

PSYCHE AND SOCIETY

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Editorial

Inauguration of Pavlov Bhawan

On the 27th of February, 2010 one permanent structure of Pavlov Institute was inaugurated at 6 J Sodepur Road, Haridevpore, Kolkata - 700082, three kilometers from Tollygunge Metro Station. In this occasion I on behalf my co-workers extend heartiest congratulation to all those who have attended the function in spite of their various personal inconveniences. We welcome to those who were not able to attend the function. However you are requested to visit your institution, because this is a matter of great pleasure to us. Dr. Dhirendranath Ganguly, founder of our institution wanted to have a permanent structure and mailing address. Dhirendranath dreamt a dream to establish Pavlov in Bengal as well as in India. His students and well-wishers made his dream successful. In the year 1985, when Gobra Mental Hospital was christened in the name of 'Pavlov Hospital', Dhirendranath commented that in Kolkata the name of Pavlov found a permanent space.

I like to remind you that in Soviet Russia after Bolshevik Revolution, in 1921 the great leader Lenin constituted one Commission under the leadership of famous litterateur Maxim Gorky perceiving the importance of neuro-physiological research of Pavlov and according to the report of the Commission the state co-operation was extended to Pavlov imposing a decree. Interested readers may consult the 36th volume of Lenin's *Collected Works*, published by Progress Publishers, Moscow, for details.

Primarily due to this unique state support given by the Bolsheviks Pavlov did not look back for his modern research on neuro-physiology and discovered his epoch making theory of conditioned reflexes. Dhirendranath did not get any support for his Institute from this state. Even the allocated Government advertisement in our periodical *Manabmon* has been stopped for many years.

However our Pavlov Institute is now sixty years old and its organ *Manabmon* will commemorate its diamond jubilee in the next year. Although it is true that we have not grown sufficiently to carry out according to the expectation of Dhirendranath to provide various services from this institute.

With the inauguration of 'Pavlov Bhawan', we get the opportunity to accomplish those unfinished works of Dhirendranath.

The works which we have desired to accomplish are as follows -

1. To build an infrastructure for continuous study, reasearch and analysis among scholars regarding normal mental health, its abnormality, its classification etc. and to provide regular clinical services for psychiatric patients in short term and long term basis.
2. To do comparative study through survey in specific urban and rural areas regarding epidemiology of psychiatric morbidity.
3. To provide training facilities on various aspects of mental health.
4. To publish regularly books and journals on mental health.
5. To arrange workshop, seminar, group discussion for creating necessary consciousness on mental health among the general people and interested persons.
6. To document the history of psychology and psychiatry.

7. To keep close contact and to work in collaboration specially with those who are working with any wing of mental health so that we can strengthen the system of providing services to the most vulneral and marginal section of the society.

8. To write text books on psychology and psychiatry and a dictionary from English to Bengali.

We want to develop all these works centering round Pavlov Bhawan though anybody can perceive that it is not possible to carry out these huge task without the direct and indirect passive support of all of us. Those who were with us and who are still with us and who will be joining with us in future are requested - please come, join with the cause so that we can build up a new heritage of scientific humanism and culture focussing the socio-economic problems relating to mental health movement and let us include in this movement the agenda to establish the human rights of these people who are suffering in silence. **P A S**

Hegel and Pavlov

Basudev Mukhopadhyay

"When it thus appeared that abstract metaphysical thinking was inadequate, it was felt that resource must be had to empirical psychology." (Hegel, *Shorter Logic*, # 37 Empiricism)

Introduction

Pavlov, perhaps heard the name of Hegel but we can make sure of it that he did not read anything of Hegel. We know Pavlov was a voracious reader but he did not indulge in any discussion regarding philosophy. He considered philosophical writings as something like arm-chair speculation and there was no room of this subject in his laboratory or reading room. He categorically ridiculed and discouraged such type of discussion among his students and research workers. We can confirm this statement from his authentic biographies. Yet ideologically Pavlov had carried the philosophical heritage of Hegel. Because in his great works named *Phenomenology* and *Logic* philosopher Hegel proposed that thought is the internal form of symbol or signal and language is the external form of this signal. Before Hegel no philosopher whatsoever has formulated such kind of dialectical relationship between thought and language with matter. In his *Logic* Hegel wrote, "The battle of Reason consist in this, to overcome the rigidity which the understanding has brought in." (tr. Wallace, p.67)

It is a well-known fact that to overcome Cartesian dualism regarding mind and matter and to save science from this dichotomy philosopher Kant left no stone unturned but failed at last. But Hegel is the first philosopher who had solved this problem at least in theoretical or philosophical plane. One can find it in the history of the evolutionary process of development in fragments in Hegel's *Phenomenology*. And in *Logic* we can find various objective propositions specially how the individual psyche transforms into collective psyche. On the otherhand Pavlov in his laboratory had experimented and proved all these theoretical propositions during his entire scientific life and career of fifty years.

If anybody makes a venture of reading Hegel's works along with observing the animal experiments of Pavlov then he would be astonished to find out how Pavlov is good enough to have a 'thought reading' of Hegel and had verified all Hegel's philosophical speculations at

his laboratory knowing nothing about Hegel.

Say for example the concepts of Hegel's 'immediacy' and 'mediation'. These two concepts of Hegel's trio-paradigm structure of philosophy is very important and considered as fundamentals. Now we can see how Pavlov handeled these two concepts in his laboratory experiments. If we deal the subject a bit elaborately then we see that Hegel in his philosophical structure of Individual-Particular-Universal tried to convince us, all external stimulus that act upon our sensation developing consciousness or creating *Gestalt* are of dual characters. On the one hand it acts quickly, immediately or directly upon our sensation without any mediation and on the otherhand it acts slowly taking time generally interacting through some sort of mediation. If we carefully consider the whole phenomena then we would find that here Pavlov's experimental findings of conditioned and unconditioned reflexes that is the theoretical and functional basis of his inference of two signalling systems are representing Hegel's philosophical concept of 'immediacy' and 'mediation'.

Just after birth we continue our existance and maintain the homeostasis of internal and external environments with the help of our inborn and innate reflexes. They are called unconditional reflexes and they are created by the stimulus that act on our sensations directly and immediately. These chains of unconditioned reflexes are generally called instincts. With the help of these unconditioned reflexes we learn and develop some sensory, flexible, signalling system in our cerebral cortex for recognising, comprehending external symbols even those are remotely significant or meaningful, throughout our life to adapt and adjust the subtle changes of our existing environment and act accordingly. These various external symbols develop the chain of temporary connections. These stimulus gradually become significant when meaningful unconditioned stimulus being associated with innumerable external events, so pairing with the neutral stimulus mediate to crystalize a separate signalling system which Pavlov called conditioned reflex. Considering this fact we can say, to maintain its existance every animal has to develop within itself a system to accept two type of necessary external mediation or measure, one short-term, one long-term.

Besides we know Pavlov discovers that human language is second signalling system. Regarding the experimental proof of this discovery we can remember the famous experiment where one unconditioned reflex develops to a conditioned reflex. When a stimulus of the electric charge of battery is given to a child he suddenly withdraws his fingers. Then he gradually develops this reflex to a sound of bell when it is simply associated with the electric charge. It has been seen that the child reacted to the sound, sight and even thought of the word 'bell'. Here the word 'bell' signifies, besides the sound of a bell, the shape of a bell and the function of a bell, and not only of this or that bell, but of all bells. It denotes a concept. Later Vygotsky, the student of Pavlov, stated his epoch-breaking theories like 'associative complex', 'creation of artefacts mediated by collaborative activities' in developmental psychology showing the Hegelian dialectical relationship of thought and language. Considering this we can say Hegel is one of the founders or fore-fathers of scientific psychology which is being firmly established in human civilization through rigorous experiments and studies done by Hegel's 'follower' Sechenov, Pavlov and Vygotsky.

