they are produced without the instrumentality of language. But this is completely erroneous. Regardless of what the thoughts that arise in the human soul are, they cannot be produced or directed except on the basis of linguistic instruments. Language, therefore, is the direct reality of thought.[13]

We differ from Marxism with regard to both points. We do not admit instrumentality in human knowledge. Thoughts and knowledge are not mere reflexive reactions produced by the external environment, as behaviorism claims. Moreover, they are not the product of such reactions that are determined by the external environment and chat develop in accordance with this environment, as Marxism believes.

Let us clarify this matter by the following example: Zayd and 'Amr meet on a Saturday. They converse for a while, and then attempt to separate. Zayd tells 'Amr the following: 'Wait for me at your home next Friday morning.' Then they separate. Each of them attends to his usual life. After the passage of some days, the time comes to make the visit.

Each of them remembers his appointment and understands his position differently from the way the other understands his position. 'Amr remains at home waiting, while Zayd leaves his home setting out to visit 'Amr. What is the external conditioned stimulus that caused (p. 399) different understanding in each of them, a few days after the previous meeting, and at this specific time? If previous conversations were sufficient for the present stimulation, why then do these two individuals now not remember all the conversations they had exchanged? Further, why do those conversations not play the role of stimuli and causes?

Another example is this. You leave home after having put a letter in your briefcase. You are determined to deposit this letter in a mailbox. While on the way to school, you see a mailbox. You realize immediately that it is necessary to deposit the letter in it and, thus, you do so. Later, you may come across many mailboxes that do not at all attract your attention.

What is the stimulus that causes your realization when you see the first mailbox? You may say that the cause is the sight of the box itself, since you have conditioned it by the natural stimulus. It is, therefore a conditioned stimulus. But how can we explain our unawareness of the other boxes? Further, why does the conditioning disappear when our need is met?

In light of the above examples, you know that thought is an efficient, positive activity of the soul, and not something at the disposal of physiological reactions. Similarly, thought is not the direct reality of the cause, as Marxism claimed. Rather, language is an instrument for the exchange of thoughts. But it is not itself what forms thoughts.

That is why we may think of something, yet make a long search for the appropriate word to express it. Again, we may think of a subject at the same time at which we are conversing about another subject.

In our detailed study of historical materialism in the work Our Economics, we offered an extensive criticism of the Marxist theories of human knowledge, [in particular,] the relation of knowledge to social

and material conditions and the explanation of knowledge on the basis of economic conditions.

Similarly, we studied in detail the Marxist view that asserts that thought is produced by language and is dependent on language. For this reason, we now consider that what appeared in the first edition of the present book to be sufficient as a recapitulation of our detailed study in the second series, Our Economics. (p. 400)

Therefore, social life and material conditions do not mechanically determine people's thoughts and conscious feelings by means of external stimuli. Indeed, a human being may freely shape his thoughts in accordance with the community and environment, as the school of functionalism in psychology asserts, from its influence by Lamarck's[14] theory of evolution in biology. As a living being organically adapts in accordance with his environment, so also does he ideationally adapt in the same way.

However, we must know the following. First, such adaptation is a part of the practical thoughts whose task is to organize the external life. But it cannot be a part of the reflective thoughts whose task is to disclose reality. Hence, logical and mathematical principles, as well as other reflective thoughts, proceed from the mind and are not shaped in accordance with the requirements of the social community. If this were not so, every truth would be destined to absolute philosophical doubt. This is because if all reflective thoughts were shaped by certain factors from the environment, and if they were to change in accordance with those factors, then no thought or truth would escape change and replacement.

Second, the adaptation of practical thoughts by the requirements and conditions of the community is not mechanical. Rather, it is freely chosen. It grows out of human free motives that lead one to create a system that is in harmony with one's environment and community. With this, opposition between the school of functionalism and the school of instrumentalism in psychology is completely eliminated.

In Our Society, we will study the nature and limits of this adaptation in light of the Islamic notions of society and the state, because this is one of the main issues with which the study and analysis of society are concerned. In that study, we will treat in detail all the points that are briefly mentioned in the present discussion of knowledge.

Our final appeal is for gratitude to God, the Lord of the Universe!

1. al-Maddiyya ad-Dialaktikiyya wal-Madddiyya at-Tarikhiyya, p. 19.
2. Ludwig Feuerbach, p. 57.
3. Ibid., p. 64.
4. Al-Maddiyya wal-Mithaliyya fi al-Falsafa, pp. 74-5.
5. Ma Hiya al-Madda, p. 32.
6. Introspectionism is a school advocating reflection on, or subjective observation of the mental processes and states. Watson's behaviorism was a rejection of introspection. It viewed the conscious states only in terms of observable data.
7. Functionalism is a tendency in psychology asserting that mental processes, thoughts, sense perceptions and emotions are adaptations of the biological organism. Among the exponents of this tendency are: W. James, C.T. Ladd, C.S. Hall, J. Dewey and J.R Angell.
8. Associationism is a tendency insisting that all mental states are analyzable into simple elements. Locke is a forerunner of

associationism in psychology.

9. In German, Gestalt is 'shape' or 'form'. The Gestalt school in psychology was founded in Germany around 1912 by Max Wertheimer, Wolfgang Kohler and Kurt Koffka. It interprets a person's experience in terms of organized wholes. It is through the whole that the parts acquire their existence and character. Without the whole, the parts do not exist. This is a clear rejection of the associationist's analytic tendency or atomism.

10. This ancient theory of vision was held by Empedocles.

11. Plato, Phaedrus, 246 a6ff.

12. Al-Maddiyya wal-Mithaliyya fi al-Falsafa, pp. 78-9.

13. Ibid., p. 77.

14. Jean Baptiste Lamarck, French naturalist (1744-1829). He is the founder of modern invertebrate zoology. He coined the words 'vertebrate' and 'invertebrate'. He is best known for his theory of evolution. Although he was not the first to propose evolutionary development of living species, he was the first to speak daringly and openly of the view that species are not immutable. Living beings use some parts of their bodies quite a bit, while they use some other parts very little. The parts that are used a lot develop, while the parts that are little used die out. The development or death that a part undergoes is transmitted to the offspring. Hence, acquired traits are inherited. His most important writings are: Natural History of the Invertebrates and Zoological Philosophy.
