THE

MARXIST DIALECTICS

OF

NATURE

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The Marxists Interpret The Pre-Socratics

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MARXISM TODAY presents itself as a thoroughly complete philosophical system. a) It claims a theoretical and scientifically tenable justification for its practical approach to the world of nature, society, and history.[1] b) It challenges other philosophical systems on the plane of theory. c) It claims a continuity with philosophies of the past, particularly with pre-Socratic Greek philosophy. It is the relationship of this third point with the first two that I wish to study in this paper.

In the *Anti-Duehring,* a source-book for the theoretical principles of Dialectical Materialism, Frederich Engels wrote:

> This primitive, naive, yet intrinsically correct conception of the world was that of ancient Greek philosophy, and was first clearly formulated by Heraclitus: Everything is and also is not, for everything is in flux, is constantly changing, constantly coming into being and passing away. But this conception, correctly as it covers the general character of the picture of phenomena as a whole, is yet inadequate to explain the details of which this total picture is composed: and so long as we do not understand these, we also have no clear idea of the picture as a whole. In order to understand these, *we must detach them from their natural or historical connections and examine each one separately, as to its nature, its special causes and effects. . . .*[2]

And in the *Dialectics of Nature,* an equally valuable source-book, he wrote:

> Thus we have once again returned to the point of view of the great founders of Greek philosophy, to the view that the whole of nature, from the smallest element to the greatest, from the grains of sand to

[1] J. Stalin, *Dialectical and Historical Materialism* (New York, 1940), p. 21.

[2] F. Engels, *Anti-Duehring* (Full title: *Herr Eugen Duehring's Revolution in Science*) (New York, 1935), pp. 26, 27, Italics mine.

> suns, from protista to man, has its existence in eternal coming into being and passing away, in ceaseless flux, in unresting motion and change, only with the essential difference that what for the Greeks was a brilliant intuition, is in our case the result of strictly scientific research. . . .[3]

Karl Marx' own philosophical view was not always so objective. In a series of theses which he had jotted down during his study of Feuerbach, he said that "The philosophers have only interpreted the world differently; the point is to change it."[4] Marx felt that the interpretation of the world could be no more than "instrumental" to a practical social philosophy. The very notion of purpose of theory was devoid of meaning outside the realm of man. At the time he wrote the theses against Feuerbach (1845), it seemed to him that the only vantage point from which philosophy could be viewed was that of human progress. For it was at that time that he wrote:

> The chief defect of all hitherto existing materialism, that of Feuerbach included, is that the object, reality, sensuousness, is conceived only in the form of the object of contemplation, but not as sensuous activity, practice, non subjectivity. Thus it happened that the active side, in opposition to materialism, was developed by idealism, but only abstractly, since, of course, idealism does not know real sensuous activity as such. Feuerbach wants sensuous objects really differentiated from thought-objects, but he does not conceive human activity through objects. . . . Hence he does not grasp the significance of 'revolutionary,' of practical-critical activity.[5]

From this conception of philosophy it follows that no purely objective judgment could be made either of things or of thoughts. Things cannot be confronted absolutely, but only through practice and through practical thought essentially conditioned by matter. Theory could not bear upon nature ab-

[3] F. Engels, *Dialectic of Nature* (New York, 1940), p. 13.

[4] Marx' Theses on Feuerbach, in F. Engels' *Ludwig Feuerbach* (New York, 1934), p. 75.

[5] Thesis I on Feuerbach, *Ibid.*, p. 73.

solutely, but only upon what nature happens to be for man in the present material conditions of human life. Thus Dialectical Materialism could not be a general theory of which Historical Materialism is but the application to society. Rather the contrary is true: Dialectical Materialism *is* Historical Materialism. Present day Dialectical Materialism could not, then, be looked upon as the natural outgrowth of principles of Being or of Nature affirmed long ago in pre-Socratic philosophy.

Was Marx unaware of the strong emphasis that would later be put upon theory? Did he see that his own philosophy could not resist the temptation to become more objective, more able to justify itself before Reason? Unquestionably, at that time Marxist philosophy did not have the physical power behind it to impose itself upon the world. It is possible that if it could have convinced men by a critique of arms, the insistance on theoretical principles rooted in traditional philosophy would never have taken place.

In a footnote to his *Ludwig Feuerbach* Engels said of Marx' contribution to the theoretical principles of Dialectical Materialism:

> Here I may be permitted to make a personal explanation. Lately repeated reference has been made to my share in this theory (Dialectical Materialism), and so I can hardly avoid saying a few words here to settle this particular point. I cannot deny that both before and during my forty years' collaboration with Marx, I had a certain independent share in laying the formulations, and more particularly in elaborating the theory. But the greater part of its leading basic principles, particularly in the realm of economics and history, and above all, its final, clear formulation belong to Marx.[6]

And in the *Anti-Duehring*:

> I may note in passing that inasmuch as the genesis and development of the mode of outlook expounded in this book were due in far greater measure to Marx, and only in a very small degree to myself, it was of course self-understood between us that this exposition of mine should not be issued without his knowledge. I read the whole manuscript to him before it was printed, and the tenth chapter of the section on economics was written by Marx, and my part was only to shorten it slightly, to my regret, for purely external reasons. As a matter of fact, we had always been accustomed to help each other out in special subjects.[7]

[6] F. Engels, *Ibid.*, footnote on p. 52.

Marxism today presents itself as a philosophy which may be compared with any other philosophy; and it dares confront any other philosophical system strictly on the theoretical plane. And today the Marxist approach to the history of philosophy is no longer by way of the criterion of practice. Whether in practice the Soviet Union hues more to the original Marxist view of the critique of "practice," or whether it actually prefaces its actions with a study of theoretical principles as developed by the "Engels shift," is not point at issue in this paper. Our concern is rather with what contemporary Marxists say.

Because they now invoke the pre-Socratics as forerunners of their own Dialectical Materialism, we may demand proof that they have understood them. They may no longer confine themselves to purely dogmatic statements about Heraclitus or any other of the early Greeks. Any statement they now make about the origins of their own philosophy being in the soil of ancient Greek "materialism" must be submitted to the ordinary methods of historical criticism.

A valid critique of any philosophy demands that it be applied to the proper historical cadre. And, therefore, we would agree with Marx that Dialectical Materialism must be understood in its historical context. But the pre-Socratics, too, can be appreciated if we restore for our analysis the philosophical environment in which their teaching grew — not as isolated from the problems which they faced, but in their dialectical approach

[7] F. Engels, *Anti-Duehring*, p. 13.

to the solutions of those problems. With the Marxists we feel that static thought and methods are incapable of rendering a fair picture of these early Greek philosophers. Rather we should see them in the positive and negative elements of their philosophies, in the opposition and the agreement which so often characterize men of genius belonging to the same era. Wherever it is possible, therefore, we shall employ the method of limits in analyzing the doctrines of the pre-Socratics since this method lends itself uniquely to the dynamic and fluid conceptions of these early philosophers.

The Pre-Socratics: Heraclitus (floruit 500 B. C.)

If there is a point of rapprochement between early Greek philosophy and Dialectical Materialism, it would seem to be on the doctrine of contraries in nature. Heraclitus was, perhaps, the foremost exponent of this view. The physical universe appeared to him to be constituted of such conflicting elements as gave rise to the phenomenon of motion. In the selected fragments which follow we have the closest approximation in early Greek sources to the Hegelian laws of Dialectics which Marx and Engels had incorporated in their own thought. The translation is that which Kathleen Freeman made of Diels' *Fragmente der Vorsokratiker*.[8]

8. That which is in opposition is in concert, and from things that differ comes the most beautiful harmony.
51. They do not understand how that which differs with itself is in agreement: harmony consists of opposing tension, like that of the bow and the lyre.
53. War is both king of all and father of all, and it has revealed some as gods, others as men; some it has made slaves, others free.
62. Immortals are mortal, mortals are immortal; each lives the death of the other, and dies their life.

[8] K. Freeman, *Ancilla to the Pre-Socratic Philosophers* (Oxford, 1948), pp. 24 ff.

67. God is day-night, winter-summer, war-peace, satiety-famine. But he changes like fire which when it mingles with the smoke of incense, is named according to each man's pleasure.
80. One should know that war is universal and jurisdiction is strife, and everything comes about by way of strife and necessity.
88. And what is in us is the same thing: living and dead, awake and sleeping, as well as young and old; for the latter having changed becomes the former, and this again having changed becomes the latter.
91. It is not possible to step into the same river twice. (It is impossible to touch the same mortal substance twice, but through the rapidity of change) they scatter and again combine (or rather, are simultaneous) and approach and separate.

If we are to see the *whole* doctrine, which is more literally the *true* doctrine of any philosopher, we may not isolate such passages. For in its totality the teaching of Heraclitus was primarily a reaction to the teaching of Xenophanes and Pythagoras, who had separated God from the universe of men, plants, animals and inanimate things. Against the separation Heraclitus reaffirmed the identity of God with all that is. Against Xenophanes he argued that God is not an isolated cause. And against the Pythagoreans he argued that God, as divine Fire, was not merely present in some way in all things, but that he was the changing opposites themselves.

The universe, according to Heraclitus, was begotten from Fire and returns to Fire in the cyclical movement that goes through all eternity, in accordance with the laws of Destiny. With all its change, the all-consuming Fire reasserts itself and recaptures its Unity. The cyclical intervals were estimated at 10,800 years, to our notions, a figure arrived at arbitrarily by multiplying the number of days in a solar year (three hundred and sixty, as he tabulated) by thirty, which was considered one generation. There is not much point in quarreling over this arbitrary calculation. Heraclitus wanted to affirm the perfection of the Divinity by showing that the apparent deviations were not

permanent, and that what appeared to be a plurality of natures and permanent opposition was essentially an illusion. Through the cyclic annihilation of otherness God preserved his supremacy over the world that issued from him.

There is a passage in the *Dialectics of Nature* very like Heraclitus' cycle of the Great Year.

> It is an eternal cycle in which matter moves, a cycle that certainly only completes its orbit in periods of time for which our terrestrial year is no adequate measure, a cycle in which the time of highest development, the time of organic life and still more that of life of beings conscious of nature and of themselves, is just as narrowly restricted as the space in which life and self-consciousness come into operation; a cycle in which every fine mode of existence of matter, whether it be sun or nebular vapour, single animal or genus of animals, chemical combination or dissociation, is equally transient, and wherein nothing is eternal but eternally changing, eternally moving matter and the laws according to which it moves and changes. But however often, and however relentlessly, this cycle is completed in time and space, however many millions of suns and earths may arise and pass away, however long it may last before the conditions for organic life develop, however innumerable the organic beings that have to arise and to pass away before animals with a brain capable of thought are developed from their midst, and for a short span of time find conditions suitable for life, only to be exterminated later without mercy, we have the certainty that matter remains eternally the same in all its transformations, that none of its attributes can ever be lost, and therefore, also, that with the same iron necessity that it will exterminate on the earth its highest creation, the thinking mind, it must somewhere else and at another time again produce it.[9]

At this point there appears a radical cleavage between the two philosophies. In the doctrine of Heraclitus, Mind is prior to the downward movement of the Fire, for it is through the direction of Reason (*Logos*) that all things come to be. But in the Marxist doctrine Mind is the result of the blind and necessary movement of matter. What is important in the doctrine

[9] F. Engels, *Dialectics of Nature*, p. 24.

of Heraclitus is not that Fire is something material and tangible, but rather that it is the Reason (the *Logos*) present in all things. Fire is the intelligence that directs all. But Reason, in the philosophy of Marx, is the highest state that matter has reached up to now.

Heraclitus has been called the father of pluralistic philosophy only because all the emphasis has been put on one aspect of his doctrine, and that the least important. The most important doctrine is that all Being is one, in spite of the downward movement of the Fire in the combinations that would diversify it. For the doctrine of the One is wisdom, while the knowledge of the many is full of deceit, for the former is intellectual knowledge and the latter is sensory cognition.

The following fragments [10] emphasize the unity of all things in the supreme God and the wisdom that men should strive for.

41. That which is wise is one: to understand the purpose which steers all things through all things.
50. When you have listened, not to me but to the Law (*Logos*), it is wise to agree that all things are one.
79. Man is called childish compared with divinity, just as a boy compared with a man.
83. The wisest man will appear an ape in relation to God, both in wisdom and beauty and everything else.
86. Most of what is divine escapes recognition through unbelief.
102. To God, all things are beautiful, good and just; but men have assumed some things to be unjust, others just.
114. If we speak with intelligence, we must base our strength on that which is common to all, as the city on the Law (*Nomos*), and even more strongly. For all human laws are nourished by one, which is divine. For it governs as far as it will, and is sufficient for all, and more than enough.