In this reference we can quote Lenin in one of his 1894 writings, " He, the scientific psychologist, has discarded all philosophical theories of the soul and has set about making a direct study of the material substratum of psychical phenomena - the nervous process - and

has given, let us say, an analysis and explanation of such and such psychological processes." (*What the Friends of the People are and How They Fight the Social Democrats*, Moscow, 1951, p.28)

It is needless to say that Pavlov did not dedicated long thirty years of his career experimenting higher nervous system of the animals and primates reading all these writings of Lenin. Because he had a strain relationship with the Bolsheviks. But that did not create any disturbance for his laboratory works. Because Lenin as the head of the State constituted a commission under the Chairmanship of Maxim Gorky and released fund for Pavlov's laboratory with unlimited resources. On the other hand traditionally Russia was ready to give birth of scientific psychology, since the stone of materialistic psychology and physiology was laid by great physiologist and teacher of Pavlov, Sechenov through his book *Reflexes of the Brain*. Mainly keeping his mind this great tradition of Russia in physiology Lenin wrote the above words and Pavlov was a staunch follower of this tradition of materialistic physiology and psychology.

Pavlov experimented in his laboratory regarding the facts of experimental psychology and established it gradually with innumerable facts. So much so that with these laboratory experiments he had changed himself radically. The fact that Lenin had throwned the challenge to the physiologist to develop the experimental psychology, as stated by Hegel, was being established by Pavlov in his laboratory. But It is to be kept in mind that at the begining Pavlov was very much reluctant to make any kind of discussion regarding psychology. In his laboratory Pavlov did not allow any student or researcher to indulge any discussion about psychology whether in lecture or writings. Because then psychology was not termed as 'science'. So Pavlov did not know once psychology would be established by himself as a subject of scientific study.

Gradually it had been seen that the innumerable experiments done by Pavlov based on his dog-technology with the help of the *Praktikants* (junior researchers), created so much problems that it urgently needed a solid enduring theory-law to analyse and synthesise all these facts. We have to remember in this regard that at a time throughout the year at least twenty researchers of Russia and from some foreign countries were engaged in their research activities in Pavlov's laboratory. No physiology laboratory of the world can boast of it. However here the point is, along these huge laboratory works Pavlov had changed himself a lot. Pavlov who had once rejected any discussion about psychology after experimenting many years stated, "I am an experimental psychologist."

Towards History

It can be said that for the last two thousand and five hundred years psychology was largely the province of the philosophers and theologians. From the early Greeks down to the threshold of the twentieth century it consisted primarily in speculation about the nature of the soul or mind and its relation to the body. Throughout the ages all the thinkers specially the great one gravitated on one side as materialists who held that mind was inseparable from and dependent on body. They are the Democritus and Epicurus, and the medical doctors, Hippocrates and Galen, to the materialists of the British, American and French revolutions, supported and elaborated this view. On the other side were the idealists, from Plato and St. Augustine to Bishop Berkeley who maintained not only that mind was separable from body but that in one form or another body was dependent on mind.

Toward the middle of the nineteenth century three new influences were brought to bear on the field which eventually led to the declaration of the independence of psychology from philosophy.

In the first place as the physics developed with regard to optics and sound led a number of German physiologists to investigate human eye and ear. In this way psychology and physiology of sensation and perception made significant development by the contributions of Weber, Helmholtz, Muller and others. Then it became customary to think psychology as an essential part of physiology.

In biology Darwin through his epoch-making discovery created evolutionary biology for psychology. From his theories we learn that psychology emerges from the human brain and it has developed from the lower form of animals. Even he speculated the evolution of human emotions. Here psychology was more closely related to biology than to philosophy.

Next under the influence of core science like physics, experimentalists Fechner and Wundt of Germany developed an experimental method for the first time in the year 1879, in their psychology laboratory. They specially experimented on 'apperception' which is a most important part of insight and consciousness of human being. Under their influence innumerable scientists throughout the world flocked to their laboratory to learn these experimental methods of psychology and subsequently they developed their own laboratory in their countries. So then everybody was convinced that psychology was more closely related to science than to philosophy. Hereafter psychology had no obligation to strengthen the belief as the special creation of the soul and life after death according to the necessity of philosophy and theology.

Even such a backward and poor country like us psychology has developed itself as an independent discipline in the college universities. Though there is no relationship with this psychology and Indian philosophy. Like other discipline of learning this psychology has been developed under the guidance and influence of Western knowledge and philosophy. Because as a global phenomena the process of individualisation is also active here and we are emulating West with the same objective to achieve the goal of modernisation in our society through industrialisation, urbanisation. But the point is if some discipline has to emerge with its own separate identity than it has to evolve with its own system of growth and development for a long period of time, not at the cost or mercy of others. But it was not possible for psychology as it had to depend on others specially on physiology, neurology, neuropathology etc.. The fathers and founders of psychology and psychiatry are physiologists and neurologists respectively.

So in the process of developing scientific psychology as an independent discipline one has to face two trends. On one side there is constant opposition of speculative and philosophic psychology to keep purity of the discipline. And on the other side the other disciplines like medicine, neurology, physiology are trying to engulf the whole discipline of psychology. In this state of pulling and dragging we come across innumerable theories and speculation regarding functioning of 'mind', 'consciousness' or 'psyche'. Naturally most of the theories are hypothesis and are not verified in the laboratory. We can say almost all these theories of mind are at best the vestige of philosophy and are metaphysical or metapsychology. They are the basis of innumerable school of psychology. But it would not be a wise decision to discard all these theories because they had developed after long continuing philosophical struggle and the process of analysis and synthesis.

If we carefully consider all these hypothesis of functioning of mind we would find that there is broadly two schools. One school proposes that the process of functioning of mind is with innate qualities and a method of introspection and another school proposes that it is fully controlled by the stimulus of external environment. In the twentieth century Freud represents the introspective school and the second school is represented by the behaviorist like Thorndike and Skinner. Though Pavlov is counted as a behaviorist but it is totally mistake. There is no relationship of Pavlov with the behavior theorists. However there is polarization to study the functioning of psyche by a sound methodology. Here each school represents one of the two possible definitive approaches to the study of the human mind - the objective, experimental method and subjective, introspective method. Pavlov stands for the first, Freud for the second. There are many intermeidate approaches espoused by one or another school, but the current and growing trend is toward and ever sharper polarization.

Hegelian Dialectics and Pavlov

Pavlov found that the classic physiological method of experimenting on anaesthetized animals was unsuitable for work on the complex problem of nerve regulaton. Anaesthesia had a distorting effect on the reflex actions of the nervous system. Pavlov succeeded in eliminating this and in taking first step toward his method of studying the functions of the intact organism under natural conditions. He did this by training the experimental dogs to lie on the operating table and calmly undergo without narcosis all the manipulations of an elaborate and lengthy experiment.

By this new method, Pavlov termed as chronic method, Pavlov was able to discover a number of important laws concerning the reflex regulation of the cardiac and vascular functions. From these discoveries he made a broad generalization to the effect that not only the blood vessels, but all organs contain specific sensitive nerve devices adapted to respond to mechanical, physical or chemical stimulants. From this he concluded that it is the nervous system that regulates and combines the varied activity of the organism into one unified whole.

These broad generalizations were by no means speculative, but were the result of almost fifteen years of exacting yet creative experimental work. They were firmly rooted in what Pavlov throughout his life liked to refer to as 'Mr. Fact'.

In the begining after joining in the Institute of Experimental Medicine in 1891 Pavlov did some classic experiments on the digestive glands which made him world famous. The old 'acute' or vivisectional type of experiment was not suitable for studying the intricate workings of the digestive glands. In overcoming this difficulty, Pavlov perfected his method of the chronic experiment, begun in his work on circulation.

This method was called 'chronic', meaning lasting a long time or continuously, in opposition to the 'acute' meaning short but critical, coming speedily to a crisis through drastic surgery (for example, the removal of organs for purposes of analysis). This latter method had played an important role in physiological research as long as the analysis of structure was the primay task. But when the function of an organ or system of organs was to be investigated, the drastic acute method was far crude and led to distortions of functions which made discovery of laws all but impossible.

The secret of the chronic method as employed by Pavlov was to treat the organism as a whole, thus making possible the investigation of the interrelation of organs. The technique

employed was the construction, through highly skilled surgery, of a fistula, an opening or a 'window'. This fistula would then allow the experimenter to observe the functioning of the gland or organ or system under controlled conditions but without interference with the normal, healthy functioning of the animal.

