

Buddhism, Science and Socialism

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Contents

- [Physical Materialism](#)
- [Physical reality](#)
- [Technological innovations](#)
- [Human alienation](#)
- [Beyond Formal Logic](#)
- [Problem of alienation](#)
- [Buddhism, Science and Dialectics](#)

"The trouble is an intellectual one, indeed its solution if there is one, is to be sought in logic"
Bertrand Russell

Static Images

Early human thinkers identified movements, change of power, eternal problem of identity and negation of things. They believed reality consisted of interplay of several energy forms. Greeks named these as gods of Olympus. Indians claimed these as "Maha Bhuta". Similar views can be found in other early communities. This view of matter as "non matter" or as forms arising out of change was the beginning of human understanding of reality. Natural human perception is thus dialectical. This is borne out by the fact that all early human thinkers including **Buddha and Heraclites** were dialecticians of one form or the other. They understood the world in its essential impermanence.

This early human understanding of reality was abandoned by Newtonian science. Science is based on investigating dead, inert lifeless matter. Even biology is based on studies made on inert matter. Also motion or dynamic processes are explained as sums of static images, or series of small quantitative changes. Detailed study of compounds and chemicals was seen as the only way forward. It was assumed that such detailed studies put together could recover the reality, not as an integral whole but as a sum total.

Newtonian scientists did not see any use of considerations beyond logic. Formal logic system based on "A = A" was considered to be the ultimate tool of analysis and intellectual investigation. Dialectical view based on impermanence was considered to be the view of mystics and eccentrics. Empirical study became an end in itself "nothing can be lost by taking things apart; it can give the detailed picture in its essence". Such views were considered to be serious and sensible. The reductionist principle was applied to everything including human mind. An attempt was made to explain human thought through a set of chemical and electro-magnetic equations. Success in practice, particularly in the factory system after the industrial revolution was largely responsible for the dominance of this "scientific view" among ruling elites in the Western society. Their motto was

“what is useful in practice must be the truth”. Thus science was tied to the usefulness within the industrial world. Hence at that stage nobody in the scientific community was prepared to challenge this “scientific view point”. However, challenge developed outside the scientific community, among the radical philosophers and thinkers. Such thinkers broke the rigid framework set by mechanistic materialism. They brought back to the scientific community the necessity of understanding ever present impermanent nature of things.

The reality of empirical scientists is confined to practical experience and laboratory tests. But this experience of the middle world of ordinary objects and “common sense”, ceases to exist when one moves into cosmology or particle physics. At either of these ends, the material world as defined by physical forms ceases to be the reality. In place of physical forms, the reality turns out to be of fluxes of energy. In the end, change, negation, identity and inter-relations, replace everything that can even remotely be called physical. Does that mean physical experience is an illusion? Does that mean mind and matter cease to be separate things? Does that mean thinking and impermanence are two sides of reality and the identity of mind and matter thus created is the ultimate truth?

Physical Materialism

Formal logic and physical materialism of common sense has been finally overthrown not by philosophers that challenge them. These were overthrown by modern scientists and mathematicians such as Einstein, Neil Bohr, Heisenberg, Gödel and Stephan Gould. They showed very clearly within science and mathematics, that the reality of “common sense” does not exist, beyond the world of scientists. Does that mean physical reality has been abolished? No, what they showed is that physical reality that we experience in ordinary practice is only a form that arises out of impermanence: eternal change, negation, identity and inter-relations. Impermanence creates physical reality and physical reality produces through brain, human mind, and in turn human mind allows perception, thinking and cognition. Hence the identity of mind and matter exists only through the physical reality. Or, in reverse, we could say mind exists in the brain, brain exists in physical reality and physical reality exists in impermanence, the ultimate reality.

Human thinking arises within human self. Two are dialectically related. Human thought is an autonomous function, but mind could relate to the physical reality only through the human body. Identity between physical reality and mind exists through human body. Mind cannot divorce itself from the brain. Those who ponder on such existence move into the domain of idealism. Idealistic thinking can exist with or without Einstein. It arises out of the assumption that mind can arise without the base provided by the human type physical existence. Dialectical materialism accepts impermanence as ultimate reality. Physicality is only a form of this reality. Impermanence gives rise to the laws of dialectics. Identity and inter-relation of all things, unity of the opposites, quantitative changes leading to change in quality and Negation of Negation are the laws that govern this reality. Already many scientists have become unconscious dialecticians.