Heraclitus criticized those who thought that the knowledge of the many gave wisdom. "The learning of many things teaches not Wisdom." But the knowledge of the One is wisdom,

[10] K. Freeman, *op. cit.*, p. 24 ff.

because wisdom is the vision of the many in their original source. We should not be tempted, as have many historians of philosophy, to take the doctrine of conflict and change (*πάντα ῥεῖ*) as the principle of Heraclitus' philosophy. This doctrine is simply a means of emphasizing the transcendence of the Divinity. Hence the paradox in a philosophy of change which is essentially a monism.

> And yet it has been the fate of Heraclitus, who invented this almost magical artifice for the abolition of real time and real change, to be abused and admired as the philosopher of the "flux." Heraclitus invented the doctrine of the flux, that *πάντα ῥεῖ*, for a different but wholly consistent purpose, as we have already seen; it was intended to reunite the supreme god with the changing world, from which Xenophanes had separated his One God.[11]

We cannot agree with the Marxists that the eternal Fire in the doctrine of Heraclitus is comparable to Matter in their own philosophy. The Fire is prior to the material universe; it is Reason that directs all things; matter is the antithesis of Fire, because matter is heavy, dark and inert, while the Fire is light, pure and active. Already this conception of the Perfect Being approaches the Nous of Anaxagoras. If God were present in the physical universe, it would be a kind of degradation having to be corrected periodically. Since the Greeks had no conception of creation out of nothing (*ex nihilo sui et subjecti*), the pantheistic emanation became involved in the obvious and serious difficulty of keeping the impurity of creation from tainting the divinity. This Heraclitus did as best he could by saying that in the sight of God, in the vision of eternity, all things were pure, because the temporary imperfections would periodically be absorbed by the Fire. Heraclitus is not a positive materialist as the Marxists are, because he does not deny the existence of spiritual things apart from matter. He had not yet come to the place where he could speak freely of

[11] K. Hack, *God in Greek Philosophy* (Princeton, 1931), p. 78.

a separated spiritual substance like the "agent intellect" of Aristotle's psychology. An authority on Greek philosophy wrote of this paradox in Heraclitus' philosophy:

> The philosophy of Xenophanes had induced Heraclitus to go far on the road that ultimately led to the complete distinction between the Aristotelian God (immaterial Reality) and matter ("material" unreality). The supreme god of Heraclitus was still spoken of as changing, but Fire had assumed the dignity of the cause and the agent of change, and its activity was necessarily contrasted with the passivity of that which it caused. But that which is caused by Fire is the lower forms of Fire; and these lower forms take on a degree of relative passivity and unreality which corresponds to their lowly stations in the temporal universe. They become mere intervals in the one active divine reality of Fire. God is the eternal cause, and all change is temporal. The cosmogenetic gods of earlier Greek tradition were as a rule sluggish beings, whose power was eclipsed by that of their transcendent gods; but the non-anthropomorphic Fire of Heraclitus is no longer merely at the beginning of the series of changes that constitute the cosmos, but is itself the end of the series. Like Kronos, Fire devours its offspring; but none of the offspring escapes Fire, not even the cosmos.[12]

This fundamental monism of Heraclitus' philosophy, it seems to me, points definitely to a parallelism rather than to a contrast with the doctrine of Parmenides.

Parmenides (floruit 475 B. C.)

Though he holds an exceptional position in the history of Greek philosophy, Parmenides is not among those who are mentioned by the Marxists as having directly and positively influenced Dialectical Materialism. But it is possible that just as Hegel conceived the history of philosophy as a dialectical movement, so do the Marxists; hence, they may attribute to Parmenides the role of opposition to the dynamic conception of Heraclitus. The absence of change and opposition in the eternal

[12] K. Hack, *ibid.*, p. 79-89.

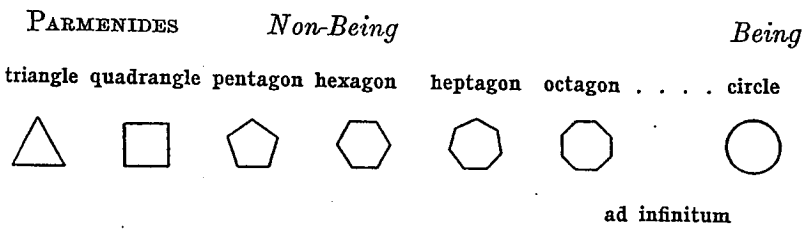
Being of Parmenides' philosophy could well be the foil that would bring out the best in the writings of Heraclitus.

But the deeper meaning of the doctrine of Heraclitus should make us aware that the *πάντα ῥεῖ* is not in direct opposition with the whole of Parmenides' philosophy. The Perfect Being (the "sphere, equally balanced from its center in every direction") is not opposed to the Fire in its eternal attributes; and the world of appearance is not opposed to Heraclitus' world of *doxa*. In describing the phenomenal world, Parmenides used figurative language almost identical with that of Heraclitus. He called the fire of heaven gentle and light, like unto itself in every direction. But when the pure Fire became mixed with darkness, it, too, tended to become impure. Though the phenomenal world which resulted could not be called Being, it was real. It was not to be named because of its impurity and instability. When it entered the inferior world, the One lost its attributes of pure Being and became devoid of understanding. Hence, the combinations could not be called Being, but only *φαινόμενα*, the appearances of Being.

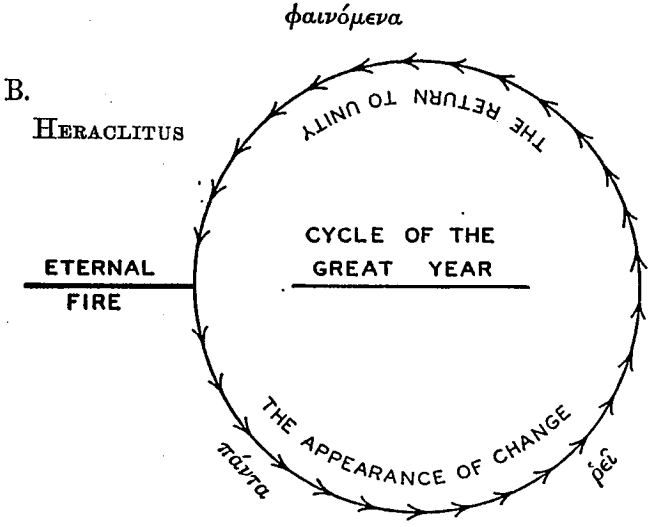
When we consider the philosophies of Heraclitus and Parmenides dialectically, in the flow of development, rather than statically, where they appear as islands of opposition, we get a more objective view of both of them. And if Parmenides, by no stretch of the imagination, may be called a forerunner of Dialectical Materialism, a most serious doubt also holds for Heraclitus.

The two ancient philosophies may be compared in the following graph, in which the Perfect Being is the dialectical limit of the phenomenal world, and the Perfect Fire is the dialectical limit of the *πάντα ῥεῖ*.

A.



B.



ZENO OF ELEA (FLORUIT 450 B. C., DISCIPLE OF PARMENIDES)

Motion, according to the Marxists, can be accurately represented only as a contradiction. It is only in abstract thought that a body is *either* in the state of rest *or* of motion. In reality motion and rest are the same thing, because a body cannot be taken simply as an isolated unit except as a mode of abstraction, whereas in nature one and the same body has contradictory relationships to its surroundings. There is no difficulty in representing motion in terms of equilibrium, just as it is evident that bodies at rest are in a condition of agitation.

To be sure, it is a hard nut and bitter pill for our metaphysician that motion should find its measure in its opposite, in rest. That is indeed

a crying contradiction, and every contradiction, according to Herr Duehring, is nonsensical. . . . From the dialectical standpoint, the possibility of expressing motion in its opposite, in rest, presents absolutely no difficulty. To dialectical philosophy the whole contradiction, as we have seen, is only relative; there is no such thing as absolute rest, unconditional equilibrium. Each separate movement strives toward equilibrium, and the motion as whole puts an end to the equilibrium. When, therefore rest and equilibrium occur they are the result of arrested motion, and it is self-evident that this motion is measureable in its one form or another.[13]

Not so much because of his purpose, but rather because of the genius of his method and his examples, Zeno has influenced Marx and his followers. Aristotle said that Zeno was the inventor of the dialectical method.[14] And Plato said the Sophists were influenced by him.[15] In form, the dialectic of the Sophists parallels the arguments of Zeno. Gorgias and his followers tried to show that out of every proposition a contradictory conclusion could be drawn. It was, perhaps, to Zeno that the fifth and fourth century sophistry owed its spirit and its method, insofar as the eristic arguments have their foundations in the antinomies of Zeno. The argument of Gorgias are strongly reminiscent of the disciple of Parmenides.

When Aristotle credited Zeno with the invention for the dialectical method, he defined in that context what he meant by *Dialectics.* "Dialectical arguments," he said, "are those that reason from premisses generally accepted to the contradictory of a given thesis."[16] The initial meaning of dialectics is a *debate,* through which a conclusion is reached after contradictory viewpoints are presented by both sides. Zeno used the dialectical argument as an *argumentum ad hominem,* so that he could show the untenable position of his adversaries. If the theses of the adversaries were accepted and then followed

[13] F. Engels, *Anti-Duehring*, p. 70-71.
[14] H. Diels, *Fragmente der Vorsokratiker*, 19a 2 (ap. Diog. Laert. IX, 25).
[15] Plato, *Sophist* 216 a 3.
[16] Aristotle, *Topics* I, 100 a 30.

out to their logical conclusions, the result would be a contradiction that the mind could not accept. For that reason there is an essential deviation in the Sophists from the arguments of Zeno.

The most important influence that Zeno has had upon the Marxists is due not to the dialectical method which he introduced but to the problems which he raised. Is motion really contradictory? There is no doubt about Zeno's own viewpoint. Motion is not contradictory because it simply does not exist. At least, not in the realm of perfect Being, which is the only province of knowledge that he, as a philosopher, thought worthwhile. In the very prosecution of his argument, in which he tried to prove the impossibility of change in perfect Being, Zeno submitted an analysis of motion which has thrilled the minds of subsequent philosophers, mathematicians and scientists. He thought of analyzing motion into static points of space, in the same way as the *continuum* of bodily extension and the *continuum* of time might be analyzed into points and movents. Though Zeno reasoned that the supposition of division, change, or motion in the supreme Being would logically lead to a contradiction, his *argumentum ad hominem* was not as impressive as the problems he stirred up.

In answering the problems raised by Zeno Aristotle shows that division and motion are possible in bodies and that these do not imply a contradiction. Through his doctrine of potency Aristotle shows that a body may be in a condition which is neither wholly one or the other of two contraries. Just as there is an intermediary between Being and Non-being taken absolutely, so there is an intermediary between the condition of a body that is wholly without a particular form and the state of the same body when the form is had completely.[17] In this context Aristotle is talking about that world which Parmenides and Zeno call the world of appearance. They did not deny

[17] H. D. Lee, *Zeno of Elea* (Cambridge, Eng., 1936), pp. 13-14.

motion under all conditions, but did not admit that the changes or motion can be predicated of the perfect Sphere. On that point Aristotle seems to be in agreement, for he immediately says that "That which is without parts cannot be in motion except accidentally." [18]

Zeno's first argument against the division of the *continuum* into points was directed against the Pythagoreans who supposed that the point is the element out of which all Being is constructed. If by definition a *continuum* is divisible into divisible parts so that at the infinite limit there remain only points; and if at the same time the point is defined as that which is indivisible and without magnitude, the conclusion would be that that which has magnitude is composed of that which has no magnitude. If a given *continuum* may be said to be divisible *ad infinitum* this means only that a simple division will not change the nature of the *continuum*; and if the *continuum* is said to be infinite through addition, it means only that it can always be added to, without changing the nature of the *continuum*. But this process of division or addition *ad infinitum*, cannot actually be carried out, no more than a finite number can be divided into an infinitely small fraction or a series of finite numbers can actually be developed into an actual infinite number.

The progression either in the series towards the infinitely great does not involve real motion but only the movement of reason in its attempt to construct dialectically one contrary from another. If motion is conceived as a synthesis of contradictories — as a dynamism and as a state, as finite and as infiinite — this can be only because the mind has transcended the limits of the variable and imagines that the one form has actually given birth to its contradictory. But this can be true only in the realm of logic. But when Engels and the other Marxists said that motion is contradictory, they meant that the movement of bodies in nature actually involves a contradiction.

[18] Aristotle, *Physics* VI, c. 9, 239 b 10 through 240 a 4.

Aristotle as well as Zeno admits the reality of change and motion, but only in imperfect things. Perfect Being is not subject to motion because it has no parts. Even the heavenly bodies, in the philosophy of Aristotle, though incorrouptible in their nature, are imperfect from the point of view of local motion. But in Dialectical Materialism motion is assigned the role of perfection, because it is through the instability of a universe in movement that the eternally increasing perfection of matter comes.