Pavlov accomplished this feat by masterful surgical technique and by instituting for the first time in history the kind of aseptic operative and post-operative care. On such healthy animals with fistula 'windows' in different parts of the digestive system, Pavlov carried forward his experiments to discover the facts and laws of digestion. This synthetic approach, the chronic method, made possible a much closer, and more detailed and all-sided study of the digestive glands as they function under normal life conditions without disturbing the integrity of the complex organism or its relation with the environment.

Here again we are not primarily concerned with the results of these experiments on the digestive glands. We are, however, deeply concerned with the innovation in method. For it was this method that was to make possible Pavlov's work with the conditioned reflex.

The process of studying the interconnections and interrelations and of treating the organism as a whole, together with its life conditions, is called synthesis, or the synthetical method. Synthesis is the putting together, the composition, the combination of parts or elements to form a whole. As such, it is the direct opposite of analysis. The two in their interconnection form the methodology of science, if it is to discover the laws of complex processes.

Pavlov was the first physiologist to employ both approaches systematically. The chronic experiment was the solution of the problem of synthesis in physiological investigation. He supplemented the analytical approach to the structure and functions of the organism with a synthetic one. In this way he created a dialectical method of study; that is, he combined the two opposite methods into one unified approach. It was this dialectical method which enabled Pavlov to study the organism in its integrity and in its unity with its environment.

In his study of blood circulation and of digestion, Pavlov was governed by a single idea: to investigate the nervous regulation of the activity of the organism. This idea or principle he called 'nervism'. "By nervism", Pavlov wrote, "I mean the tendency in physiology which tries to extend the influence of the nervous system on the greatest possible number of functions of the organism." In the begining Pavlov directed his experiments to know how the external stimulus influences the functional changes of the organism and he tried a quantitative analysis of these facts. Now the situation demands that he has to know the internal environment of the animal that its thought, emotion, will, feeling, judgement etc.. How this could be possible. So he had to labour and had to overcome the most difficult part of his scientific career. What he had done it was written in his book. Summarily we can say that to overcome this problem he left the easy conventional way. Generally in this situation we take it for granted that what we think or imagine, the animal also has the same experiences and we extrapolate our feelings on the experimental animal.

On the contrary he had choosen the most difficult path, to measure the response of external stimulus that thrust upon the animal. He had observed and measured this specific reactivity of the animals throughout the last thirty five years in his laboratory. On the other way we can say that Pavlov had rejected the conventional speculative terms and its subjective method such as 'introspection', 'self-analysis', 'inner psychical' etc.. Instead he started experiments with animal with some definite objective methodology so that he could overcome the

impasse on ever elusive treacherous 'psyche' in his laboratory. Though he was aware that to measure the activities of psyche was not his domain. Knowing fully well that he was going to experiment on the activities of 'spirit', 'soul', 'mind', 'psyche' etc. but not in the conventional methods. And in this case he had some advantage because his predecessor Sechenov had prepared the road of his experiments. Because Sechenov has written in his book that there is nothing separate subject like 'mind' or 'psyche', what we see as their activities are simply the functions of the brain. These statements of Sechenov that had been written in his 'Reflexes of the Brain' had created much uproar in his contemporary Russian society.

Now it is difficult for us to imagine what a revolutionary act Sechenov had done in his conservative Russian society. This book had been censored immediately after its publication. Though this book had helped a lot to the intellectual formation of scientist so that he could declare with much courage, he is not at all interested with 'psyche', instead he is doing research works with physiology of higher nervous system. As a physiologist he had every right to perform this kind of laboratory works.

Pavlov knew that psychology still was a subjective, speculative subject for discussion so it was impossible to do any laboratory works with its content. On the other hand Pavlov also was aware of this fact that the part with which he was engaged in research work was still a virgin and it needed a solid methodology to find out the exact data from higher nervous system functions. He had to create this method. Because brain is under cover of a solid skull and it is not possible to get reach of it while the animal is still alive. On the other hand the 'psychical function' is actually the highest form of activities of the nervous system. Then how could he reach there? However he had strict instructions to his students and junior researchers that in any pretext the discussion on 'psyche' would not be allowed in his laboratory. So his juniors were habituated to depend only on 'Mr.Fact' and nothing else regarding laboratory works.

In this context we can assume that Pavlov made his decision and took his stand solidly with natural science. Because The general scientific principles on which he based his choice of paths for the investigation of psychical phenomena was that there must be no assumptions from sources other than nature itself. He knew that if he had to establish his research works on higher nervous system as a part of core scientific activities then he had to develop and depend on such a pure objective methodology. He was confident that as he was abiding by the natural laws and accepting spatio-temporal incidents as his laboratory data so whatever color and quality 'psyche' might thrown upon his research organisation it had to surrender with the constant, fixed natural laws. As a scientist Pavlov was sure that whatever properties the psyche might possessed it must be controlled by the natural laws. So as a researcher what he had to do, to find out how the psyche is influencing the external stimulation and the animal by applying some subtle means is constantly adapting with its external environment. Alternatively it can be said that here Pavlov was chiefly engaged with the works of measuring the amount of interaction or interrelationship between psyche and nature.

Now broadly what is the philosophical significance of this type of laboratory works of Pavlov ? Primarily it can be said that here Pavlov deliberately rejecting all sorts of speculative rubbish of the idealists regarding 'soul' and creating the foundation of materialistic philosophy with the help of his research works. Here we call it 'materialistic philosophy' as because Pavlov's methodology is totally objective and anybody can repeat his experiment and would

get the same result anywhere, anytime. Here Pavlov was not speculating of some statement, on the contrary he was verifying some fact in his laboratory in a spatio-temporal context. He was establishing the fact that the activities of 'psyche' can be proved in the laboratory because all the functions of psyche are comprising of and abiding by some natural laws. Here we can remember in a lecture in honor of Thomas Huxley, the popularizer of Darwin, delivered in London in 1906, Pavlov tells the story of 'a young doctor', obviously a reference to Snarsky, who, though capable of appreciating the joys and triumphs of scientific investigation could not go along with an objective approach to the psyche.

"Great was my astonishment", Pavlov says, "when this loyal friend of science became profoundly disturbed on hearing our plans to investigate the psychical activity of the dog in that same laboratory and by the same means which we had been using for the solution of physiological questions. All of our arguments were ineffective; he prophesied and hoped for only failure." Why was Snarsky so opposed to this approach? Pavlov answers, "The cause of this, as far as we could understand, was his idea that the psychical life of man and that of the higher animals was so individual and exalted that it not only did lend itself to investigation, but would even be sullied by our rude physiological methods."

Pavlov continued, "We chose to maintain in our experiments with the so-called psychical phenomena a purely objective position. Above all, we endeavored to discipline our thoughts and our speech about these phenomena, and not to concern ourselves with the imaginary mental state of the animal; and we limited our task to exact observation and description of the effect on the secretion of the salivary glands of the object acting from a distance. ... This is natural science, the work of the human mind applied to nature, and the investigation of nature without any kind of assumption or explanation from sources other than nature itself. Were the investigator to speak of the psychical faculties of the higher animals, he would be transferring ideas from his inner world to nature, repeating the procedure of his predecessors who are accustomed, on observing nature, to apply to its inanimate phenomena their own thoughts, wishes, and sensations. The naturalist must consider one thing : what is the relation of this or that external world?"

We have to keep in mind that Pavlov did not change his attitude till his death. Ultimately according to his statement, he is an experimental psychologist. He is searching the objective relationship of 'psyche' with the animal's internal and external environment and he is certain that someday science would be capable to arrest psyche in the laboratory. He knew that then all the mysterious imaginations in relation to psyche would be vanished from our mind. However again we have to keep in mind that Pavlov did not develop in his mind this 'revolutionary' concept about psyche out of nothing. There were innumerable reasons that encouraged him to stick to his principle. The principle reason for this was the excellent environment of science-culture at that time in the Russian society and specially a good tradition of physiological research by some excellent predecessors of Pavlov namely Sechenov, Tsion, Metchnikof. This is the reason that at that time Europe was much more advanced in every field of scientific research works than Russia but it could not produce a Pavlov. Because in 1863 it was impossible to find out a physiologist named Sechenov who could write that, "All the human activities are produced due to the interaction of stimulation of external environment and brain. So the real cause of every human activity lies outside man."