Looking through human history and through global investigation of philosophical systems, one can conclude that there are two categories of human understanding of reality; One is the “come-on sense” understanding of reality. “Commonsense” knowledge is based on formal logic and empirical data. Elementary use of six organs, i.e. eye, ear, tongue, nose, body and brain made such a perception possible. But it is not a mental construction. One goes into practice on the basis of such knowledge. There are collective agreements and common conventions arising from such practice. Social production is the result of this process. It is the reality of ordinary day to day existence. All physical objects and physical experience fall within this reality.

Physical reality

Development of science whether it is in Europe, China or India was based on “common sense” understanding of reality. Investigations were carried out by breaking physical reality apart. Objects and phenomena were studied using component parts. Cartesian framework and ordinary understanding of time, based on day and night and movement of sun and moon, defined the background for scientific investigation.

On the other hand many great men of the ancient world including Buddha and Heraclites saw the fundamental reality as impermanence. If one investigates beyond reality of “commonsense” by entering the domain of macro or micro world, what exist is impermanence; arising and decay of identity and inter-relations. Physical reality of the commonsense world is only a form, arising out of impermanence and change. Marx, a relatively modern thinker arrived at the same understanding. However there are certain differences in the approach. In any case Buddha and Marx are separated by history and culture. Situations in which they arrived at “Fundamental reality” are very different. Buddha lived before exploitive societies appeared on earth. He struggled against Aryan caste system and its patriarchal reactionary practices, using debates and public discussions. Marx was born into Western capitalist society at the ‘end of history’. It is the history based on class struggle.

Human thinking arises within human beings who are part and parcel of physicality created by impermanence. Hence there is identity between human thinking and impermanence, and it should be natural for humans to understand impermanence and the fundamental nature of reality. But in fact that does not appear to be the case. Buddhism explains this inability as a result of “Thrushna” (craving). Conversely if any human can remove this barrier then she/he would be able to understand impermanence, “the fundamental reality”. Marx on the other hand explained the inability of the proletariat in the capitalist society to gain consciousness by pointing to their “alienation”. Human alienation has removed the relative independence of human mind. Capitalist market system has taken control of human thinking. Under the hegemony of capital, humans are incapable of arriving at “Fundamental reality”. A conscious revolutionary movement is necessary to break out of this situation.

Technological innovations

The question is raised, why Europe entered this capitalist stage when others did not. Scientific discoveries and technological innovations were available in many countries. But in countries such as India and China, these inventions and innovations did not lead to an industrial revolution or to hegemony of formal empirical ideology. Industrial revolution was the result of the factory system. Main feature of a factory is the division of work among humans confined to the limits of factory. Creative work is replaced by monotonous repetitive jobs by detailed breakdown of the creative process. This happened long before the introduction of machines. To start such production it is necessary to find humans who are conditioned for monotonous, repetitive jobs, and also joined together by formal technical relations.

Humans naturally emerged as social beings in an ancestral society. Family bonds, blood relationships and tribal communal existence provided primitive emotional security. First civilizations did not disturb this natural organic existence of humans. There was harmony with nature and matriarchy remained dominant, at least at the village level. It was necessary to destroy such existence to create human dust necessary for the factory system. Europe which came under attacks

from Nomadic hordes from the East since first wave of Aryan invasions became a rich ground for delocalized humans suitable for factory set up. There was, of course, several other reasons for the industrial take off. But the primary condition for the evolution of the factory system is the growth of humans displaced out of organic existence. Europe, through the brutality that it underwent, emerged as a strong industrial center that could dominate the world.

Marx identified tragedy of the humans under capitalist factory set up as 'Alienation.' Production system that was created by the humans has in turn deprived them of all sense of life. Human consciousness is detached from the reality of existence. Capital has 'taken over' consciousness, leaving humans as slaves tied to the system. Relative independence of human mind is lost. Under such conditions, humans are incapable of understanding "fundamental reality". Proletarian revolution carried out by the conscious movement of working people under the leadership of Vanguard party armed with revolutionary ideology is the only way out.