Marxists are logically consistent in saying that there is no Perfect Being, either as the Source of creation or as the Reason which eternally guides the physical universe: If all things are in motion then there cannot be an absolutely perfect Being, since movement is possible only where there is imperfection.

Far from having an essential continuity with either Aristotle or Zeno, the Marxist philosophy of dialectics, particularly where it analyzes the nature of motion, offers unique discrepancies. If this philosophy strikes any harmonious chord with the past, it is with the dialectics of the Sophists; but no claim to such a connection appears in Marxian writings.

Melissus of Samos (floruit 44 B. C.)

He wrote a treatise *On Being* in defense of Parmenides' theory. The only departure from orthodoxy was in extending Being to infinity, in order to get rid of the notion of the Void. Unfortunately Aristotle misunderstood what Melissus was trying to do, and came out with a mildly derogatory remark about his being "a little too countrified." [19] Melissus had nothing to do with the background of Marxist theory.

Empedocles (floruit 450 B. C.)

Because of both the content and purpose of his philosophy Empedocles enjoys a continuity with Heraclitus. Like Heracli-

[19] K. Hack, *op. cit.*, p. 92.

tus, he posited a world of change made up of contraries, which he called Love and Strife, and he also used the figure of recurring Fire to overcome the contrariety of the imperfect world. The *Sphairos* came back to identity with itself under the power of divine Love, at intervals when Strife seemed to have conquered Love. And his purpose was to put the Divinity into the world of change, because it had seemed that Parmenides' doctrine of Unity kept Love out of the world in which men lived.

Marxists do not explicitly claim a continuity with the philosophy of Empedocles, but there is the same superficial likeness mentioned in the philosophy of Heraclitus. Perhaps the Dialectics is simply the doctrine of Love and Strife "in a much more definite and clear form" and achieved by "strictly scientific research."

Such a conclusion is quite unfounded. The diversity and mobility of this world, the effects of combining Love and Strife, are not absolutes. The unifying force of Love overcomes all differences. The principle of fecundity is not Strife but Love, which gives harmony to the whole. This is evident from the following passages:

Fragment 17: I shall tell of a double (process): at one time it increased so as to be a single One out of Many; at another time again it grew apart so as to be Many out of One. There is a double creation of mortals and a double decline: the union of all things causes the birth and destruction of the one (race of mortals), the other is reared as the elements grow apart, and then flies asunder. And these (elements) never cease their continuous exchange, sometimes uniting under the influence of Love, so that all become One, at other times again each moving apart through the hostile force of Hate. Thus in so far as they have the power to grow into One out of Many and again, when the One grows apart and Many are formed, in this sense they come into being and have no stable life; but in so far as they never cease their continuous exchange, in this sense they remain always unmoved as they follow the cyclic process.[20]

[20] K. Freeman, *op. cit.*, p. 53.

But most important of all, the concept of a Divinity, an intelligence superior to that of man, a Mind which gives direction to the whole universe, is unthinkable in the philosophy of Marxism. It is foremost in the philosophy of Empedocles. Here we have an approach to the *Nous* of Anaxagoras and to the Divinity of Aristotle.

Fragment 133: It is not possible to bring God near within reach of our eyes, nor to grasp him with our hands, by which route the broadest road of Persuasion runs into the human mind.

Fragment 134: For he is not equipped with a human head on his body, nor from his back do two branches start; (he has) no feet, no swift knees, no hairy genital organs; but he is Mind, holy and ineffable, and only Mind, which darts through the whole universe with its swift thoughts.[21]

Anaxagoras of Clazomenae (floruit 460 B. C.)

Two principles govern the philosophy of Anaxagoras, the Infinitely Small and the *Nous*. It is the similarity on the point of the Infinitely Small that Marxists may think they have in Anaxagoras a kindred spirit, for they also speak of the infinitely small when they give examples of dialectics in the field of mathematics, especially in its higher forms. "The mathematics of variable magnitudes," said Engels,[22] "whose most important part is the infinitesimal calculus, is in essence nothing more than the application of dialectics to mathematical relations."

The dialectical character of calculus is not simply limited to the area of abstractions. The same thing is found in nature, which is really the prototype of mathematics.

The mystery which even today surrounds the magnitudes employed in the infinitesimal calculus, the differentials and infinites of various degree, is the best proof that it is still imagined that what are dealt with here are pure "free creations and imaginings" of the human mind, to which there is nothing corresponding in the objective world. Yet

[21] *Ibid.*, p. 67.

[22] F. Engels, *Anti-Duehring*, p. 148.

the contrary is the case. Nature offers prototypes for all these imaginary magnitudes.[23]

By use of the *Infinitely Small,* things that once were thought to belong to the "eternal metaphysical truths" are now seen to be dialectical in charter. One such example is the identification of the curved and the straight line. The following argument is given by Engels, but the editor and translator of the English edition says, "This was, of course, written before 'rigorous' proofs based on the theory of limits were introduced into most books on the calculus. Engels is quite correct concerning the calculus taught in his day." [24]

Straight and curved in the differential calculus are in the last resort put as equal: in the differential triangle, the hypothenuse of which forms the differential of the arc, this hypothenuse can be regarded *"comme une petite ligne tout droite qui est tout à la fois L'élément de l'arc et celui de la tangente"*—if now the curve is regarded as composed of an infinite number of straight lines . . . *"puisque le détour a chaque point M étant infiniment petit, la raison dernière de L'élément de la courbe à celui de la tangente est évidemment une raison d'égalité."* Here therefore, although the ratio continually approaches equality, but asymptotically in accordance with the nature of the curve, yet, since the contact is limited to a single point which has no length, it is finally assumed that equality of straight and curved has been reached.[25]

But nature herself is composed of the infinitely small. As soon as we deal with nature, not according to the vulgar non-scientific viewpoint, but according to the discoveries of the most modern science:

. . . not merely the earth but the whole solar system and the distances occurring in the latter in their turn appear infinitely small as soon as we have to deal with the distances reckoned in light years in the stellar system visible to us through the telescope. . . .

In so far as mathematics calculates with real magnitudes, it also

[23] F. Engels, *Dialectics of Nature,* p. 314.
[24] *Ibid.,* p. 200 (footnote). [25] *Ibid.,* p. 200.

employs this mode of outlook without hesitation. For terrestrial mechanics the mass of the earth is regarded as infinitely large, just as for astronomy terrestrial masses and the corresponding masses of meteors are regarded as infinitely small, and just as the distances and masses of the planets of the solar system are reduced to nothing as soon as astronomy investigates the constitution of our system of stars extending beyond the nearest fixed stars.[26]

In the philosophy of Anaxagoras, coming into being was explained by the fact that contraries proceed from each other, and since it is impossible that anything come from non-being, the conclusion is that everything is in everything else. However small any portion is, it will always contain portions of everything else. Thus the Infinitely Small means that none of the elements that enter into composition in the material world can ever be exhaused. Because it contains all the elements out of which everything is made, the Infinitely Small is the matrix of the nature we know.

The following fragments from the writings of Anaxagoras contain the essence of his philosophy of nature:

1. All things were together, infinite in number and in smallness. For the Small also was infinite. And since all were together, nothing was distinguishable because of its smallness.

3. For in Small there is no Least, but only a Lesser: for it is impossible that Being should Not-be; and in Great there is always a greater. And it is equal in number to the small, but each thing is to itself both great and small.

6. And since there are equal parts of Great and Small, so too similarly in everything there must be everything. It is not possible (for them) to exist apart, but all things contain a portion of everything. Since it is not possible for the Least to exist, it cannot be isolated, nor come into being by itself; but as it was in the beginning, so now, all things are together. In all things there are many things, and of the things separated off, there are equal numbers in Great and Small.

9. Thus these things circulate and are separated off by force and speed. The speed makes the force. Their speed is not like the speed

[26] *Ibid.,* p. 315 and 318.

of any of the Things now existing among mankind, but altogether many times as fast.[27]

The principles out of which nature is constructed, Anaxagoras held, are divisible *ad infinitum*. No given element can have existence wholly separated from other elements. There can be so such thing as pure water, for example. At the extreme limit there can be the approximation to the state of separation, when the Infinitely Small is reached; but that would be the annihilation of the reality of nature. The elements are the variables in the dialectical process by which we might tend to isolate an element, and the Infinitely Small is the limit. But the limit will not be actually reached however often a division is made of anything in nature, because there is a portion of everything in everything else. Hence there can never be any isolated units, because the movement is infinite.

Though there is always something of everything else in the tiniest particle, there can be a greater or lesser amount of an element in a combination. Since the elements can have no separate being, and since there is no special reason in the elements themselves why there should be a predominance of any one or serveral of them in a combination, this effect is produced by something outside the elements. The cause of the combinations is the *Nous* which has separate existence; it is the one exception to the law that everything is in everything else.

11. In everything there is a portion of everything except Mind; and some things contain Mind also.

12. Other things all contain a part of everything, but Mind is infinite and self-ruling, and is mixed with no Thing, but is alone by itself. If it were not by itself, but were mixed with anything else, it would have had a share of all Things, if it were mixed with anything; for in everything there is a portion of everything, as I have said before. And the Things mixed (with Mind) would have prevented it, so that it could not rule over any Thing in the same way as it can being alone by

[27] K. Freeman, *op. cit.*, p. 83-84.

itself. For it is the finest of all Things, and the purest, and has complete understanding for everything, and has the greatest power. All things which have life, both the greater and the less, are ruled by Mind. Mind took command of the universal revolution, so as to make (things) revolve at the outset. And at first things began to revolve from some small point, but now the revolution extends over a greater area, and will spread even further. And the things which were mixed together, and separated off, and divided, were all understood by Mind. And whatever they were going to be, and whatever things were then in existence that are not now, and all things that now exist and whatever shall exist—all were arranged by Mind, as also the revolution now followed by the stars, the sun and moon, and the Air and Aether which were separated off. It was this revolution which caused the separation off.[28]

Thus, the phenomenal world, which consists of the various combinations that the infinite variety of elements can assume under the direction of the *Nous*, is dialectical in nature. It can never be homogeneous; it can never have isolated, so-called "metaphysical" units, for everything contains its contraries in combination. The world is composed of infinitely small portions, because all the elements are divisible into portions that are infinitely small. The world has no stability, because that could be reached only when any one element could be absolutedly separated from the others. Since the attempt cannot be realized, this world and its matter, which is constituted by the elements, can never be an absolute. If, *per impossible*, one element could be entirely separated from the others, it would necessarily be identified with the *Nous*. But that is a contradiction — and Anaxagoras recognized the validity of the principle of contradiction.

The *Nous* of Anaxagoras' philosophy is incompatible with Marxist philosophy because of its transcendence. When compared with the Platonic and Aristotelian notion of divinity, however, it is still inchoate and imperfect. Aristotle criticized

[28] *Ibid.*, p. 84-85.

it for using the *Nous* as a *deus ex machina* to explain "the process of" *Becoming,* which should have been explained according to natural principles.

Leucippus (floruit 430 B. C.)

The teacher of Democritus, in whose collected writings we can discover what the founder of atomism taught.

Democritus (floruit 420 B. C.)

The title of Karl Marx' doctoral dissertation was *Differenz der demokritischen und epikureischen Naturphilosophie.* Though he preferred the Epicurean form of materialism to Greek Atomism, it seems likely that Marx's study of the philosophy of Democritus influenced his own writing, particularly on the question of chance in nature. Whether he interpreted the Greek Atomists correctly is another question.

The Atomists judged that Parmenides' doctrine of the One had created an irreducible antinomy between the phenomenal world and the world of Being. Hence, to rationalize the process of Becoming, they came up with several concepts that were not found in the philosophy of Parmenides. They first of all substituted the *atomoi,* an infinite number of invisible Forms, for the Continuum of the older philosopher. These forms, however, were thought to have the same characteristics as the One: they were eternal, indivisible, invariable, continuous throughout. But they were distinct from each other and most important of all, they had an extrinsic mobility.

In order to make this mobility possible, the Atomists postulated the Void, which was just as real as the Forms. Incapable of intrinsic movement because of their absolute continuity, they could acquire new combinations and positions in the Void. There had to be some space to travel in, if there was to be local motion. Because he had denied non-Being, Parmenides also had to deny the reality of even extrinsic change in Being;

the mobile had only the appearance of Being. Though it could not destroy the eternal and necessary continuity of the Forms, the Void was the contrary of the absolute *Plenum*; hence there was a kind of eternal conflict between Being and non-Being.