Sechenov

The concept of 'reflex' as proposed by Sechenov is very simple but excellent. A reflex always has a three-phased structure: first the stimulation from the external (or internal) environment of the sense receptors (skin, eye, ear, nose etc.); second, the transmission to the spinal cord or to the brain where further connections and interconnections are made; and third, the transmission outward again, but this time not to the sense receptors but to the muscles and glands leading to activity.

In his scientific career Sechenov carried out experimental investigation of the nervous centres which inhibit reflex movements specially on frogs through vivisection in the Claude Bernad's laboratory. However according to Sechenov's hypothesis, some amount of energy or spirit is acting on our five senses of the body as external stimulation. We have seen that this hypothesis is not new, at that time from the famous experiments on sensation, perception it had been proved conclusively that external energy stimulates our nervous system in various form. However Sechenov postulate that all the immense diversity of psychical phenomena can and must be explained on the basis of the nervous system and the brain, and that there is no reason to presume that higher nervous activity proceeds in any other way than through the mechanism of the reflex arc which is the mode of operation of nervous processes generally.

According to Sechenov, " The brain is an organ of the spirit i.e., a mechanism which, when brought into activity by any kind of cause, produces as a final result that series of external phenomena which we characterize as psychical activity." This psychical world is so vast, its manifestations so varied, its complexities so intricate that, as Sechenov puts it, the task of finding a physiological basis "at first glance, appears to be impossible." But, he adds, "in reality it is not so, and for the following reason." The reason is that underlying all the endless diversity of psychical phenomena there is a single unifying feature. They are all expressed in muscular or glandular activity, whether in words, spoken or written, or in deeds. Sechenov further noted, "Under deed the popular mind conceives, without question, every external mechanical activity of man based exclusively on the use of muscles. And under word, as the educated reader will realize, is understood a certain combination of sounds produced in the larynx and the cavity of the mouth, again by means of muscular movements."

Sechenov postulated certain centres within the human brain the function of which were to augment or inhibit the third part or muscular, phase of the reflex arc. Emotions he accounted for in terms of an augmented muscular response, and thought by an inhibited muscular response. However in this way after elaborate discussion in his book *Reflexes of the Brain*, Sechenov concludes, " My chief task is to show that all acts of conscious and unconscious life are reflex from the point of view of their mechanism" and "to show the psychologists that it is possible to apply physiological knowledge to the phenomena of psychical life, and I believe that my aim has been partly attained."

That Sechenov and his work played a major role in Pavlov's decision is attested to by Pavlov himself: " And I take it that the most important motive for my decision, even though an unconscious one, arose out of the impression made upon me during my youth by the monograph of I. M. Sechenov, the father of Russian physiology, entitled *Reflexes of the Brain* and published in 1863 ... In this book, a brilliant attempt was made, altogether extraordinary for that time (of course, only theoretically, as a physiological outline), to represent our subjective world from the standpoint of pure physiology."

Vygotsky

In this context we must discuss some relevant part about the research works of Leo Vygotsky, a student of Pavlovian psychology. The Western experts called him 'Mozart of Psychology'. We know, Hegel tried to establish in his *Gestalt* philosophy (psychology) how external stimulus thrust upon our special senses and create conscious stream in our mind after infinite inter-actions. Hegel had made a theoretical proposition out of it and as if Vygotsky and his co-researchers such as Leontiev, Luria had proved it in their psychological laboratory and Pavlov had verified it in his physiological laboratory. Vygotsky had started a school with his co-workers for their research works. In this school Vygotsky, theorising his developmental psychology studied regarding two things such as firstly how an individual develops *Gestalt* with the mediation of tools, the artefacts, the collaborative activities and secondly the process of mediation and development of 'proximal zone' of a child or individual.

In this respect what Vygotsky and his co-workers proposed - an individual controls himself and his environment (with the cooperation of others), developing within himself the properties that he learns or acquired from his environment with the help of language as tools. In this way the individual develops an excellent interrelationship with his surrounding collective.

We gather some artefacts throughout our life since childhood with continuous interaction and mediating between our culture and lifestyle. After continuous usage of these artefacts, it transform and stored in our mind as tools inclusive language. According to Vygotsky, after gradually developing this capacity child and adolescents become self-reliant, independent and they can control themselves. They can handle the process of application of these artefacts. This stage or phase we call stage of maturity. We have to keep in mind that in the beginning of this process external stimulus (symbol/signal) guides and controls the child and gradually through practice he internalises these artefacts within himself. These internalised artifacts after necessary inclusion and exclusion process, gradually transform into 'tool'. As a result, since childhood through an informal and formal learning process, the child gradually advances to the age of mature adult through various phases.

Here the most important aspect which Vygotsky emphasising is, in this dialectical process of transformation into a new phase, matter and mind make an unity of opposites. They are mutually exclusives but they are inseparable. Because here mind transformed into matter in one stage as our creative imaginations are the basis of building any artefact. So here mind is not something mysterious or full of abstract pre-existing ideas. Mind is intimately related and an inseparable part of the body that is to be inquired by some materialistic methodology. Here again Vygotsky has given emphasis in the process of 'concept' formation since childhood. He shows that as the child starts to acquire language from his environment since then he gradually develops the independent process of 'concept' formation. His thought process matures gradually. According to Hegel the thought process of a child gradually transforms to a dialectical process of concept formation and the child develops to the stage of adolescent.

Role of Dialectical Process in Mind

Hegel in his concluding lines in 'Logic' writes the following statement, " The idea, in positing itself as absolute unity of the pure Notion and its reality and thus contracting itself into the immediacy of being, is the totality in this form - Nature."

According to Hegel 'Logic' is enmeshed in Nature in the intelligence level, not in perceptual

level i.e. in the movement and change of structure and function of nature there is no logic at the conscious level. We, by dint of our labour and through continuous study of nature, comprehend its spirit or essence at the conscious level. In this context it is necessary for classification to measure nature fully specially its quantity, quality and volume. Then we have to be certain how and in what amount this matter-nature reflected on our mind.

The problem is that nature is continuously going through some amount of change due to its inner conflicts, movements, opposition etc. of the existing matters. As it is going on, we however see these changes of these conflicts in some meaningful vestiges. These signs and symbols of nature are changes of external environment and conceptually they are formation of the signalling systems (conditioned and unconditioned) as proposed by Pavlov. Gradually it develops or associates dialectically into some complex changed phase from matter to mind and again from mind (as artefacts) to matter. These process towards concept formation is an interconnected chain so in any level it can be thwarted by some internal or external pressure and the necessary change from mind to matter or vice versa would not happen. Those who see the whole matter mechanically they cannot conceive the total process specially the part where mind transforms into matter so they would mechanically develop in their mind some grey, stubborn, fixed, authoritative ideas that would be very difficult to surpass.

The child learns language from his environment. Gradually through practice due to active participation and mediation by others in various social circumstances, the child cognitively comprehend the meaningfulness of the every parts of the language specially which part is representing what. Through his languageusage he can differentiate, classify, identify his immediate associated external world in the form of signal or symbols, so much so that he responds according to the demands of this environment either immediately, temporarily or after taking some time. Here language plays the role of mediation and tool. Sometimes these signals are difficult to comprehend because it seems to be hard, complex, as if linkless conditioned stimulus and as society advances situation demands from us to read this inter-related complexities.

It has been proved that a corresponding age is optimum to receive and conceive the meaningfulness of some sign or signals. As if the brain is prepared to receive this signal at this age or phase. If it does not develop to that level it is very difficult to progress for handling the higher form of symbols. Due to this reason many complex sign-symbols are not meaningful to the younger and we consider these associated symbols as 'missing link' in psychology. This part is very much important as far as Hegel's philosophy is concern. Because what Hegel discussed regarding concept formation is a dichotomous idealisation about 'actual' and 'real'. In this context if we want to solve this problem and want to develop some clear idea then primarily we have to associate these symbols with the material existence that surrounds us. Our childs also understand this problem and they handle it in their own way that everything is not true to fact. If it remained to be true than it have to be definitely associated or identified with the material world.