Human alienation

Technology and forces of production built on human alienation consolidated the formal empirical view of reality. Domination of bourgeoisie productive forces is expressed by the hegemony of false ideology: "scientific outlook" based on formal logic and empirical investigation. However, further development of science itself created problems for the system. Philosophical criticism started with Kant and Hume. Kant exposed that the accepted notions on space and time are but the human way of conceiving reality and not reality itself. Hume showed that all causality recognizable to human intelligence is but the fragile principle of induction. However, Newton- Aristotle world, with modifications, remained the reality for most scientists. Because it is the framework where modern technology exists.

Marx arrived at Dialectical Materialism through critical investigation of Hume, Kant, Hegel and Feuerbach. However this philosophical contribution was influential only within social sciences. The attempt of Soviet scientists to give lip service to Dialectical Materialism in their investigations reduced it to a collection of set phrases without a real content. All serious scientists were repelled by this crude attempt to use a philosophical view-point as an appendage of a propaganda kit. Hence until science has grown far beyond the limits set by Newtonian time space framework, no scientist was eager to look around for an explanation in the domain of philosophy. Temporary periods of stability that existed in the past within Western industrial society consolidated this attitude of the scientific community.

However, many scientists and mathematician in the course of their investigations exposed the limitations of the formal empirical system. Gödel showed that no formal system could be both complete and consistent. Heisenberg's paradoxical principle of indeterminacy, in quantum mechanics showed the impossibility of ascertaining jointly certain magnitudes. Einstein rejected Newton's space time frame work, changing the hold of common sense reality within the scientific community. In the meantime in biology organism was seen as more than a thing made out of component parts. It is claimed that an organism cannot be understood except as a dynamic unified whole that is more than a sum of all parts and processes. Stephen Gould radically altered the concept of continuous evolution by his theory of punctuated equilibrium.

Breakdown of formal empirical framework of science created two trends within philosophy of science. These are not trends openly recognized by the Western scientific community, which is still dominated by the Newton Aristotle worldview. But in practice, these two trends have affected scientific research and investigation. Firstly, there are those who wanted to rescue scientific

practice - experimentation and induction— from the rigidity of Newtonian framework, such as Kant, Mach and recent logical positivists. Secondly, there are those who looked around for a new kind of logic that will be useful in scientific investigations.

Though detached from Newtonian space, what positivism has done is only to sharpen the tools of formal logic and empirical analysis. Question of reality is thrown out of the domain of philosophy. According to positivists the philosopher's function is to "clarify the propositions of science, by exhibiting their logical relationship and by defining the symbols which occur in them." By sticking to formal logic, positivism in general has restricted itself to the ordinary common sense reality. Thus the whole edifice of positivism rests on sense - experience of physical reality and identification of elements x. y. z. etc. Problem of positivism is so aptly expressed by Wittgenstein when he said "our justification for holding that world could not conceivably disobey the laws of logic is simply that we could not say of an unlogical world how it would look".

Beyond Formal Logic

However there were those who wanted to go beyond the system of formal logic. They started by questioning classical negation, and on that basis challenged the law of excluded middle. If formal negation and alternative, is removed from the picture, "many valued logic" is possible. But the question is, if one were to reject the classical true - false dichotomy or the classical negation, what does negation mean? Birkoff and Von Neumann made a serious attempt to answer this question. But they could not give a valid answer that could be useful in quantum mechanics. Another attempt to exceed formal logic was made by Van Kampen who made use of Dirac delta functions to design new functions which are finite, infinite, continuous and non-continuous in the same sphere of application. However, all these attempts to go beyond formal logic have the same deficiency. They could not give a dynamic interpretation to negation. If negation in new logic is different from classical negation then it has to be impermanent. It should be a negation which gives rise to something other than the formal alternative. That means a becoming.