When the Form moved about in the Void the propulsion was given by the Vortex. This principle of motion demanded an explanation, but the Atomists simply said that it was eternal. On this point the Marxists would disagree with Leucippus and Democritus, for this was the difficulty intrinsic to classical materialism; it could not reasonably explain motion without bringing in a Prime Mover. In the Marxist dialectics of nature matter is said to have an intrinsic principle of motion.

If we were to follow the interpretation of Aristotle, we would understand the Forms in a materialistic sense, as being bodies and having magnitude. But this interpretation seems unwarranted both because of historical context and because there is no evidence for it in the writings of Democritus. Theophrastus stated distinctly that Leucippus had been a member of the school of Parmenides and Zeno. The innovation in his doctrine was the substitution of the many Forms for the One and the conceding that the Void was real. Everything else in Parmenides' teaching seemed acceptable. All Forms have the attributes of the Divinity, though some have them more perfectly than others. Spherical Forms, for example, are the most truly divine, since it is of these that Life and Mind are composed.

Chance in the Atomistic World

More than anything else, I think, the doctrine of Chance in the philosophy of Democritus must have impressed Karl Marx. The origin of different natures through the undirected powers of nature and the identification, in several passages, of Chance and Necessity — these seem to a student of Dialectical Materialism to be very Marxian. For Marxists hold that from the union of Chance and Necessity arises a fundamental contradiction

in nature, which is most fecund for the progress of mankind. At the same time Chance and Necessity are integral to nature and one with it, since it is of these two principles that nature has come to be. In this third law of Hegalian Dialectics the emergence of qualitatively different and higher forms is due to the combined contingency and necessity of matter. In this manner came Intelligence, which emerged during the revolutionary cycles of matter as the highest form yet achieved in the universe. The Marxist view is opposed to any theological view which postulates the priority of Mind.

In a rather definite expression of an anti-theological viewpoint as well as in opposition to the deterministic teaching of certain men of science who permitted no possibility of chance in the physical universe, Engels outlined these several positions and then gave his own view on chance and necessity:

> Chance and Necessity—Another contradiction in which metaphysics is entangled is that of chance and necessity. What can be more sharply contradictory than these two thought determinations? How is it possible that both are identical, that the accidental is necessary, and the necessary is also accidental? Common sense, and with it the great majority of natural scientists, treats necessity and chance as determinations that exclude one another once for all. A thing, a circumstance, a process is either accidental or necessary, but not both . . .
>
> In opposition to this view there is determinism which has passed from French materialism into natural science, and which tries to dispose of chance by denying it altogether . . .
>
> In contrast to both conception, Hegel came forward with the hitherto quite unheard-of propositions that the accidental has a cause because it is accidental, and just as much also has no cause because it is accidental; that the accidental is necessary, that necessity determines itself as chance, and, on the other hand, this chance is rather absolute necessity.[29]

In a passage which refers to the early cosmic transformations in nature Engels wrote:

[29] F. Engels, *Dialectics of Nature*, p. 230-233, *passim*.

> Here either we must have recourse to a creator, or we are forced to the conclusion that the incandescent raw material for the solar system of our universe was produced in a natural way by transformations of motion which are *by nature inherent* in moving matter, and the condition of which therefore also must be reproduced by matter, even if only after millions and millions of years and more or less by chance but with the necessity that is also inherent in chance.[30]

Natural forms are subservient to matter. The present state of our universe is due to blind chance, which is the same as saying it is due to the necessity of matter. Marxists will not even admit the use of the term "evolution," because this is opposed to the third law of dialectics (qualitative changes are violent revolutions and not evolutions), and also because "evolution" already implies a certain direction in nature.

Shifting the same contradiction to the higher plane of human life, they again identify contingency and necessity. Human freedom is necessity. The reason is quite simple: the thinking mind is a form of matter.

> The old teleology has gone to the devil, but the certainty now stands firm that matter is its eternal cycle moves according to laws which at a definite stage—now here, now there—necessarily gives rise to the thinking mind in organic beings.[31]

Hegel had defined freedom as "the appreciation of necessity." It is only necessary to shed its idealistic garb to accept this definition whole-heartedly, according to Engels.

> Hegel was the first to state correctly the relation between freedom and necessity: to him, freedom is the appreciation of necessity. "Necessity is blind *only in so far as it is not understood.*" Freedom does not consist in the dream of independence of natural laws, but in the knowledge of these laws and in the possibility this gives of systematically making them work towards definite ends. This holds good in relation both to the laws of external nature and to those which govern the bodily and mental existence of men themselves—two classes of chances of laws which we can separate from each other at most only in thought

[30] *Ibid.*, p. 22.

[31] *Ibid.*, p. 187.

but not in reality. Freedom of will therefore means nothing but the capacity to make decisions with real knowledge of the subject. Therefore the freer a man's judgment is in relation to a definite question, with so much the greater *necessity* is the content of this judgment determined.[32]

What has come down to us as typical of Democritus are the passages wherein the combinations in nature are called the products of chance. But it is seriously questionable that his is a complete view, or even that it is the most important aspect of this view. Unreason does account for a certain type of heterogeneity. And the Atomists did say that the human mind was formed when a certain number of spherical atoms fell together. But as to the all important question of the priority of matter over form — which is the question whether chance of order rules the universe — the Atomists defend the Primacy of Form.

If we again use the method of limits we find that in the atomistic world there is a Variable and an Invariable Limit. The Variable is the plurality of combinations (*forms* without the capital) effected by the motions of Forms in the Void. The variety here is *quasi* infinite, but it will never transgress upon the Invariable Limit where the eternal *Atomoi* are different in their eternal differences. All combinations are extrinsic to the *Atomoi* — they are accidental. Despite appearances, the truth is that changes do not really take place in the Things that matter. No really new Forms emerge. To say that human reason emerges means that the eternal Forms of the Psyche have gathered together in sufficient quantity to produce the combination we call *man*. To prove that this is not a new kind of Form, and that the Psyche always was and will continue to be, death intervenes to separate the Forms of the Psyche from the less perfect Forms. These separated Forms will be used elsewhere without loss of perfection.

[32] F. Engels, *Anti-Duehring*, p. 125.

Because of the Primacy that the eternal Forms enjoy over all combinations of Forms, it is evident that chance can play only a secondary and unimportant role in the philosophy of Leucippus and Democritus. Chance cannot invade the higher realm striking words of Leucippus: "Nothing happens at random; everything happens out of reason and by necessity." (Fragment 2). And: "Men have fashioned an image of Chance as an excuse for their own stupidity. For Chance rarely conflicts with Intelligence, and most things in life can be set in order by an intelligence sharpsightedness." (Frag. 119).

Conclusion

I think it beyond doubt that among the pre-Socratics philosophy presents a continuity of doctrine. A certain progression in the clarification of doctrine and manner of expression accompanies the chronological continuity, so that by the time of Plato and Aristotle a long tradition on a Supreme Being as distinct from the world of change, and a reverence for the Wisdom which governs the apparent contradictions of Nature, had already been well established. This antinomy of doctrine, so often emphasized by historians of philosophy, is the reflection of dialectical development of doctrine rather than a basic difference of view.

When we compare pre-Socratic philosophy with theoretical Marxist teaching, the similarity is extremely superficial. I do not see how Marxists can claim philosophical origin from any of the Greeks that we have mentioned in this study. In a comparative study of philosophical systems, if the philosophies differ radically in fundamental principles, there can be no question of continuity or descendence. That there is a Supreme reality apart from the world of matter; that change and conflict are subordinated to the Unity of the First Principle; that a prior wisdom directs the universe — these are principles upheld by the pre-Socratics but denied by Marxists.

[33] K. Freeman, *op. cit.*, pp. 90-108, *passim*.

The early Greek philosophers are often called *materialists;* but only an analogical sameness of meaning can be verified in this term when applied to them and to Marxists. Perhaps the Greeks never clearly expressed the notion of spiritual substance; but they did set the attributes of the First Principle over against those of the material universe. The idea of God grew. It was analogous to the forming of a vase through the hands of many potters. Marxism, on the other hand, has consciously and freely rejected the notion of God as a Supreme Being apart from the material universe. Like the shattered part of a vase to the original work of art, Marxism bears a resemblance to pre-Socratic philosophy. But the pieces are not the vase: the fragments do not add up to the Grecian urn.

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On Some *Consequentiae* in Walter Burleigh

by A. N. Prior

I PROPOSE TO attempt here, with a portion of Walter Burleigh's *De Puritate Artis Logicae,* what I have attempted elsewhere [1] with a portion of Peter of Spain's *Summulae Logicales,* namely to put it into contemporary logical symbolism. I shall make use of the Franciscan Institute edition of Burleigh [2] (which I imagine was produced precisely in order that this sort of thing might be done with it), and the symbolism I shall employ is that of Professor Łukasiewicz. That is, I shall use the following symbols:

'p', 'q', 'r', 's' for unanalysed propositions.
'a', 'b', 'c', 'd' for terms.
'Cpq' for 'If p then q'.
'Kpq' for 'Both p and q'.
'Np' for 'It is not the case that p', or briefly 'Not p'.
'Aba' for 'All b are a'.
'Eba' for 'No b are a'.
'Iba' for 'Some b are a'.
'Oba' for 'Some b are not a'.
'Hba' for 'This b is a' (*Hoc b est a*).
'kba' for the compound term 'ba' (i. e. what is at once b and a).

(The last two forms are not used by Professor Łukasiewicz).

Examples of more or less complicated propositional forms constructed out of these elements are the following:

[1] The *Parva Logicalia* in Modern Dress", *Dominican Studies,* V (1952) 78-87.

[2] Walter Burleigh, *De Puritate Artis Logicae,* edited by Philotheus Boehner (St. Bonaventure, N. Y., 1951).

I N D E X

Part III : Analysis of the Dialectics of Nature :

I. The subject of the philosophy of nature is ens mobile.

II. Motion properly so called takes place only between contraries.

III. The external senses do not terminate with a species expressa but with the object in its physical presence.

IV. The speculative sciences are distinguished accoeding to their formal objects.

V. Analogy properly so called is divided into analogy of attribution and analogy of proper proportionality.

I N T R O D U C T I O N

Marx' eleventh thesis on Feuerbach states that "The philosophers have only interpreted the world differently; the point is, to change it." We, too, hold that practical philosophy aims at action and making. We even hold that the practical virtue of prudence is more necessary than theoretical philosophy. Does this mean that we might agree with the Marxists on the general nature of philosophy itself ?

In Marxism (1), the interpretation of the world can be no more than instrumental to action and making, like the mechanics to the mechanic; the purpose of action and making are the enjoyment, in this life, of material goods. This temporary enjoyment has no further aim. The very notion of purpose is devoid of meaning outside the realm of man. Hence, when the Marxist speaks of his philosophy as "complete and harmonious, providing men with a consistent view of the universe" (2), it seems that the whole of this philosophy must be viewed as centered upon, and in the perspective of, human enjoyment of material goods. Philosophy, then, becomes a world outlook or Weltanschauung only in a very narrow sense, which can be best understood by comparison with what the outlook of a brute animal would be if it were endowed with the faculty of conceiving its own plan for its nest, hive or dam. The end of man remains

within the same genus. It is materially more elaborate than that of the brute, but the final result is as common and certain as death.

Contrary to what the neophyte Marxist, J.B. S. Haldane, holds when he says "Marxism is not complete, not a system, and only in the second place theoretical" (3), the orthodox Marxist very definitely claims that his is a finished philosophy.

> Marx' philosophy is a finished philosophical materialism, which has provided humanity, and especially the working class, with powerful instruments of knowledge. (4)

This complete philosophy, nevertheless, retains a rather fundamental distinction between what is called "dialectical materialism" and "historical materialism".

> Dialectical materialism is the world outlook of the Marxist-Leninist party. It is called dialectical materialism because its approach to the phenomena of nature, its method of studying and apprehending them, is dialectical, while its interpretation of the phenomena of nature, its conception of these phenomena, its theory is materialistic. Historical materialism is the extension of the principles of dialectical materialism to the study of social life, an application of the principles of dialectical materialism to the phenomena of life of society, to the study of society and its history. (5)

Marxism claims completeness, not merely with respect to the world of nature, but with respect to the world of thought and action. It claims to account for the whole of human history. It sees in the earlier philosophies a mere groping for the truth that for the first time comes to full light in Marxism.

How does Marxism actually go about proving this simple completeness ? This simple question confronts us with a very intricate problem. If the writings of Marx himself were to furnish us with an answer, the problem would be simple enough. The theory of Marxism would be a mere historical outgrowth of all past philosophy. The theory would not itself be strictly theoretical; it would not be universally analytical. As Marx says :

> With me, on the contrary (referring to Hegel), the ideal is nothing else than the material world reflected by the human mind, and translated into forms of thought. (6)

The justification of theory must be sought in the changing material conditions of the material life of man, not in an absolute object, not in a speculative conformity of the mind with what is. That was the trouble with Feuerbach's materialism.