Pavlovian Psychology

The psychology which Pavlov established devoting his entire career had to make an incessant fight against all kinds of metapsychology. Even the reknowned neurophysiologist of England like Sherrington once made comment to Pavlov, "Your physiology would not be accepted by

the conservative society of Europe as it smacks materialism." Sherrington was an intimate friend of Pavlov. We can imagine how painful it is for a scientist to get such type of reciprocation for his research works produced by hard labour devoting his entire career. Yet Pavlov did not fall back from his objectives or research works. Pavlov understood it very well that the contemporary psychology is just metapsychology as it only deals with 'soul', 'spirit', 'introspection', 'speculation', 'subjective analysis', 'nature of god' etc. etc.. There is no scope of verification or experimentation of the objective findings of natural phenomena such as animal's nature.

Now we can make a look and consider that though Hegelian logic is a part metaphysical yet it wants to develop a structure based on objective reality. Other way we can say, Hegel's philosophy consider the growth and development of 'idea' depending on the whole aspect of material existence of nature and natural phenomena. Considering this it can be said Hegel's philosophy is not idealistic philosophy or speculative metaphysics. In this special 'metaphysics' Hegel discussed how an individual animal internalises the outward meaningful external stimulus as sign/symbol/signal and with the help of these signals it struggles for continuing its existence. Here man is considered as a continued part of animal but we have to keep it in mind that Darwin published his *Origin of Species* thirty years after Hegel's death!

However Pavlov was harping on the same string but more methodically, more scientifically, more objectively. His subject of study was how the external stimulus acting as conditioned stimulus though temporarily and the animal learns the signal from external environment so that it perpetuate its existence. Here Pavlovs' main research work was the interaction of the animal with its external environment. This tradition of quest had been developed by biologist Darwin. In this inquiry Pavlov discovered the role of conditioned stimulus on animal specially how they create the necessary neuronal pathway in animal psyche after proper conditioning and preference though temporarily. These created neuronal circuits and nervous system organisation since birth and throughout his life are the essential tools for the animal for its survival. So that the animal can gather the meaningful external stimulus as temporary conditioned reflex and read and act accordingly in any changed situation or circumstances of the external environment. Sechenov called these animal behavior or acquired nature as reflexes of the brain. Here we want to mean in the term 'reflex' is infinite temporary or permanent connections and developed neural pathways. Pavlov agreed with the proposal of Sechenev but he went one step further and said these reflexes were of two types one innate, permanent i.e. unconditional reflex and the another acquired, temporary conditional reflex.

Generally the conditional reflexes develop based on cerebral cortex. On the other hand the unconditional reflexes are generally permanent, innate, fixed and special neurophysiological activities and they develop based on lower cortex. They maintain the vital functions of the body such as respiration, heart rate, appetite, fear, thirst, reproductive behavior etc.. We have seen that after taking dry food there is much watery secretion by the salivary glands and if we take tough and hard food then there is much more mucinous secretion to make the food slippery. This kind of reactivity of the body is innate and this unconditional reflex develops when body directly come across to the actual or essential properties of food. On the other hand in conditioned reflexes the secondary properties of the matter such as colour, form, odour, sound are the actual signalling factors to the animal. Though there is no direct relationship with salivary secretion to these secondary properties. Yet these secondary properties of

the matter gradually make pairing or associated with the principle properties of food and become the representative or symbol of the principle properties and so become meaningful. After developing this pairing just seeing the utensil on which food has been served or just hearing the footstep of the person who serves food, there is salivary secretion. That is the animal learns the phenomena 'at a distance'.

In this way we can say what Pavlov's animal's psyche read the situation is actually the continuous analysis and synthesis of the stimuluses or signals of the external environment by the cerebral cortex. So our mental state or act, according to Pavlovian psychology, is the development of analysing and synthesising power of the cerebral cortex of the external signals since birth. Pavlov concluded that our cerebral cortex is infinitely powerful analyser and its chief duty is to analyse continuously the inward chain of conditioned reflexes, signals of secondary properties of meaningful matters (phenomena), that thrust upon our senses and to act accordingly befitting our culture. These analysis are crystallized and actually termed as judgement, intelligence, memory, consideration, emotional intelligence, concentration, motivation etc.. Say since birth our primary or fundamental mental process or learning is to classify the upcoming stimulus or signal. That is according to preference or meaningfulness we give importance to these infinite signals and we need mediation or collaborative assistance to read these signals.

These signals are not of same importance i. e. some are threatening or life threatening, some are joyful, some are pleasureable, some are depressing, some are necessary or essential for life. We have to learn, internalise or judge the signals and its circumstances. In this process of learning, 'language' is an important tool to us as it stored in our cerebral cortex. Because without language (here in broadest sense) it is impossible to analyse or synthesise these infinite numbers of complex, interrelated signals.

The ability of man to react to the environment in terms of abstractions, gave him far greater adaptability. So much greater was this adaptability, that it became an important aspect of the ability to adapt the environment to his needs. Pavlov called this system of conditioned reflexes to language "a second signal system." He called the speech function "a second system of signals" because words are the signals standing for the sensory signals which both animals and man receive from the external world. The sensory signals Pavlov called "a first system of signals."

Conclusion

We have to keep it mind, what Pavlov had done is materialistic because he had done it in a spatio-temporal condition. He had documented that in this date in this time this dog secreted this amount of saliva or gastric juice for this stimulus. This is an unique and novel condition for any scientist because it can be verified any where any time. And for this very reason Pavlov was considered and honoured as an laboratory scientist. He had shown in his experiments that a specific stimulus after creating a temporary neuronal pathway reaches the brain and later activated in a final common pathway centrifugally either stimulating the glands or the muscles for a purposive act. There is no speculation or introspection in this theory of conditioned reflexes. Thousand and thousand of experiments were done to falsify Pavlov in all over the countries of this world but it was proved doubtlessly that

Again we have to keep it in mind that in this way Pavlov did not proposed for any

mechanical mental process where the emotion, will, consciousness, thought process of an individual person did not get any importance. On the contrary Pavlov proposed we have to build a methodology applying his chronic method to analyse or synthesise or interactions of these highest form of human mental faculties.

For the construction of a thoroughly scientific and materialist psychology there are two absolutely essential guiding principles: one, that mental activity is a function of the brain; and two, that it is a reflection of objective reality. These two principles, in their philosophical form, have been primary elements in the Marxist world outlook, dialectical materialism, for a hundred years and more. Moreover, they are inherent in the materialism in science, and have been for some two thousand years. One is a basic premise of materialism, the other of the materialist theory of knowledge. The first holds that matter had always existed and that mind, spirit, consciousness is a late and derivative development depending on a certain organization of matter. The second maintains that human beings through their social practice, including labor and science, discover facts and laws which truly reflect the processes of the external world.

The two principles have been tested and proven throughout the history of the natural sciences, as well as in the theory and practice of Marxist social science. But one link has been missing in this scientific materialist view of the world and of man, the link that a genuine science of psychology, in close union with physiology, alone could supply. The link was the material apparatus, the mechanism, which could at once explain how nature produced and produces consciousness, and how consciousness reflects reality.

However, summarily we can say, Hegel discussed about a system of three levels of signal transfer i.e. individual/particular/universal and Pavlov had proved this in his laboratory. In the individual level in the function of lower cortex innate unconditional reflexes are formed and organised. Next in the particular level in the frontal cortex (except the prefrontal cortex), sensory signals are formed as primary signal system with innumerable conditioned reflexes. In the last stage at the universal level it is the function of the human language that acts as conditioned stimulus and organise the second signal system. This functional organisation in the prefrontal cortex is the important link to consciousness. Empowered with this infinite capacity of the prefrontal cortex we can create artefacts based on imagery and its dialectical relationship with the external environment, we can dreamt of a new world to march towards a better humane civilization. **P A S**

The Mind of the Aggressor and Society

Dr. Dhirendranath Gangopadhyay

Are aggressiveness, violence, opposition to one's own race natural or instinctual? Is there any centre in the cerebral cortex to control this aggressive behavior. Is our chromosome is the carrier of the gene producing violent behavior? Is it not true that man attacks his fellow men due to his self-preservation instinct? Or it is true that man inherit the aggressive behavior from his predecessors as an innate virtue?