So the crisis in the scientific world continues. It is not only a crisis in the scientific outlook but a crisis of philosophy perpetuated by the industrial and technological complex. Human gains in the form of technology and culture consolidate our attachment to logical empiricist reality. We are forced to assume that the logical empiricist understanding as the end of human cognition. Intermediate reality, to which "unenlightened" mind is so strongly attached, cannot be exceeded without overthrowing the system that controls the human mind. In fact one has to detach from the physicality to identify with the "fundamental reality", which is beyond the sense experienced physical reality. One has to understand that physical reality is a condition arising from impermanence and auto change. To achieve that understanding, one has to overcome impediments that block the mind from realizing this end. Buddha explained these impediments in relation to craving. Craving represents the attachment to the physical reality and the common sense world. By suppressing craving one is empowered to see beyond the logical empiricist understanding, to see the fundamental nature of things. But irrespective of the process of arriving at "fundamental reality", it enables us to use a logical apparatus dormant in mind. This new logical apparatus conforms to the reality that we are about to see. On the other hand, empowerment of mind by arousing new logical tools to the thinking process means none other than understanding "fundamental reality" itself. In fact dialectical logic is nothing new to the human mind. Humans are endowed with this facility but craving for physicality suppresses this natural ability.

Problem of alienation

When we go from intermediate world of physical reality to either the microscopic world of quantum physics or the macroscopic world of astrophysics, we go through a qualitative change. We enter the fundamental reality where logic and analytical tools based on sense experience of ordinary reality is no longer valid. We cannot extend our sense experience using physical instruments beyond a certain point where physicality of the intermediate world ceases to exist. A new frame of reference is necessary in a fundamental reality where impermanence, identity and inter-relations have overcome physical identity. Not only Buddha and Marx but also great scientists such as Robert Oppenheimer appealed for such an approach for resolving this problem. Buddha approached fundamental reality going beyond common sense experience in the field of human existence and psychology. Logical tools used are discussed in Buddhism in relation to this approach. Buddha used several symbolic devices to explain dialectic logic. On the other hand Marx approached fundamental reality in the field of social science, history and political economy. Marx following Hegel introduced this new logical set up as a set of laws valid in such reality. So far no serious attempt is made to put dialectical laws into a convenient symbolic form, acceptable to the scientific community. However, absorbing dialectics and arriving at an identity with fundamental reality is not so much a problem of learning and conceptual clarity. Both Buddha and Marx agreed that overcoming alienation of mind which blocks the mind from seeing fundamental reality is a must. This cannot be done entirely through intelligence and formal logical analysis. One has to make a conquest in the unconscious and come out of alienation.

Crisis in science is now over 50 years old. But it has not affected the ruling classes who are increasingly moving away from philosophy. Last few decades are completely empty of any substantial philosophical discussion. Formal empirical framework is firmly fitted into the system by the needs of the Western industrial technological set up. Only those who are breaking away from this system can show any interest in a counter philosophy. The fall of Russia has removed the false picture maintained by the bureaucracy on dialectical materialism. All discussions on the Buddhist version of fundamental reality can only improve and expand the free development of the international movement of working people, the proletariat. June 1997

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Buddhism, Science and Dialectics

***A response to the comments made by Michael A Lebowitz,
GA. Cohen, Patric A.Heelan, Anthony Favale and others to the
article Buddhism, Science and Dialectics***

We are struggling to understand reality. "We" means the human in the collective sense. As such understanding reality is a collective job. Humans communicate and come to consensus, agreements and give consent. This has become the basis of our common sense understanding of reality. Common sense is the beginning of human understanding. Language is the medium of common sense. After a long historic discussion, we have given a new name for common sense - that is logical empiricism. Of course, logical empiricism is the pure form of common sense; in that we have identified the ordinary method of human investigation and understanding of reality. Human understanding start with information received. We have to depend on our senses for our information. The brain does the processing. Hence we can say there are six senses or organs involved in the process of cognition. Common sense tells us that reality exists outside of human understanding. That is, whether we are there or not reality exists. For, so many human generations we have lived and changed this outside reality. There is ample evidence for that. Hence we live in a reality in which we are a part. Also we can both collectively or individually act and change this reality. We have developed science and technology and quite capable of extensive changes in the immediate physical world.