> The chief defect of all hitherto existing materialism --- that of Feuerbach included --- is that the object, reality, sensuousness, is conceived only in the form of the object or contemplation (in the German Anschauung) but not as human sensuous activity, practice, not subjectively. Thus it happened that the active side, in opposition to materialism, was developed by idealism --- but only abstractly, since of course, idealism does not know real sensuous activity as such. Feuerbach wants sensuous objects, really differentiated from the thought-objects, but he does not conceive human activity itself as activity through objects. Consequently, in the Essence of Christianity, he regards the theoretical attitude as the only genuinely human attitude, while practice is conceived and fixed only in its dirty-Jewish form of appearance. Hence he does not grasp the significance of "revolutionary" of practical-critical activity. (7)

Theory, then, can at no time be given an absolute status. Theory is a factual outgrowth. It needs no analyt

ical justification. It is a historical fact, a fact of human history. In reality, the questions : "What is reality ?" and "What should be done about it" are inseparable. Their separation is scholastic abstraction. Hence even the question : "What are the laws of nature, the principles governing the phenomena of nature ?" is a purely scholastic question.

> The question whether objective truth can be attributed to human thinking is not a question of theory but is a practical question. In practice man must prove the truth, i.e., the reality and power, the 'this-sidedness" of his thinking. The dispute over the reality or non-reality of thinking which is isolated from practice is a purely scholastic question. (8)

Practice is the purpose of theory. Hence practice precedes theory. Hence, the very question : "What is reality", even when asked for the purpose of action, is already the conditioned outgrowth of practice and is inseparable from sensuous activity.

But from this conception it follows that no purely objective judgment can be made, neither of things nor of thoughts. Things cannot be confronted absolutely, but only through practice and through essentially practical thought conditioned by matter. Hence, theory cannot bear upon nature absolutely, but only upon what nature now happens to be for man in the present material conditions of human life. From this it follows that the distinction mentioned by Stalin is not strictly Marxian : dialectical materialism cannot be a general theory of which historical materialism is but an application to society.

Rather the contrary is true : dialectical materialism is historical materialism : nature cannot be seen but through historical materialism. Neither Engel's, nor Lenin's nor Stalin's philosophy are strictly Marxian.

Marxist philosophy could not have remained strictly Marxian. Marxism could not resist the temptation and necessity of becoming more general, more objective; it had to justify itself to reason. It did not have the practical power to impose itself brutally. History explains this necessity : the elaboration of an absolute theory would not have been necessary if Marxism had not been compelled to convince reason of its truth, that is, if Marxism had been able to impose itself by "practical-critical activity", by the critique of arms.

In other words, Marxism had to bow to the natural demands of human reason. And this it did in Marx himself, for, as we shall see further on, Marx approved of Engel's work. In this Marx himself could not remain faithful to Marxianism.

Because of its strong emphasis on theory, Marxism is at the same time more intelligible and less reasonable than Marxianism. This may be clearly shown from Stalin's Dialectical and Historical Materialism. Every practical application to society is preceded by an absolute consideration concerning the very nature of things in general. Society is but an instance of the general, and

what it is and what we should do about it are stated as conclusions of more general principles reached without any reference to society (notwithstanding Stalin's warnings to the contrary).

In Marx's mind, historical materialism is complete in itself and needs no justification from more general principles. This means that, as far as the philosophy of the past is concerned, only that part of it which can be interpreted in the light of the material conditions of our time, can be accounted for. And even this cannot be accounted for objectively, nor does it have to be. And yet this restriction has not been carried out. Did Marx realize that, in accepting Engel's work, he was dangerously broadening his outlook into a philosophy which is, as it is in Stalin, first and above all a Weltanschauung, that is, a philosophy where theory can justify itself and be compared with another theory on the level of abstract thought ?

The Marxist approach to the history of philosophy is very different from what it should be in Marxianism. Marxism today presents itself as a philosophy which may be compared with any other philosophy and confront it in the classical philosophical sense. This may be exemplified by Stalin's comparison between metaphysics and dialectics as well as by his comparison between idealism and materialism. From the strictly Marxian viewpoint, it is entirely too objective, and, what is more, much too dangerous. For

raises the question : "What is metaphysics ?" or "What has hitherto been meant by that term ?" In other words, it raises at least the question of historical truth in a non-Marxian sense. Stalin has to know and understand what the metaphysicians mean, whether he approves of them or not.

When Engels said that "The question of the relation of thinking to being, the relation of spirit to nature is the paramount question of the whole of philosophy" (9), he was being entirely too objective, as if, in strict Marxianism, being or thought could have an absolute meaning. Such statements are entirely unreasonable.

Marxism could not resist the necessity of becoming more intelligible at the expense of Marxian reasonableness. It could not resist the temptation to present itself as the strictly logical outgrowth of past philosophies. Even when Marxist history of philosophy makes reference to the social conditions at the time of the development of some given philosophy, the reference remains extrinsic. They will hold, for instance, that such a conception was not yet arrived at because the human mind was still under the domination of the feudal system, etc., but they suppose that there is an inner logic being temporarily halted by social conditions, actually tending to be itself as much as conditions allow. In Stalin, a faithful enough disciple, philosophies of the past are actually rejected for strictly

speculative reasons. From the strictly Marxian point of view a non-Marxian philosophy of the past could have been true insofar as it faithfully expressed the material conditions of human life at that time. Stalin himself will say that slavery was justified. At the same time he criticizes metaphysics as if it could never have been but false, as if it contradicted a reality reaching far beyond the Marxian closed system of historical materialism. Metaphysics is false, Stalin holds, because nature is not what metaphysics holds it to be.

Marxists now discuss past philosophies just as we discuss them. They confront theoretical problems concerning movement, quantity, etc.. They attempt to justify their actions from the theoretical solution of these problems. In other words, Marxism has exposed itself both to Marxian criticism and to absolute criticism. Any statement made about a Marxist about Greek philosophy may now be submitted to the ordinary method of criticism. When they invoke the presocratics, or even Aristotle, we may now request proof that they have understood them. They can no longer confine themselves to purely dogmatic statements, for they have placed themselves in a position where they must give proof.

An extensive study of the early Greeks is important for two reasons. The first reason is that the Marxist claim a continuity with the ancient materialists, particularly with the

teaching of Heraclitus and Democritus.

> Marxism is a world outlook. In brief, it is the contemporary materialism which represents the highest state of the world outlook, which began in ancient Greece under Democritus and the other Ionian thinkers which immediately preceded him. (10)

In his Dialectics of Nature Engels says :

> The new conception of nature (the scientific) was complete in its main features; all rigidity was dissolved, all fixity dissipated, all particularity that had been regarded as eternal became transient, the whole of nature was shown as moving in eternal flux and cyclical course. Thus we have once again returned to the point of view of the great founders of Greek philosophy, the view that the whole of nature, from the smallest element to the greatest, from the grains of sand to suns, from protista to men, has its existence in eternal coming into being and passing away in ceaseless flux, in unresting motion and change, only with the essential difference that what for the Greeks was a brilliant intuition, is in our case the result of strictly scientific research in accordance with experience, and hence it also emerges in a much more definite and clear form. (11)

And in the Anti-Dühring he says :

> Lorsque nous soumettons à l'examen de la pensée la nature, ou l'histoire de l'humanité, ou notre propre activité mentale, ce qui s'offre à nous tout d'abord c'est le tableau d'un enchevêtrement infini de relations, d'actions et réactions, où rien ne demeure ce qu'il était, où il était, comme il était, où tout se meut, se transforme, devient et passe. Cette conception du monde primitive, naive, mais objectivement exacte, est celle de l'ancienne philosophie grecque, et est d'abord clairement exprimée chez Héraclite : 'Tout est et en même temps n'est pas, car tout coule, tout est en métamorphose continuelle, en continuel devenir et finir". (12)

The second reason why an extensive study of the ancients is undertaken is the importance of the Greeks in the growth of philosophy. Since our task is to study the Marxist philosophy of becom

ing, that is, dialectical materialism, there is no better place to begin than with the men who were first confronted with the problem, with the men, who in attempting a solution, show us, at least, what the problem is.

In the second part of the thesis we shall give a presentation of the dialectics of nature where we shall see how the problem of becoming is explained on the basis of universal, theoretical Marxist principles.

In the final part we shall give an analysis of the Marxist doctrine, together with the Aristotelian teaching on the problem of becoming.

The principal sources for the historical part are the fragments of the early Greek philosophers, the English translation of which have been taken from Burnet's Early Greek Philosophy and from Hack's God in Greek Philosophy. Marxist doctrine has been taken from Marx himself (though the material here is not abundant), and particularly from the writings of Engels, Plekanov, Lenin and Stalin. Secondary sources include the lesser theorists who follow in the tradition of Marxist philosophy as taught today in Soviet Russia. The primary sources for our analysis of dialectical materialism are the works of Aristotle, together with the commentaries of Saint Thomas, Cajetan and John of Saint Thomas.

To Mr. Charles de Koninck is due an immense dept of gratitude for giving so unstintingly of his time, for his encouragement, and particularly for his instruction without which I could never have done this work.

Parmenides :

Since comparison and contrast are effective means for the clarification of any position, we shall begin our historical introduction with the doctrine of Parmenides, for it is he who is generally opposed by historians of philosophy to the Heraclitean doctrine of movement and becoming. And when the Marxists say that their philosophy has continuity with the philosophy of the ancient Greeks they most probably did not have in mind Parmenides, but rather men like Heraclitus and Empedocles and Democritus whose teaching on becoming and contrary principles bears a great extrinsic similarity with the teaching of dialectical materialism. We shall see to what extent the opposition between Parmenides and Heraclitus is justified.

Instead of beginning with the Parmenidean doctrine of knowledge, we shall begin with his teaching on Being and Becoming, for the problem of certitude is secondary to the problem of being and movement.

As we shall see in the following quotation, Parmenides understands the term Being or rather, What is, in such a full and absolute sense that it can only be one and immobile :

> One path only is left for us to speak of, namely, that it is. In this path are very many tokens that what is is uncreated and in-

> destructible; for it is complete, immovable and without end. Nor was it ever, nor will it be; for now it is, all at once, a continuous one. For what kind of origin for it wilt thou look for ? In what way and from what source could it have drawn increase ?...I shall not let thee say nor think that it came from what is not; for it can neither be thought nor uttered that anything is not. And, if it came from nothing, what need could have made it arise later rather than sooner ? Therefore must it either be altogether or be not at all. Nor will the force of truth suffer aught to arise besides itself from that which is not. Wherefore Justice does not loose her fetters and let anything come into being or pass away, but holds it fast. Our judgment thereon depends on this : "Is it or is it not" Surely it is adjudged, as it needs must be, that we are to set aside the one way as unthinkable and nameless (for it is no true way), and that the other path is real and true. How, then, can what is be going to be in the future ? Or how could it come into being ? If it came into being, it is not; nor is it if it is going to be in the future. Thus is becoming extinguished and passing away not to be heard of. Nor is it divisible, since it is all alike, and there is no more of it in one place than in another, to hinder it from holding together, nor less of it, but everything is full of what is. Wherefore it is wholly continuous; for what is, is in contact with what is.
>
> Moreover, it is immovable in the bonds of mighty chains, without beginning and without end; since coming into being and passing away have been driven afar, and true belief has cast them aside. It is the same, and it rests in the self-sameplace, abiding in itself. And thus it remaineth constant in its place; for hard necessity keeps it in the bonds of the limit that holds it fast on every side. Wherefore it is not permitted to what is to be infinite; for it is in need of nothing; while, if it were infinite, it would stand in need of everything. (13)

Now, in order to understand why Parmenides denies becoming to this Being, it is necessary to see what he meant by this Being that is uncreated and indestructible; complete, immovable, and without end; which is all at once, a continuous one; indivisible, and all alike, wholly continuous; without beginning and without end; in need of nothing.

Surely, these attributes refer to divinity. The Greeks were religious men. Their God had to be absolutely perfect, and the attributes that are here given to this one Being show both the perfection of Being in itself and also its eminent superiority to things in nature. God would not be God unless he were the absolutely perfect Being who could neither come to be nor pass away, nor change in any way. Except for several of the attributes which are derived from quantity, such as the continuous, the all in one place, we could apply these very same attributes to the God of our metaphysics. Even those names which seem to make God synonomous with the material universe are but the feeble human way of speaking about that Being which is absolutely beyond the imperfections of our universe.

The theological character of the Being of Parmenides is brought out when we compare this Being with the God of Xenophanes. The description is practically identical, leaving little room to doubt that both descriptions refer to one and the same.