Today this question is very significant as we the human species are facing a world, full of nuclear-warfare weapons with infinite destructive powers. One American scientist has raised the question - are the human species are in the same crisis, as were the prehistoric dinosaurs

who had a huge physical development and power but lacking proportionately the mental ability to adapt a complex external environment? With the help of the nuclear and biological-weapon we have increased our muscle-power immensely so that we can destroy this planet. But our cerebral cortex is not proportionately balanced with our physical ability. The dinosaurs had extended their kingdom for a long nine crore years in this earth but ultimately they were not able to cope with a changed situation and was wiped out from this planet. Are human species also waiting for the same fate? This psychologist is not so pessimist. He does not believe that due to this inherent nature of aggressiveness man is advancing towards self-destruction.¹

Pomp and pleasure, rage and violence, worries and miseries all these positive and negative emotions originated from human brain. Psychologists are now unanimous in this opinion. Scientists are successful in producing this kind of behavior, stimulating by some electrodes inserting on some particular areas of the brain. Let us now discuss the results of some of these experiments.

Reproduction and Aggressiveness

After doing experiments on rats, a group of researchers express their opinion that aggressiveness is an innate quality, not an acquired virtue. They select two groups of rats. They differentiate these groups based on rat's emotiveness. One of the groups, that are highly emotive was created after selective breeding and the other group is totally emotionless. Now some kind of fear reaction has been conditioned on this emotive group. Now one male rat of one group is kept for five minutes with the male rat of another group in the same cage. In this way some kind of cross mixing is done by keeping one emotive rat into the cage of another emotionless rat and vice versa. So one rat got the chance of encountering another rat of another group twice. Their aggressiveness were measured by Klein-Hall scale. This scale is spread from 0 to 8 digit.

0 Besides taking smell once or twice they remained indifferent to each other.

1 Besides taking smell strongly and deeply no other behavioral abnormality is detected.

2 Occasionally they are engaged in pushing and pulling each other.

3 Always they are trying to push each other and sometimes chase each other.

4 They are facing each other as if they are ready to fight and trying little clasping with each other.

5 They are severely attacking each other, repeatedly jumping, rolling and scuffling and tumultuous brawl.

6 Bloody fighting are going on, they are biting each other and there is blood-shedding.

After scoring according to the above scale, their aggressiveness is measured and it is observed that fifteen emotionless mice start attacking 326 times and the same number of emotive rat spontaneously start attacking only in 67 cases. The intensity of attack in the case of emotionless are double. Through this observation Hall-Kliene concluded that their aggressiveness are innate and genetic. (Hall C.S.J : *Comp. Psychology*, 1942, pp.33, p. 371-383).

Scot had came to similar inference after another different experiment. He did the experiment with three pure jusky mice. Leaving one unknown mouse in their cage he had observed and recorded their behavioral pattern. C57 black mouse of the first group welcomed the guest licking its body and mixing with it freely and it had no tendency in his behavior to attack the guest. A. Albino of the second group rather welcoming its guest, attacks it from the beginning.

After receiving the smell of the stranger the third group of C3H Agonti refuges in the corner of the cage with a sign of quick successive breathing. (Scott J.P. *J. of Heredity*, 1942: p. 33: pp. 11-15).

Ginsburg and Alee made the experiment with a group of pure mice in the Jackson laboratory. They had tried to record and ascertain the intensity of their attacking propensity. It was observed that there was difference regarding fighting capacity among these three groups of mice. Hospitable C57 black mice are considered to be the great fighter and were proved to be inferior to a great extent.

Even if the offspring of C57 black were brought up under the care of Albino mothers since their birth, the fighting spirit of those offspring would not subside. From this event the scientists conclude it doubtlessly that the innate difference is the main reason regarding aggressiveness and fighting spirit of the mice. Moreover, one researcher has observed examining the Maze Bright and Maze Dull mice that the capability to ascertain the technique to come out from the Maze depends greatly on the innate capacity. According to these researchers the impact of acquired knowledge from the environment is the secondary matter.

But till date we have not found any gene responsible for violent or aggressive behavior. Despite some genes responsible for some neuromuscular disorders we cannot find any such gene responsible for any behavioral or mental disorder. One experienced reproductionologist comments that psychogenetics is only capable to inquire of the special gene that are responsible for control of behavior of some of the structural organisation of the body. Because it seems that it is not possible for any gene to control directly any variety of mental state or overt behavior. The gene can only influence the structural pattern of the body that are responsible for and regulator of the personality type and behavior.²

In fact till date we have not collected adequate information so that we can say that this specific gene is responsible for this type of innate aggressive or violent behavior. This is true even for the lower animals. Though science cannot permit any kind of extrapolation of general laws based on experimental results found in animals to project it on human being. Human beings are heavily depends on social conditions and due to social adaptations in millions of years of infinite materials, many such subtle changes had occurred in their brains that lead them to reach the crest of the animal kingdom with some unique characteristics, not found in any other animals.

Standing erect on two legs, manufacturing machine-tools and inventing medicines, acquiring the capacity of using and maneuvering verbal and written languages i.e. second signalling system man has developed some unique power that is distinct and different from the lower animals. Even if we discover any gene responsible for violent or aggressive behavior, manifesting as nature of the lower animals yet we cannot extrapolate the same gene manifesting as nature of human being and equally responsible for the same aggressive, violent behavior. Though we do not deny that due to different types of higher nervous system organisation, man differs with each other from their personality characteristics, so that somebody is excitatory type and somebody is inhibitory type. Somebody has preponderance of first signalling system and somebody of second signalling type. So we differ in our character and personalities. But these differences can not be actualised without the influences of proper environment.

All powers of man - to walk, to talk, to reason, to imagine, to love, among others - are a combination of direct or indirect, of innate requisites and of social capacities to form the

universal level, together with a superstructure of advanced abilities rising on the universal basis to possible heights not yet within the range of human vision. So we can assume that if in someday we 'discover' some gene in some chromosome that is directly responsible for aggressive behavior, yet we cannot say with certainty that the person is aggressive due to that gene. Because for development and functional ability of that gene the person needs a favorable environment. If there is no incidence of violence or aggression in the society then that particular gene would be deleted subsequently after remaining dormant or non-expressed for few generations.

Aggression Proneness and Education System

This time I am giving opinion of another group of experts. They are educationist. They say one cannot control aggressive behavior only with the help of education or learning. They have done several experiments to verify this opinion. According to them an unsuccessful person only exhibit aggressiveness when he thinks that he can relieved his pain by this act of aggression towards others.³

It has been seen that human child and goat's child sometimes become aggressive and attack the competitor when they fail. But they try to avoid influential and powerful competitor. So in the opinion of these experts aggressive behavior is totally depend on the environmental circumstances and encouragement and to some extent it is controlled by the intelligence and judgement of the aggressor.

Is there any centre in brain for violent behavior

One American scientist Dr. Delgard expressed his opinion that if we insert electrode in some particular area of cortex of Chimpanze then we can change him to an aggressive animal. If we apply some current and stimulate some neurons through electrodes than the Chimpanze gets excited and it manifests violent behavior. Dr. Delgado with his 'stimo-receiver' machine has collected some peculiar data. This machine has the capacity to write the excitation and electrical stimulation process of the brain at a time at a distance directed by some radio-control system.

In Spain a bull can be challenged for fight waving a red colored cap in front it. When the bull became ready for fight with lowering its horns Delgado stoped the bull with his machine by pressing button. Though previously he has inserted some electrode into the brain of the bull. In the newspapers this news was published with quite prominently. Here Delgado assumes that there is some area deep in the temporal lobe from where violent behavior is produced. If there is any centre in brain then it is possible to control this centre so the behavior by stimulating or inhibiting it with the help of inserting electrode in that specific area. Certainly we can remain hopeful in this incident as because we can control the violent behavior with the help of some machine. But first of all we have to know, is there any centre of aggression in the brain? Is the violent behavior an innate property.