This physical world of common sense understanding depends on identifying entities of a small number of different kinds. One can build simple structures to depict the reality, out of these units. There are causal laws that govern this process. Hence there is a limit to the development of such structures. These structures are of discrete different kinds. But these simple structures can create complete events as time develops. However, there are certain events which can be expected. Hence assuming that world is as it is, certain inferences are possible. . Thus common sense and logical empiricism both depend on discrete nature of things in the ordinary reality. Units, things, kinds, structures, events are all discrete. Changes, movements and events can be broken in to variation of structures. The process of understanding of information received will be the application of $A = A$ to sort out data. Thus empirical data is ordered by logical device for recognition. This is what happens within the human cognitive system, consisting of five senses and the brain. Logic is the recognition of discrete nature of things but has no other knowledge within. In this context, it is only an instrument for reorganizing empirical information received.

We say "in this context" to mean the domain of physical world of common sense. Within that $A = A$ is a universal truth. It is at the root of our language and common usage. $A = A$ rule alone adds nothing to our knowledge though we are assumed to be in a world of discrete things. This is so in the common sense reality. Here we take reality to consist of things. Whether things are objects or events, all data can be put in the form of receipts from discrete things. In that situation a statement of the form either "'p' is true or p is not true" will be valid. Because, in a discrete set up 'A' and 'not A' are distinct; and this is the very basis of understanding reality. Without discreteness, there is no common sense. In other words the logic of common sense is based on the scheme of enduring and recurring individual objects. Such logical thinking could be a part of the intrinsic principles of mind.

Common sense makes one aware of change of things or of structures. Also, motion is associated with entities or objects. But motion without such recognizable substance arises when we discuss heat, electricity. Here, there is motion which give rise to a physically identifiable form or physical change. Empirical knowledge can accept such evidence and also the theoretical explanation given on the basis of electrons and other particles whose existence can be questioned. But human thinking and consciousness cannot be separated from human beings and their physical existence. All these theories exist only within human consciousness. Hence it is not possible for a logical empiricist to accept that human thinking can exist without humans; or, for that matter, any thinking without a physical being. Hence, reason existing as a spirit or as a formless god is not acceptable to a logical empiricist. Logical empiricist is really, in the old Marxist sense, a formal materialist.

Buddha, as a recluse, before 'understanding impermanence', rejected the existence of supernatural beings on the basis of empiricism. He went to places claimed to exhibit supernatural phenomena. By

logical empirical method he exposed the fallacy of such belief. Hence before 'enlightenment' or becoming Buddha, Saman Gothama was a logical empiricist, or a formal materialist. While accepting logical empiricism as one way of understanding reality, it is natural to question whether it is the totality of human reason or understanding of reality. Reality, broken in to discrete things, is the approach of logical positivism, the modern version of logical empiricism. It is connected to the natural endowments of the brain, in its simplest analytic form. This is the simplest, as it is more primitive than the endowment of language ability. In fact Norm Chomsky says, quoting Monod "that there can be no doubt that animals are capable of classifying objects and relations according to abstract categories, especially geometric categories such as triangle and circle. To some extent experimental work has even identified the neural basis for such analysis. This work suggests that there is a primitive, neurologically given analytic system which may degenerate if not stimulated at an appropriate critical period, but which otherwise provides a specific interpretation of experience varying with the organism to some extent". While humans have developed this ability to a very high level, it alone cannot explain the cognitive capacity of humans.

Rejecting logical empiricist, Nelson Goodman's "image of a mind, initially unconstrained, striking out freely in arbitrary direction", Norm Chomsky says "Russell was correct in titling his study of 'Human knowledge: Its scope and limits'. The principles of mind provide the scope as well as the limits of human creativity. Without such principles, scientific understanding and creative acts would not be possible. If all hypotheses are initially on a par, then no scientific understanding can possibly be achieved, since there will be no way to select among the vast array of theories compatible with our limited evidence, and by hypothesis, equally accessible to the mind. One who abandons all forms, conditions and constraints, and merely acts as in some random and entirely willful manner is surely not engaged in artistic creation, whatever else he may be doing. 'The spirit of poetry, like all living powers, must of necessity circumscribe itself by rules', Coleridge wrote, perhaps 'under laws of its own origination' If as Russell frequently expressed it, man's "true life" consists 'in arts and thought and love, in the creation and contemplation of beauty and in the scientific understanding of the world', if this is 'the true glory of man' then it is the intrinsic principles of mind that should be the object of our awe and if possible our inquiry". (Problems of knowledge and freedom).