> There is one God, greatest among gods and men, not like the mortals in form or in thought...The one God abides ever in the same, never moving; nor is it fitting that he travel now in this direction and now in that. (14)
>
> Throughout alike (παντα χοθεν ὁμοιον); always a like (ἀεὶ ὁμοιον); coherent with all things (ξυμπαν τοις παρεουσιν). (15)
>
> Xenophanes says that the One God is neither infinite and indeterminate nor finite and determinate, since that which does not exist is the infinite and indeterminate, because it has no beginning or middle or end, and since it is the many that limit and determine each other. Similarly, he deprives the One God both of motion and of rest, since that which does not exist is the unmoved, because nothing else ever comes into it nor does it

> go into anything else; and the things which are moved are those which are more than the one, for one thing changes into another. And so when Xenophanes says that the One God abides ever in the same, he does not mean that it abides in the sense of 'repose' which is the opposite of motion, but that it abides in a sense which does not refer either to motion or to rest. (16)

There is one difference between the wording of Xenophanes and that of Parmenides which is quite notable. Xenophanes says that God can neither be called Limited or Unlimited; while Parmenides says Being is Limited. Xenophanes denied that Limit or Without Limit were appropriate qualifications for God, because both Peras and Apeiron were regularly employed to explain the processes of physical change, and were actually substantial parts of these processes, and had been identified, consequently, with the changing world. The one God was absolutely above the world of physical change. Parmenides, on the other hand, used the word Limit in order to show that Being is absolutely separated from the world of Becoming. It is "locked off" from the world of becoming, and is unchangeable in itself.

The doctrine of Truth follows upon this conception of Being. In the Aristotelian teaching Science can only be about what is necessary, that is, about what is universal : what is everywhere and always. Hence, if being is taken for the most perfect Being, and Wisdom and Certainty for their most perfect type, Parmenides is far from talking non-sense. If we took this path of Truth, then there could be Truth only in the knowledge of such Being. For the truth of pure knowledge consists in the conformity of the intellect

with what <u>is</u>. Viewing this in parmenidean perspective, we might go on to say that unstable truth is not truth in the fullest sense of the word. For, of those things that sometimes are and sometimes not, at one time it is true that they are, and at another time it is true that they are not. When a thing ceases to be, the truth that it is ceases to be. Hence, this type of truth is itself subject to becoming and non-being. Insofar as what is now asserted to be true may cease to be and cease to be true, such truth is unstable, provisional. It <u>is</u> not, it does not have Being in the sense in which Parmenides understand <u>to be</u>.

In turn, science, ἐπιστήμη, is only about those things whose principles cannot be otherwise, as Aristotle shows.

> Prius quidem igitur dictum est duas esse partes animae: et rationem habentem, et irrationalem. Nunc autem de rationem habente secundum eumdem modum dicendum. Et supponantur duo rationem habentia. Unum quidem quo speculamur talia entium, quorum principia non contingit aliter se habere. Unum autem quo contingentia.
>
> Ad ea enim quae genere altera, et animae particularium alterum genere ad utrumque aptum natum. Siquidem secundum similitudinem quamdam et proprietatem cognitio existit ipsius. Dicatur autem horum hoc quidem scientificum, hoc autem ratiocinativum. Et consiliari enim et ratiocinari idem. Nullus autem consiliatur de non contingentibus aliter habere. (17).

Consequently, Aristotelian philosophers should be slow to criticize Parmenides for his teaching both about the nature of the one Being, and following upon that, the quality of knowledge we can have about the world of Being and the world of phenomena.

The error in the criticism of Parmenides is due to a great extent, as we shall subsequently see, to a univocal conception on the part of historians of philosophy of the word knowledge --- an error that is just as inexcusable on their part as is Parmenides' error in regard to the univocity of Being. Knowledge is not an univocal term. It can refer to the knowledge of God, to the knowledge of angels, to the knowledge of men. It can mean strict demonstration, science, certitude. It can mean the knowledge of probable reasoning. It can mean the knowledge of the senses. Parmenides uses the word ἐπιστήμη in the rigorous sense of stable, immovable knowledge which supposes necessity on the part of what is known.

Parmenides says that non-Being is unthinkable; and whatever is thought must be. This is not the idealist position which holds that thought is prior to Being --- as though Being were but the product of thought, either in the sense of the subjective idealists or that of the objective idealists, who admit the reality of objects outside their minds. What Parmenides seems to mean is this : Thought must be about what is. This is fundamentally true, since, as we ourselves hold, even non-being is necessarily conceived "ad instar entis".

In order to understand his position on non-being and the relationship this has with knowledge, it is necessary to see what Parmenides means by the world of appearance. After that we shall be able to make a comparison between the world of Being and the world of phenomena.

> Wherefore all these things are but names which mortals have given, believing them to be true --- coming into being and passing away, being and not being, change of place and alteration of bright color. (18)
>
> Mortals have made up their minds to name two forms, one of which they should not name, and that is where they go astray from the truth. They have distinguished them as opposite in form, and have assigned to them marks distinct from one another. To the one they allot the fire of heaven, gentle, very light, in every direction the same as itself, but not the same as the other. The other is just the opposite to it, dark night, a compact and heavy body. (19)
>
> Now that all things have been named light and night, and the names which belong to the power of each have been assigned to these things and to those, everything is full at once of light and dark night, both equal, neither has aught to do with the other. (20)
>
> And thou shalt know the substance of the sky, and all the signs in the sky, and the resplendet words of the glowing sun's pure torch, and whence they arose. And thou shalt learn likewise of the wandering deeds of the round-faced moon, and of her substance. Thou shalt know, too, the heavens that surround us, whence they arose, and how Necessity took them and bound them to keep the limits of the stars...how the earth, and the sun, and the moon, and the sky that is common to all, and the Milky Way, and the outermost Olympos, and the burning might of the stars arose. (21)
>
> The narrower hands were filled with unmixed fire, and those next them with night, andin the midst of these rushes their portion of fire. In the midst of these is the divinity that directs the course of all things; for she is the beginniner of all painful birth and all begetting, driving the female to the embrace of the male, and the male to that of the female. (22)

In these fragments Parmenides does not deny what we would call the objectivity of the phenomenal world --- he openly admits it, for he calls it the union "of Light and night". What he does deny is that this world may be called Being. And the reason is plain from the consideration we have already given to the

Being of Parmenides, namely the identification of Being with the absolute fulness of being that is God. Only that which is perfectly, absolutely, immovably Being can be called such. But "things" in the phenomenal world are not completely Being, for they only share in the Light; they merely participate in the attributes of that one Being. All in the phenomenal world is in a state of movement; there is no stability; no necessity; no absolute continuity, consequently the phenomenal world cannot be called Being. Men are deceived to this extent by the world of phenomena --- that they consider the multiplicity they come into contact with through their senses to be truly Being, and consequently to have the attributes that can be applied only to that Being which is absolute. Wisdom, certitude, science is not about the world that is but a shadow, an appearance of Being, for there is no necessity and invariability about this world. Individuals and in the conditions of time and space, things are contingent, and about them we can have only doxa, opinion.

This will immediately call into mind Aristotle's dialectic of the Topics. However, this might be over simplifying the case. We have seen that, according to Parmenides, anything less than divine truth falls short of what he means by truth, just as anything this side of divine being is not what is pure and simple. Hence, any truth, which is in the mind, admitting of any change whatsoever, or any passage from one state to another, lacks the

stability of science which Parmenides has conceived in its most absolute form. In other words, any knowledge that is not of Being falls within the range of doxa. Today it is true that it rains. Tomorrow it will no longer be true. Hence the truth of "that it rains" is unstable.

In this Parmenides seems to have at least a confused insight into the immutability of divine truth which extends to all things in the simultaneity of eternity. (23) That truth lies beyond the "beliefs of mortals".

As Aristotle pointed out, Parmenides' conception of being is univocal, and so will be his conception of truth. But it is wrong to identify being with the most perfect Being, and to identify truth with divine truth. Being can be said of what is necessary and of what is contingent; of what is actual and of what is in potency; of what is substantial and of what is accidental. It may be said of God and of creature. Non-being too is not univocal. The analogy of being and the analogy of non-being overlap. Some being of which being may be predicated, may be identical with some non-being. This may be shown from the following. What is <u>not</u> in act, what <u>is</u> merely in potency, both is and is not. Movement itself is a kind of mixture of being and non-being : it is neither determinately act nor determinately potency.

Obviously Parmenides does not reach these distinctions and identifies being with the actuality that excludes all potency, the necessity that excludes all.....

forms of contingency. On the other hand, his non-being covers all that is not absolute being in the sense just described. In other words, he uses the analogy of non-being, whereas he ignores the analogy of being.

We can well understand why he refuses being to becoming. For, the act of becoming is imperfect : movement is neither determinately act nor determinately potency. Hence, in Parmenides, movement will belong to the genus non-being as opposed to the genus being identified with absolute being in its very highest form.

We can also see that the exclusion of becoming from being and its rejection into the multifarious genus of non-being does not take reality away from becoming, does not deny its objectivity. It is true, however, that just at this very point Parmenides is "in angustiis". Actually he could not have accounted for the reality of becoming without accepting the analogy of being. But we have no right to impose upon him a conclusion which he has not drawn.

That Parmenides' world of appearance and becoming is still a real world, and not, as is sometimes stated, a mere illusion, is clear from the fact that he says that there are two forms, one of which must not be named. The one that must not be named is non-being. It must not be named for every name that we apply to it supposes that it is being, whereas it is not. It is movement ;

it is a participation in some way of the Being that is One. It is a mixture of "Light and night" as he says, and not full Being.

The Light in which the phenomenal world participates is called Fire. This is not unique to Parmenides --- practically all of the ancients considered Fire as something that participated in the Divine. The hierarchy in the world of phenomena was ordered according to the amount of Fire and darkness each thing had within itself. This in itself is sufficient to prove the objectivity of the world of doxa, because there must be something positive if there is to be a combination. At the same time the non-being in the phenomenal world is considered as something positive, for it is had in varying degrees. Thus we have in the world of appearance the beginnings of the doctrine of the analogy of being and of non-being. In the doctrine of the phenomenal world we have those participations which should have evoked the idea of analogy. But Parmenides is so fascinated by the nothingness of this world in comparison with the absolute to be of God, that the form pertaining to the former is one that should not even be named.

Being enters the phenomenal world as Fire, but in so doing must pay a price. It can no longer retain the attributes of pure Being. It becomes void of understanding; it gives only opinion. There is a world of flux that is incapable of accurate description. What is in movement is but an appearance of the One

Being that is separated. When he says that "movement is an illusion" he does not mean that movement does not exist in the world of Nature, but only that it is an illusion of Being as defined in the above sense. Mortals are led into error when they consider that things here below are really identical with Being that is unchangeable.

Note that in explaining movement Parmenides relegates the notion of act into the background and considers only the movement. For this reason he did not want to call phenomena real Being - he went to the opposite extreme and called all these things non-being. The logical consequence of the univocity of the supreme Being is pointed out in a passage of Aristotle, in which he says that if Being is only One, as in the system of Parmenides, then we must identify Being and non-being, good and evil. The natural conclusion, he says, is a reduction to the Heraclitean doctrine of contraries, and to contradiction :

> But to proceed : If their One is one as indivisible, nothing will have quantity or quality, and so the one will not be infinite, as Melissus says --- nor, indeed, limited, as Parmenides says, for though the limit is indivisible, the limited is not.
>
> But if all things are one in the sense of having the same definition, like raiment and dress, then it turns out that they are maintaining the Heraclitean doctrine, for it will be the same thing ' to be good' and 'to be bad', and 'to be good' and 'to be not good ', and so the same thing will be 'good' and 'not good', and man and horse; in fact, their view will be, not that all things are one, but that they are nothing; and that 'to be of such and such a quality' is the same as to 'be of such and such a size'. (24)
>
> (Physics, I, 2, 185b17)

We must point out here the great similarity between this and the Marxist doctrine of union of contradictories. They

admit openly, as we shall see when we come to the presentation of their doctrine, that there is to admit contradiction in everything in nature. Movement is, indeed, nothing other than the union of absolute contradictories, of being in place and not being in place; a union of actuality of motion and of rest. Movement is an evident contradiction, says Plekanov. (25)

That the problem of defining movement is an easy thing, no one who has studied the problem will affirm. It is not strange, therefore, that Parmenides will have difficulty in speaking of the world of phenomena which is the world of change. In the several quotations that follow we shall see that Aristotle himself acknowledged the difficulty of the problem, and he did not criticize in his usual sharp tones those who called it non-being.