Other Experiments Regarding this Theory

Before discussing the experimental results of the researchers of Yale University we can describe in gist the opinion of the neo-Freudians like Horny on aggression. They admit that aggressive behavior is an innate virtue or mental quality of man. Though they also admit that this type of behavior is conditioned to the person's previous experiences of his living

environment. Regarding interhuman relationship, according to Horney, there is three major types. So we can classify man of these three types as flexible, violent and detached. The 'Flexible' type tries to mix with others freely and they are very much cooperative and eager to get others recognition. The violent type tries to establish himself by dominating others. They think, the strong type would attack, dominate and suppress the weak. Because this is the rule. And the third type is not at all concern for anything, they are detached type. They have the motto - 'Live and let live'. Their nature is to keep safe distance from others. Our society is the mixture of these three types of people. Our subject of discussion here is the second type i.e. violent, aggressive type. Some researchers of Yale University conduct some laboratory experiments among the monkeys classifying them according to their aggressiveness and violent behavior. When a group of monkeys stay together for some period they become divided according to their authoritative and organising capacity. Researcher observe such type of division among a group of eight monkeys. Among the eight monkeys of this group three were identified as aggressive and dutiful. They were named Dave, Jeck and Riva and subsequently they were levelled as leader, sub-leader (1) and sub-leader (2).

After six weeks Dave was operated upon his both temporal lobes and after recovery he was again taken to its original group. In the meantime the second monkey Jeck got the control of the group and after returning to its group Dave with its present personality and authority, failed to take control of its group. He could not override the power of Jeck and again Jeck was operated in the same manner after ten weeks. In the same way Jeck failed the group leadership after recovery from operation. So the researchers came to the conclusion that personalities of Dave and Jeck were changed after operation.

Preoperative assualtative and authoritative tendencies of both of them were vanished. Now they were transformed to docile creature. They had surrendered to the authority of the monkey on whom they had dominated on previous occasion. But there was a difference regarding the behavior of Dave and Jeck. Jeck did not surrender to the authority of Riva. Jeck tried for four days to keep the control of the group but ultimately failed to Riva. Riva dominated its *harem* for another sixteen weeks. Then he was again operated in the similar manner. In the hierarchy of this group next monkey was Harvy but he was not interested about the leadership because he was a docile type so did not challenged the leadership of Riva, so Riva remained the leader after operation.

Now we can come to more than one conclusion from this experiment. Firstly, the group of monkeys were divided according to their innate, instinctual dominating power at the centre of their temporal lobe. Secondly, after ablation of their so called aggressive centre of the temporal lobe the aggressive behavior of Dave and Jeck subsided and they lost their leadership quality. But as no monkeys except Riva desired the leadership so Riva continued his leadership in the same manner. Thirdly, the power of their aggressive instinct is not only confined or depend to the centre around temporal lobe. The habit of conducting aggressive and leadership behavior regularly help for positive reinforcement of this instinct. So Jeck, who has pre-operative experiences of giving leadership, was able to retain the leadership four more days even after ablation.

Riva had more experiences of aggressive behavior, attacking habit and dominating behavior. Was it the reason for his retaining the leadership even after operation? According to the experimentors, in the group of monkeys there was no other aggressive monkey who could

challenge the authority of Riva. So Riva's domination prevailed. There was no satisfactory answer why erstwhile leader Dave and sub-leader Jeck did not attack Riva. The experimentors did not place any fact or proof that Dave, Jeck and Riva was born with the nervous system, muscular system specially suited for this aggressive instinct.

Society and Aggressive Instinct

There is no definite scientific proof that if we remove the centre controlling the aggressive behavior from both the temporal lobes or inserting some electrodes to inhibit that specific area, as suggested by Delgado, one can transform somebody into a peaceful docile person. There is a harmful side of advertising this type of experimental result. Either the experimentors are intentionally doing that or they are not at all aware of this kind of advertisement.

If we draw attention to the temporal lobes of man regarding the inherent cruelty and violence of this imperialistic, capitalistic society then nobody would feel that there is an urgent need to change this society. The simple minded psychologists who did believe the Thanatology theory of Freud, believe that the suppressed unconscious desire of destructive instinct within us is the driving force for our warfare, violence and destructive behavior. We do not need to change our people, our society for its betterment. So the neo-Freudian formulate that we have to change the individual mind with the help of psychoanalysis.

Today's scientists are claiming that they can save the human species from their destructive behavior by changing them inserting electrodes into their brain. They have located the destructive and aggressive behavior centre at the human brain. The society-conservationist, those who want to maintain the 'status co' would highly acclaimed this theory of aggressive behavior, confined to human brain not the necessary change of the society. There is a group of people who could not find the origin of the problem of development and spread of this beastly instinct into the unequal distribution system of this capitalistic society. But those who support this theory that the illness is deep-rooted on the society, are also not totally aware of the whole situation.

So we heard many fiery speeches regarding the cruelty of capitalistic society, unhealthy competition and tremendous exploitation; but we do not hear a single word regarding the alienation of essence of man. They justify the class struggle as the aggressive attack of the exploiters on the downtrodden to conserve the hierarchical power-structure of the society. On the contrary they do not justify the act of retaliation of the exploited, with some cruel beastly act of violence, as a way of their protection. The interaction and complexity of the fact that our vanguard of revolution do not comprehend properly that the seed of destruction of humanity is embedded in this capitalistic society. While some progressives think the whole matter mechanically and they hope that after radical change of this capitalistic structure of this society, the human mind would transform to a new person automatically. And the sin of violence and cruelty would be vanished from this society and scientific humanism would be established.

As we know it is not possible to remove the aggressive behavior just only inserting some electrodes through the brain or prescribing some psychiatric medicines, so it is an one-sided view that after the removal of the system of private property or after socialistic revolution the cruelty or violence residing in the society would be vanished. We have to comprehend how in this 'surplus valued' society the violence and aggressive behavior have contaminated our

mind and it has a definite spread effect. Without knowing this fully well it is not possible for us to create scientific humanism in our society after socialistic revolution.

Social Environment and Mental Quality

We are presenting rubbish arguments for the last few thousand years regarding the effect of 'nature versus nurture' on human mind. In one side there is the persons who support the theory of 'internalism', where it is said that all our aggressive and violent behavior and the opposite novel behavior also are embedded in our nature. Plato thought that all our virtues are pre-existed, god-gifted and unchangeable. Aristotle thought mental qualities are based on the body structure, neuronal organisation. Though it is not god-gifted but they are innate and unchangeable in character. The idea of the 'innate nature' was accepted by our priests also. The theory of collective unconsciousness of Freud and Jung is the same innate theory only with some little modification. These idealist philosophers ultimately accepted to some extent of this brain-based theory of mind, as proposed by modern scientists like Delgado. Though they do not think that this innate mental endowment is unchangeable, yet their view are one-sided.

Opposite to this innate theory there is 'external environment-based theory'. Materialist like Democritus, Epicurus thought that every thing of man regarding his thought, language and aspiration were created by his external environment. The violent, aggressive society creates this violent, aggressive man. This environment highly influences the human mind.⁴ Through ages this theory has inspired the revolutionaries and accelerated their revolutionary works. One can find this sort of mechanical materialism in the works of our modern behaviorist, Watson.

As the 'innate endowment theory' inspired the reactionaries or conservatives and the 'external environment theory' supports the progressives or revolutionaries so we cannot infer that the later theory is more correct or true. At best it can be said that the vested interested persons can use these theories for their own selfish end. We have discussed it previously that the fierce arguments and struggle are still going on among the opposite groups. It is a fact that a huge number of people are constantly manifesting their aggressive behavior today and at a time a huge amount of weapons capable of destroying our society are also stock-piled.