Formal logical framework is not enough, for the mind to go into a complicated selection process. What is the other intrinsic principle of Mind? In explaining the development of scientific theory Thomas Kuhn says: "Before it (transition) occurs, a number of schools compete for the domination of a given field. Afterwards in the wake of some notable scientific achievements, the number of schools is greatly reduced, ordinarily to one, and a more efficient mode of scientific practice begins. The latter is generally esoteric and oriented to puzzle solving, as the work of group can be only when its members take the foundations of their field for granted". He further explains "to the extent the book portrays scientific development as a succession of tradition bound periods punctuated by non-cumulative breaks; these are undoubtedly of wide applicability. But they should be, for they are borrowed from other fields. Historians of literature, of music, of the arts, of political development, and of many other human activities have long described their subjects in the same way. Periodisation in terms of revolutionary breaks in style, taste, and institutional structures have been among their standard tools". Kuhn further claims "scientific development is, like biological, a unidirectional and irreversible process. Later scientific theories are better than earlier ones for solving puzzles in the often quite different environments to which they are applied". However, he says that "in some important respects, though by no means in all, Einstein's general theory of relativity is closer to Aristotle's than either of them is to Newton's"

From these readings one can conclude that what Kuhn reiterates is the existence of a very general law of development or change. He has used it to the specific field of scientific theory or history of science. But as indicated, it is not an empirical law discovered by him, but something used either

consciously or not by theoreticians of many other fields. In fact application is so universal, that it becomes the universal law of development. Let us put it in a diagram form, in three columns.

Beginning	paradigm in science	society
Continuous change	normal practice of science	maturing society
Conflict	anomalies and contradictions	social conflicts
Explosive change	radical change	revolution
New beginning	new paradigm	new society

this means that there are two ways of looking at the reality. Firstly as essentially permanent entities in a limited time scale, secondly as an impermanent complex that arises and collapses. While formal logic is the instrument of understanding physical reality, as it immediately confronts humans, the reality as a changing and transforming complex can be understood only by using a different set of rules or different logical instrument. In our first encounter with reality we use common sense. Thus we deal with the reality as composed of discrete things. Instead, in the second encounter, now we deal with changes or motion. We further consider things as arising out of change or motion. In other word, motion becomes primary while discrete things become secondary. Main attribute of change is expressed by the rule: birth → contradiction → negation → new birth. Growth leads to contradiction between the normal and anomalies. In turn Contradiction leads to negation or to a revolutionary jump. Following Hegel, Marx put forward the same law for development using different words. Thesis gives rise to the contradiction between thesis and anti-thesis and then this in turn gives rise to synthesis.

Philosophers since the Buddha have maintained this dialectical law of development is for both the objective and the subjective. That means the same law that applies to development in objective reality gets rooted in development of concepts as well. Humans are capable of this higher form of thinking compared to other animals that are only capable of formal logical thinking at the elementary level. Only humans are capable of dialectical reasoning in addition to formal logical analysis. This view is reinforced by the findings in the application of Hermeneutics. Patrick A Heelan, William A Gaston professor of philosophy, says: "This describes a tradition of scholarship oriented towards the 'space' of shared and transmitted meanings within the context of social, historical life world, its characteristic method being that of the so-called hermeneneutical circle (or spiral) with multiple foci.:

- I. On the discovery, articulation, and fulfillment of meaning in the life world
2. On the historical transmission of meaning,
3. On the transformation of meaning under historical conditions of transmission"

Though this scheme is for the development of a concept it has wide application. In fact, it is claimed Kuhn's scheme has come out of hermeneutic thinking. "In recent years, however, scholars have begun to use both hermeneutic and social science methods to study the actual and historical profiles of activity of communities of scientific researchers. One outcome was the strong claim that the march of science was not continuous but rather characterized by abrupt theoretical discontinuities or (what T. S. Kuhn called) 'scientific revolutions'. Similar discontinuities were shown to exist even among co-existing explanatory theories. (Kuhn 70,77Fleck35.79; Crombie 94)" (Heelan)

Another clear evidence for the law of development is found in the theory of punctuated equilibrium put forward by Stephan Gould as a new theory of evolution. According to this theory there are no

'missing links' or historical forms between species. Instead of changing gradually, as one generation shades into the next, the evolution proceeds in discrete jumps or leaps.