> That what we have said is right is evident from what all others say about movement, and from the fact that it is not easy to define it otherwise. For firstly one cannot put it in any other class. This is evident from what people say. Some call it otherness and inequality and the unreal; none of these however is necessarily moved, and further, change is not either to these or from these any more than from their opposites. The reason why people put movement in these classes is that it is thought to be something indefinite, and the principles in one of the two columns of contraries are indefinite because they are privative, for none of them is either a 'this' or in any of the other categories. And the reason why movement is thought to be indefinite is that it cannot be classed either with the potency of things or with their actuality; for neither that which is capable of being a certain quantity, nor that which is actually of a certain quantity, is of necessity moved, and movement is thought to be an actuality, but incomplete; the reason is that the potential, whose actuality it is, is incomplete. (26)

And in the Physics III, where he himself gives

a definition of motion we find the same difficulty in defining motion because it is not something absolute :

> They identify motion with "difference" or "inequality" or with "not being"; but such things are not necessarily moved, whether they are different or unequal or non-existent. Nor is change either to or from these rather than to or from their opposites. The reason why they put motion into these genera is that it is thought to be something indefinite, and the principles in the second column are indefinite because they are privative : none of them is either 'this' or 'such' or comes under any of the other modes of predication. The reason in turn why motion is thought to be indefinite is that it cannot be classed simply as a potentiality or as an actuality --- a thing that is merely capable of having a certain size is not undergoing change, nor yet a thing that is actually of a certain size, and motion is thought to be a sort of actuality, but incomplete, the reason for this view being that the potential whose actuality it is is incomplete. That is why it is hard to grasp what motion is. It is necessary to class it with privation or with potentiality or with sheer actuality, yet none of these seems possible. There remains then the suggested mode of definition, namely, that it is a sort of actuality, or actuality of the kind described, hard to grasp, but not incapable of existing. (27)

We can get a better understanding both of the world of Being and of the world of doxa by comparing the one to the other. The theory of limits gives us a method of comparing these two that permits us to see much more in Parmenides than appears in the litteral understanding of the fragments that remain of his teaching.

Parmenides describes the world of Being as a perfect sphere, absolutely continuous throughout, and bound in at the periphery so that it is completely immobile.

> Since then it has a furthest limit, it is complete on every side, like the mass of a rounded sphere, equally poised from the centre

> in every direction; for it cannot be greater or smaller in one place than in another. For there is nothing that could keep it from reaching out equally, nor can aught that is be more here and less there than what is, since it is all inviolable. For the point from which it is equal in every direction tends equally to the limits. (28)

From this text it seems obvious enough that the sphere is chosen to suggest the perfection of Being, but why did he choose this figure instead of any other ? It is because the sphere is the perfect geometrical figure. It has no diversity within itself; at every point its surface is equally distant from the center, thus accounting for homogeneity in respect of measurement ; in comparison with the polygon or cube, whose side are capable of infinite diversity, the sphere is without diversity. It is this last idea we shall try to develop. For the sake of simplicity, we shall speak of a circle and a polygon in making the comparison --- these have the same relationship to each other as the sphere and cube, except that they are in only two dimensions.

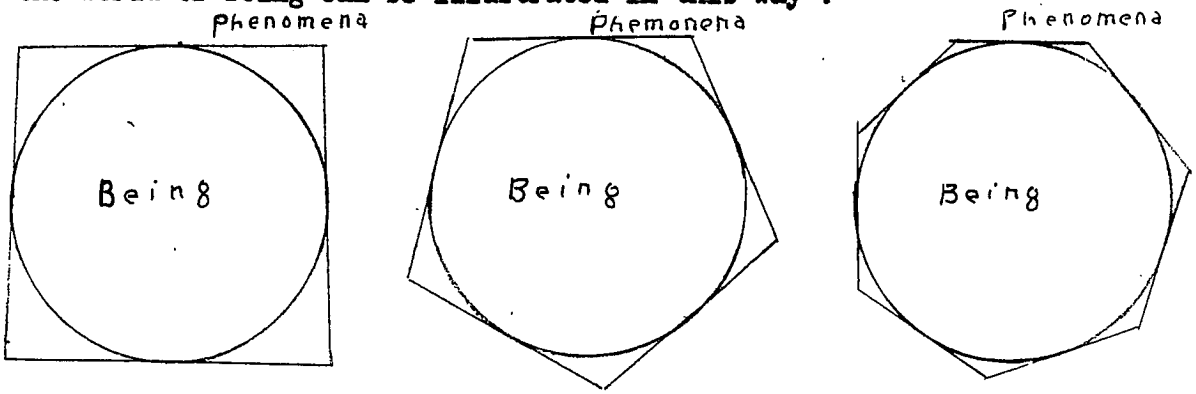
The first thing to point out in comparing the circle and the polygon is that the circle is as pure Form, that is, invariable, while the polygon, in addition to having Form, has also matter by which it is variable. The circle is formed by one single line, whose beginning and whose terminus are identical --- there is no variation in the shape of the circle. But the polygon has form (a figure bounded by straight lines), but it has also matter : the number of sides of the polygon can vary ad infinitum, and so approach ad

infinitum the figure of the circle. Now the world of Being of Parmenides is like the circle, which is Form alone, without variation. Form, we know, is the principle both of Actuality and Knowability in a thing. Form gives perfection : a thing is perfect in so far as it has form. Form gives necessity. Consequently, when we say that the Being of Parmenides is Form (represented by the sphere --- or as we are now doing by the circle) we are attributing to Being those characteristics that make it Divine.

Matter, on the other hand, is the principle of variability. This is represented by the polygon, whose sides, those infinitely variable, can never reach the perfect Form of the circle. Thus the polygon represents the world of doxa. The phenomenal world is constantly changing; it is continually moving towards the world of Being, yet remains always in the state of becoming. An infinite distance separates these two worlds, for as long as there is any distance at all between the world of phenomena and the world of Being, the distance is infinite. The sides of the polygon can be increased, and in this way, it will look more and more like a circle, but it can never reach the Limit, so that at some point we could say, "The polygon is identical with the circle." We shall never be able to say, likewise, that "The world of phenomena is Being".

The comparison of the world of phenomena with

the world of Being can be illustrated in this way :



As we pointed out, there is a hierarchy in the phenomenal world, according to which things possess more or less Fire that come from Being, and more or less Darkness. All these things are constantly changing; are never fully in the possession of the perfect form of Being. Only that of which we can say absolute It is, is Being.

The world of doxa cannot trespass upon the world of Being, nor can the world of Being be separated from itself for "It is immovable in the bonds of mighty chains, without beginning and without end; since coming into being and passing away have been driven afar, and true belief has cast them away. It is the same, and it rests in the self-same place, abiding in itself. And thus it remaineth constant in its place; for hard necessity keeps it in the bonds of the limit that holds it fast on every side." (29)

The same comparison between the two world can be made by means of the infinite approach from the number one to number

two. One is as the phenomenal world that is ever varying, ever in the state of becoming. Two is as the world of Being thatis apart, not varying, enclosed within itself. The diversity in the world of doxa is as the varying values of the one in their movement towards two, which is the form that does not vary. As long as one does not become two, it cannot be called two, just as the world of becoming cannot be named Being --- that is, forever.

In numbers, the phenomenal world and the world of Being are represented in this way :

PHENOMENAL WORLD ——————→ WORLD OF BEING

$1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} \overset{N.}{\longrightarrow} 2$

Variation, becoming, non-Being ——→ Being, Stability

There is another aspect of the Being of Parmenides that can be brought out through the method of Limits. It is the aspect of continuity and homogeneity. He says that Being is the same throughout; all at once; indivisible. This attempt on the part of Parmenides to reach Science or Wisdom by reducing all to homogeneity finds its counterpart in modern logical mathematics. And the advent of this modern explanation helps us to understand better the conception of Parmenides.

We must not consider the world of Being as a

round, solid sphere, made up of earth and the other elements. Some historians make of Parmenides a corporeal monist. The sphere of which he speaks is rather a sphere of thought, an intellectual sphere that has an intellectual boundary. (30) This sphere is Form, in contrast with matter which is variable. It is the sphere that mathematicians use — and mathematics abstract from all causes except formal.

In order to give an absolutely complete explanation, rationalisation of nature, it is necessary to reduce the formal differences in the world to homogeneity. This, of course, is impossible in itself and impossible from the viewpoint of the scientist himself. For if all formal difference were reduced to homogeneity, then all knowability would be removed from the universe, since only form gives knowability — it would be the reduction of all form to matter. (We shall see this point more fully when we study Democritus).

In his preface to Emile Meyerson's Essais, Louis de Broglie points out the logical character of the attempt to reduce all to homogeneity :

> L'identique parfait est essentiellement inimaginable, mais aussi ne l'imaginons nous jamais réellement tel. Toujours notre conception implique une sorte de réserve mentale : les choses seront identiques, mais néanmoins discernables. C'est ainsi que, quand nous parlons d'identifier, de rendre identique un divers, ce que nous voulons dire en réalité, c'est que nous entendons le rendre moins divers, plus identique qu'il n'était. L'identique lui-même apparait comme situé, à la lettre dans un lointain infini, mais ce n'est qu'en marchant vers cet idéal placé hors de son atteinte que la raison accomplit sa tâche. L'identique ainsi compris n'est par conséquent, qu'une notion-limite,

> et ce terme nous rappelle aussitôt que c'est ainsi également que le mathématicien qualifie cet infiniment petit qui forme la base des mathématiques modernes tout entières. (31)

The tendency of Parmenides, like the attempt of logical-mathematicians, is to ... all gaps, to make an absolute continuum. Meyerson points out that if this were really accomplished, Science would really destroy itself, for it would reduce everything to sterile identity. And that, precisely, is what Parmenides does with his notion of Being. He wants to reduce all Science to the common metaphysical principles, which is Science in its most potential condition. It is the utter destruction of the science of Nature which must study things in their multiplicity. Others of the ancients spoke of natural principles (fire, water, earth and air) and thus, they remained philosophers of nature, but Parmenides tried to reduce all Science to the one principle, ^common Metaphysical Being. In this, homogeneity overcomes all formal diversity.

The construction of his intellectual sphere is again shown in the method of limits, as was the distinction between the world of doxa and that of Being. The sphere is entirely without gaps; continuous throughout; completely homogeneous : at the Limit of the phenomenal world.

It is represented by the infinite series starting out from one to go towards two. Between each successive dicotomy the continuum must be filled in. This is done by means of new divisions

ad infinitum, by both rational and irrational numbers. At the limit of this continuum, that is, when the distance from, for example, 1 to $\frac{1}{2}$ is theoretically filled in, then the filling in of the continuum starts in two dimensions, and thus surface is constructed. When surface reaches the Limit, then a movement in the third dimension starts and tends towards the Limit of this dimension. And in this way the intellectual or logical sphere is completed. This sphere is the Ideal Limit of all movement. In the terminology of Parmenides it is the Limit of the world of phenomena, at which point all movement ceases; when all is completely a continuum ; when Being is perfect and contained within itself.

Thus, the metaphysical Being is the extreme Limit of the world of change. This is the Being about which we can have certitude. We, too, would admit this. But we should qualify the nature of this science. It is perfect and certain, we must say, because it is so potential --- because it is so much in conformity with the potential nature of our intellect, and not because of the supreme degree of intelligibility in itself.

Conclusion :

We have tried to bring out the double aspect of the teaching of Parmenides. We have tried to show that he is not an absolute monist in the sense in which this word is ordinarily understood.

He admits a world of change as well as a world of Being that is unchangeable. What he does is to deny the attribution of Being to the phenomenal world, because he considers Being in an univocal way reserving it for that which "is" in the fullest sense. Consequent upon this, he denies true science about the world of change, because only that which is necessary and eternal is true. We have tried to give a rational explanation of this position according to Aristotelian principles.

The Marxist philosophers who see in Parmenides the antithesis of their doctrine of eternal dynamism of matter would do well to study this aspect of Parmenides which is constantly overlooked, namely, the world of becoming.

Zeno :

Zeno, the most important of the disciples of Parmenides, offered a series of arguments in defense of the One of his master. These arguments have had a profound influence on the history of philosophy, not so much because of their intrinsic worth, but because of the method employed and because of the discussion they provoked.

Aristotle says that Zeno is the founder of the dialectical method. (32) Zeno's method was to assume for the moment the opinion of his adversaries and then to show the contradiction that this position would lead to. As Aristotle says in defining dealectics : "Dialectical arguments are those that reason from premisses generally accepted to the contradictory of a given thesis." (33) Now, Zeno assumed the opinion "of mortals", namely that Being is constantly undergoing change, and showed the contradiction that this opinion would lead to. In so far as Zeno's arguments have to do with the method of limits, namely the progression of knowledge towards a certitude that can never be absolute, this is not the dialectics of the Topics of Aristotle. It is rather in the sense mentioned above, in the sense of *argumentum ad hominem* that Zeno's arguments are dialectical.

In form these arguments are very much like the dialectic of the Sophists, who pretended to show that out of every proposition a contradictory conclusion could be drawn. To call Zeno a

Sophist goes beyond the evidence we have. Indeed, Zeno bases the validity of his arguments upon the principle which the Sophists explicitly reject, namely, the principle of contradiction. Zeno tries to show how the negation of Parmenidean unity leads to contradiction. We cannot, however, deny the influence of Zeno upon the Sophists. It was to Zeno that the fifth and fourth century dialectic of sophistry owed its spirit and its method. Plato links up the Sophists with Parmenides and Zeno, when he says that the eristic arguments have their foundations in the antinomies of these philosophers. In the beginning of the Sophist Plato speaks of his adversaries as οἱ ἀμφὶ Παρμενίδην καὶ Ζήνωνα (34). The arguments of the Sophist Gorgias are strongly reminiscent of Zeno. It seems fairly certain that Gorgias drew his method and his arguments largely from the disciple of Parmenides. It is important, however, to note the completely negative result to which Gorgias is led by Zeno's critical methods. For the fifth century was one of growing scepticism, a century in which existing standars were questioned and existing institutions criticised. (35)

The importance of Zeno for the Marxists comes not only because of the dialectical method which he introduced, but because of the problem that Zeno raised. Marxists take Zeno's argument at face value and admit openly that movement is a contradiction.

> La base de tous les phénomènes de la nature est constituée par le mouvement de la matière. Mais qu'est-ce que le mouvement ? Il est une contradiction evidente. Si l'on vous demande si un corps

> en mouvement se trouve au moment donné à tel endroit, vous ne pourrez, malgré votre bonne volonté, répondre selon la règle d'Überweg, c'est-à-dire selon la formule : "Oui est oui, et non est non". Un corps en mouvement se trouve à un endroit donné, et en même temps il ne s'y trouve pas. On ne peut pas juger de lui autrement que d'après la formule : "Oui est non et non est oui". Ce corps se présente donc comme une preuve irréfutable en faveur de la "logique de la contradiction", et quiconque ne veut pas prendre son parti de cette logique doit proclamer avec Zénon que le mouvement n'est rien d'autre qu'une illusion des sens. (36)

We shall now study the arguments of Zeno. (37) Throughout this whole discussion it is important to remember that Zeno is arguing in defense of the One of Parmenides. There cannot be any division of the One; there cannot be any movement involving the One. That is the purpose of the arguments, to show that any change, division, movement on the part of the supreme Being would involve a contradiction.

Zeno's first argument is against the division of the One. It runs in this way : Whatever there is in Being must be one, for if it were divisible at all, then it would necessarily be divisible at every point. Let us assume for the moment that the One is divisible and that the division actually took place. The division must continue on to infinity --- if Being by nature is divisible, a simple division into two parts does not change its nature, and consequently, once we admit any possibility of division we must carry this possibility out to its extreme limit. But if division goes on to infinity, we would reach a condition in which Being would have no dimension. But whatever has no dimension is the same as nothing.

This argument rests on the assumption that for plurality there must be a certain number of indivisible units out of which the One, the Continuum is constituted. But Being, which is homogenaous, if divisible at all must continue to be divided as long as any magnitude is left. The conclusion of such a division is the entire destruction of the Continuum, the negation of the One, since this division would terminate with parts that had no measurement. But parts that have no measurement are not real. The continuum would be reduced to an infinity of points.

> Further, if unity itself is indivisible, according to Zeno's postulate it will be nothing. For that which neither when added makes a thing greater nor when substracted makes it less, he asserts to have no being, evidently assuming that whatever has being is a special magnitude. And if it is a magnitude, it is corporeal. (38)

Thus, according to Zeno, if the continuum is at all divisible it is impossible that there be a certain number of indivisible units, and consequently, there cannot be plurality in Being. The continuum must be either One or a plurality --- it is not a plurality.

The error of this argument lies in the supposition that a magnitude which is infinitely divisible according to definition can be actually infinitely divided. Only a process with a finite number of steps can be completed and yield a completed result.

The solution lies in keeping distinct the real order of nature and the mathematical order, for the difficulty comes from the confusion of the two.

There can be infinite divisibility only in the mathematical order, which is concerned only with formal causality --- or the formal definition. Mathematics abstracts from actual existence. Therefore, when we speak of infinite divisibility of a continuum through points we are merely concerned with the mathematical definition of the continuum and the point.

> By continuous I mean that which is divisible into divisibles that are infinitely divisible. Moreover, it is plain that everything continuous is divisible into divisibles that are infinitely divisible : for it it were divisible into indivisibles, we should have an indivisible in contact with an indivisible, since the extremites of things that are continuous with one another are one and are in contact. The same reasoning applies equally to magnitude, to time, and to motion. (39)

And the point is that which being added to does not increase and being subtracted from does not decrease, for the point itself has no extension. The point is indivisible for it has no magnitude. And having no magnitude it cannot compose a line.

> Nothing that is continuous can be composed of indivisibles, e.g., a line cannot be composed of points, the line being continuous and the point indivisible.....Nor again can a point be in succession to a point or a moment to a moment in such a way that length can be composed of points or time of moments, for things are in succession if there is nothing of their own kind of intermediate between them, whereas that which is intermediate between points is always a line, and that which is intermediate between moments is always a period of time. (40)

Zeno's argument was directed against those who supposed that the geometrical point can be the element out of which Being is constructed, namely, the Pythagoreans. The supposition of the Pythogoreans is that the geometrical point is the basic element of all reality. Tannery, in his Science Hellène and elsewhere (41) says that Zeno was attacking the Pythogoreans. The resurgence of this confusion of mathematics and the philosophy of nature in modern times can be traced in great part to Descartes.

Since by definition a continuum (or any magnitude) is divisible into divisible parts, and at the same time, the point is defined as that which is indivisible and without any magnitude (but is either the principle or the terminus of magnitude), it is evident that there can be an infinity of points in any line --- points added to points never constitute magnitude. But an actual division of a given magnitude in nature cannot take place infinitely, because the ideal point, that which is absolutely without magnitude can exist only in the mind. Mathematics abstracts from real existence and argues only from the formal definition.

The second argument of Zeno is again the possibility of motion, an argument closely allied to that against plurality. According to the Parmenidian position all plurality as well as all motion in the continuum is illusory. An admission of real motion, according to Zeno, involves a contradiction. There are four variations of the

argument against motion. They are called : the Dichotomy, the Achilles, the Arrow, and the Stadium.

The first of these, the Dichotomy, which takes its name from the possibility of cutting in two any distance, has two forms. The first of these says that if motion through a finite distance is to take place, it must take place in finite time. But this is impossible because of the infinite divisibility of any distance. In this form the notion of time is essential to the argument. The second form of the argument is based upon the impossibility of counting the infinite number of sucessive dichotomies that are passed over by the moving body.

The first form of the argument :

Since the continuum is infinitely divisible, there must be in any given distance an infinite number of half-way points. And a body traversing this given distance must reach one (one) of these half-way points in turn. Though each sucessive step is divided in two, nevertheless an infinite distance remains to be covered. And each suceeding point must be reached in a finite period of time. Since there is an infinite number of intervals, there must be an infinite number of periods of time. But all those intervals added together add up to infinite time. Hence it is impossible to traverse any given distance infinite time. Hence, movement is impossible.

The second form of the argument the idea of

counting is essential, while the time element does not enter in. In the Physics VIII, Aristotle states the argument.

> The same method should be adopted in replying to those who put Zeno's puzzle, and claim that in traversing any distance we must first traverse half of it, that these subdivisions are infinite, and that it is impossible to complete an infinite number of distances ; or as some, who put the puzzle in a different form, claim, that in the course of its motion the moving body must, as it reaches each half-way point, count the half of this half, so that when it has moved through the whole distance it has counted and infinite number which is admittedly impossible. (42)

The argument is based on the impossibility of an actual infinite number. An observer watching the progress of a moving object should be able to count the half-way points that are passed. But ex hypothesi the remaining distance always remains capable of bisection. Consequently there would be an actual infinity of points. Since this is impossible, so is the motion itself.

Aristotle gives us the key to the solution of this argument which is practically the same as Zeno's first argument against plurality --- for it is based upon the same confusion. First of all Aristotle points out that we must distinguish the two kinds of infinity, the infinity of divisibility and the infinity of extension. These might be called the infinity of smallness and the infinity of greatness.

Aristotle admits that in the hypothesis of an infinitely great distance an infinitely great time would be required to

cover the distance. On the other hand the divisibility of any distance is likewise paralled by the divisibility of time (for it, too, has magnitude) into infinitely small parts.

> And at the same time it is clear that all magnitude is also continuous; for the divisions of which time and magnitude respectively are susceptible are the same and equal. Moreover, the current popular arguments make it plain that, if time is continuous, magnitude is continuous also, inasmuch as a thing passes over half a given magnitude in half the time taken to cover the whole: in fact without qualification it passes over a less magnitude in less time; for the divisions of time and of magnitude will be the same. And if either is infinite, so is the other, i.e., if time is infinite in respect of its extremities, length is also infinite in respect of its extremities; if time is infinite in respect of divisibility, length is also infinite in respect of divisibility; and if time is infinite in both respects, magnitude is also infinite in both respects.
>
> Hence, Zeno's argument makes a false assumption in asserting that it is impossible for a thing to pass over or severally to come in contact with infinite things infinite time. For there are two senses in which length and time and generally anything continuous are called "infinite" : they are called so either in respect of divisibility or in respect of their extremities. So while a thing in a finite time cannot come in contact with things quantitatively infinite, it can come in contact with things in respect of divisibility; for in this sense the time itself is also infinite; and so we find that the time occupied by the passage over the infinite is not a finite but an infinite time, and the contact with the infinities is made by means of moments not finite but infinite in number.
>
> The passage over the infinite, then, cannot occupy a finite time, and the passage over the finite cannot occupy an infinite time; if the time is infinite the magnitude must be infinite also, and if the magnitude is infinite, so also is the time. (43)

In both forms the argument is essentially the same. It is based on the confusion of the two kinds of infinity. At the same time it has at its foundation the same error that was

made in the argument against plurality, for it supposes that infinite divisibility means the same as actual infinite division. The same confusion of the real and the mathematical order is found here. It is not surprising, consequently, when we find modern mathematicians and scientists who are often guilty of the same confusion place so much emphasis on the arguments of Zeno.

The argument of the Dichotomy can be understood in another way. Before the body in motion can reach a certain point it must pass the half-way mark. Before it can reach the half-way mark it must reach a half-way mark previous to this one. And since the line is infinitely divisible, the body which would move from one point to another would have to pass an infinite number of half-way marks, and consequently it could never even start. Thus motion would be impossible.

In this form of the argument the time element does not enter in, nor does the notion of actual infinite number, since there is no motion at all. We might argue against Zeno, if we assume that the form of the argument which denies the possibility of passing through a finite distance in a finite time, as well as that other which denies the possibility of an actual infinite number are correct interpretations of his argument, that he already admits the possibility of motion. But this is not really against the position of Zeno, for it is is method of arguing (the dialectical method) to assume the position

of his adversaries and to show the contradictions that this position involves.

The other three arguments against motion (the Achilles, the Arrow, and the Stadium) are practically the same as that of the Dichotomy: all have as their foundation an error on the nature of magnitude and its divisions. They assume that all magnitude is composed of indivisibles: either that the continuum is made up of points, or that time is composed of a series of moments (nunc), or that motion is made up of a series of actualities.

This same confusion is found in the Marxist doctrine of identity of contradictories. That they borrow heavily from Zeno will be evident in their examples of contradiction --- given later in the dissertation --- but what is of most importance is that they accept at face value the arguments that Zeno proposes as argumenta ad hominem.

Heraclitus :

If we may say that the Marxists have a favorite philosopher among the ancient Greeks, that philosopher is Heraclitus. It was particularly with him in mind that Engels said that dialectical materialism is a return to the ancient philosophy.

What generally is brought forth as characteristic of Marxist philosophy --- we shall see this in detail in the presentation of their doctrine --- is firstly, the dynamism of matter; and secondly, the union of contradictories in all things in nature. These two elements cannot, indeed, be separated, for it is the element of contradiction that explains the dynamism. In the following fragments from Heraclitus the similarity between the Marxist doctrine and the teaching of the "philosopher of mobilism" is striking, and Engel's reference to Heraclitus might seem entirely justified.

We shall give only those references that touch directly upon the element of contradiction or that of dynamism.

24 : Fire is want and satiety.

32 : The sun is new every day.

33 : God is day and night, winter and summer, war and peace, surfeit and hunger; but he takes various shapes, just as fire, when it is mingled with spices, is named according to the savour of each.

39 : Cold things become warm, and what is warm cools; what is wet dries, and the parched is moistened.

40 : It scatters and it gathers; it advances and it retires.