All this thinking can be summed up by the statement that all developments and movements, irrespective of the field, both objective and subjective, follow a law of thesis, antithesis and synthesis, or birth, maturity and death (new-birth). In other words, development in reality is neither planned by some metaphysical reason nor anarchic, but governed by a law of development. $A = A$ is valid for a moment, or for a Newtonian space where things are stationary in an inertial frame of reference. But the real space is changing and impermanent, with change governed by a simple law of development. This is why prediction on the basis of induction and probability is such a poor performer. Probability assumes a space which is not changing or where change is not a jump. In fact $A=A$ is also a probability statement where probability is one. Because as Hans Reichenbach says. "The only point where non-analytic principle intervenes is the ascertainment of a degree of probability by means of an inductive inference. We find a certain relative frequency for a series of observed events and assume that the same frequency will hold approximately for further continuation of the series - that is the only synthetic principle on which the application of the calculus of probability is based".

Further, he says "All our Knowledge is posits; so, our most general knowledge, that of the existence of the physical world and of us human beings within it is a posit." When empiricism takes such an open stand, it is difficult to explain how $A = A$ could be a sacred tautology. After all for an empiricist $A = A$ has validity only if it can be used in the physical world. Then it becomes a posit, unless one assumes the world to be Newtonian in some fundamental way. That is the world is a space without jumps and twists, or the time scale is very regular.

However, he asserts. "The experiences offered by atomic phenomena make it necessary to abandon the idea of a corporeal substance and require a revision of the form of the description by means of which we portray physical reality. With the corporeal substance goes the two-valued character of language, and even the fundamentals of logic are shown to be the product of an adaptation to the simple environment into which human beings are born." This could be interpreted to mean that logical empiricist outlook is only valid for the ordinary physical world to which we are born. This is, of course, perfectly true. Ordinary physical world does not propose jumps or explosions. Instead, it posits continuous existence of discrete entities and their opposites. But this physical world of logical empiricist terminates as we move on to Atomic physics or to Astrophysics. Also, whenever we study historical development of phenomena we have to abandon "empty logical relations" of the type $A=A$, and look for other forms of logical relations. The fact that $A=A$ breaks down when we move out of the Middle world shows that laws of formal logic are not 'empty logical relations' but products of "simple environment" of ordinary physical reality.

What is the fundamental law of reality; in a reality without substance, but with jumps, twists and development? Buddha and Marx, who were for logical empiricism as an instrument for common analysis, proposed dialectical law of thesis, antithesis and synthesis as the universal law of development (law of impermanence). Both claimed this law is as empirical or not, as the rule $A=A$ for the ordinary physical reality. Thinking of hermeneutics, Kuhn, and many thinkers in social science agrees with this.

If A represents a thing or a concept in development,

-> Δ represents a jump in the development,

A' the negation of A (a new becoming), and (A) is rebirth of A,

Then the law of impermanence in symbolic form becomes:

$A \dashrightarrow (A/A') \rightarrow A' \dashrightarrow (A'/A) \rightarrow [A]$

Acceptance of dialectical law for development does not mean rejection of logical empiricism on behalf of a divine holistic view! Buddha showed “Beda” (reductionist or analytic method) and “Sangha” (holistic or synthesis method) both should be combined for a proper method of investigation.

Buddha explained that dialectical law of change can either be considered as

(*uppada*) birth --- (*vaya*) maturity/dissipation \rightarrow (*thitassa annathatta*) negation,

or else as,

(*uppada*) birth or beginning---(*thiti*) maintenance or subsistence \rightarrow (*bhanga*) death/dissolution.

He also claimed this law repeats to create spiral of development. This is the same as negation of negation of Marx’s dialectics.

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