The 'innate theorist' are not satisfied by considering this human nature of violent, aggressive behavior as eternal, traditional and unchangeable. It would be highly painful if we turn to be totally pessimist regarding the future of mankind. These two groups are trying with equal strength to determine something to change these men as humane with some simple easy formula. One group is saying that they could do it by electrical stimulation with inserting electrodes or brainwashing and the another group is confident that they can do it by radically transforming the social system. So much so that this self-destructive, violent behavior would be vanished and automatically new men would be created in a completely new society. There is a centrist group also, who wants to solve the problems of 'nature and nurture' dichotomy by a method of reconciliation. We can quote a statement of one psychologist regarding this matter.⁵ He says that we have only collected contradictory facts and engaged to solve the problem with the question in mind driving our conscience, whether the problem of aggression is just or unjust. But science has not advanced an inch. Murphy thinks⁶ that, gradually these two opposite forces would incorporate each other and this amalgamation would create a complete new theory.

The process of synthesising these two opposite forces into one grand theory may fetch respect but it is not scientific. Without the help of the method of dialectical materialism it is not possible to solve this dichotomy of organic versus social influence on human mind.

Dialectical Consideration

If we want to know the true explanation and significance of the experiments of the reproductive psychologists on rats and the researchers of Yale University then we have to think the dialectical relationship of the externalist and internalist theories. There are complex interactions of external environmental stimulus on innate qualities of human brain for growth and development of aggressive and violent behavior. It requires favorable environment for actualisation of innate endowment of our brain so that we can get the special and desired human growth and development. Apparently it seems to be a correct proposition but it has some amount of fallacy also.

We can give the example of learning to walk of a child. Human child within few months of its development tries to walk standing erectly on two legs. He cannot learn to walk if he is cared by some wolf after his birth. The social environment where others are walking on two legs is very important for the child to get incentive for walking i.e. standing on two legs. That is the congenial atmosphere. If walking is an internal quality then we do not require any congenial atmosphere and the child can walk while brought up by wolf. So we can not say that to walk is an internal quality. Rather we can say that the child has born with the system or organisation to walk i.e. bones, tendons, muscles, nerves, vestibular apparatus etc.. He has the potentiality to walk. If he is brought up in a favorable environment then he would actualise his potentiality to walk. This is true at least partially.

Because with all his potentialities he cannot actualise if he cannot given the opportunity to actualise his potentialities. So actually he is encouraged constantly to walk. All the family members one by one take the responsibility to teach him how to walk independently. If there is so complexity to develop such simple quality like to walk then we can imagine how immensely complex it is to develop the negative virtue of aggressive and violent behavior in our physical and mental state. So we can say the rats and chimpanzees would not develop the aggressive or violent behavior even if they have the innate quality.

Without disrespecting the reproductive psychologists we can say that the aggressive and violent behavior are to be learned from a specific environment. Further we can say the pure strain rats that exhibited aggressive behavior, definitely practiced violent behavior for few generations and they have learned that violent behavior since childhood from their environment. Primarily these behavior developed among them as conditioned reflex then after few generations it is transformed into unconditioned reflexes or as innate instincts. As it is seen that all types of rats are not aggressives so we can say that it requires a specific environment to develop this kind of behavioral qualities for self-preservation and species preservation.

The same conclusion we can draw regarding the development of centre of violent behaviors at the temporal lobes of the three monkeys. That is this sort of behavior were present among their ancestors or in their environment since childhood. After operation upon temporal lobes temporarily they were made calm and docile. But it would be kept in mind that after operation along the aggressive behavior they had also lost some good behavior. Though the researchers did not think it necessary to include it. How much influential are the social environment that

we have seen in repeated experiments among monkeys.

In the society of monkeys there are some rules and Dave and other monkeys must abide by those rules otherwise it would be impossible for them to continue their species. Human society is much more developed, organised, rule-abiding and its differentiation and classification are more innumerable and complicated. When Delgado applied electrically charged electrodes into the brain of the bull then it could provisionally restrain itself from aggressive behavior. But its aggressiveness were not vanished. It had been trained and conditioned to become aggressive and violent after seeing some red colored cloth. So in that situation he developed its violent behavior. In this capitalistic society there are special circumstances and situation where man can be transformed as inhuman. So it is not possible to transform aggressive men calm and quiet human being by only inserting some electrodes into their brain.

We have to change the society, change the training module. If researchers like Delgado are not conscious about the affair then it could be concluded that knowing fully well they are trying to maintain status quo situation of this inhuman, aggressive, violent society. And the mechanical materialists should keep it in mind that the attitude of aggressive behavior would not be vanished in one stroke after radical change of this society. This violent behavior of infinite cruelty and inhumanity of our people have developed in this class-divided, class conflict-ridden society, perpetuating for the last few thousand years. So we have to perform in psychology innumerable new experiments and training with new people that how can we eradicate this social malady.⁷

The leaders of the political organisations would specially keep in mind that senseless violence and aggression, reckless indiscriminate behavior of the vanguard in pre-revolutionary period or thinking it essential for the narrow objective or gain of our social movements, actually mean it would nonetheless hinder and obstruct the path of revolution.

Alienation and Aggression

It is inevitable that we would discuss about Marx's theory of alienation in context to aggressive attitude of man towards man. 'Man is alienated from his species being' - this alienation is of individual person from his species. We can quote one interpreter regarding the explanation of this matter.⁸

Beastly and aggressive behavior is embedded in the process of alienation of human being from its species.⁹

What is actual human nature? Man is not the replica of beast. It is not some abstract morality or ethics just standing at the opposite of beast. To define human nature the philosophers and ethicist referred man as a compilation of some opposite virtues like self-centredness, selfishness, egoistic, narrow-mindedness etc. etc.. But actually man is not either good or bad, either altruistic or selfish by nature.¹⁰ But he can mediate himself and accordingly change himself. According to circumstances man can act like god or it can act like beast. If we can think in this way we would find that presence of various conflicting virtues in our mind is a reality not a fantasy. Though we have to admit that there is no centre of humaneness or beastly attitude in our brain.

Man is a product of this nature, he is like an animal, conditioned and confined. Human nature has tremendous potentialities to deliver some good for himself and for mankind but that necessitates an exact external environment and circumstances where he can actualise him-

self. Our mental attitude develops, conditioned through continuous interaction with internal and external environment comprising of innumerable conflicts and learning. Again we should keep in mind that though man has developed from nature but man is not just nature, he is more than that. He is social and human. He can consciously and voluntarily act for his advancement. Self-transcendence is human virtue.¹²

"Conscious self-transcending act" - Marx used this word to denote some special meaning. According to interpreter Meszaros's explanation, no human emotion is innate and internal virtue of the human being. No human virtue is innate human nature, everything are acquired.¹³ According to Marx aggressiveness or violence are not in the human nature. All these are acquired by the historical and social interaction and conflict of the external environment. So all the good virtues like self-transcendence are also acquired by self mediation.

Now we have to discuss in which phase of history and in what social circumstances man has acquired this aggressive nature.

In this capitalistic system of society, status of man is quite grim and helpless as he is alienated from his own labour and product. In every issue he takes a position of self-contradiction. That is his behavior is totally unpredictable. He valued everything in terms of money. We cannot judge a man only by his individual characteristics and virtues. Money can change and transform everything, every good or evil, upside down. According to Pavlovian psychology we can say that in this capitalistic society our mental state is always in an ultraparadoxical phase. We are always in a restless condition, in a condition of chronic anxiety state. When a man suffers from self-alienation, all his normal biological activities like thirst, appetite, fear, sex etc. to maintain his survival become mechanical and abnormal. Only the organic activities persist as some mechanical acts but he remains detached and inactive from other initiatives.

Due to this ultraparadoxical phase all human activities seem to be as some beastly act and vice versa. According to Marx, "What is animal becomes human and what is human becomes animal." Beastly instinct like violence and aggressiveness seem to be the human virtues. So man is regularly engaged in unnecessary, random beastly activities without any repentance or conflict of conscience. It is not that man suffers for this situation only due to his alienation from labour. According to Marx profit-maximised owners of this capital-production-machineries do also suffer from this distressed alienated condition. It should be kept in mind that alienation is an active, dynamic process so it has the potentiality to change itself in anytime in any odd situation. Not only we are alienated from our self but we can realise this alienation in our psyche. So much so that we can take sufficient initiative to overcome this distressed situation. Those who think that the condition of the society is unchangeable they only think that this alienation is an 'inert totality'.

In this society one group of people is very much active with their violent and aggressive behavior so there is also a group of people who are quite conscious and alert of their beastly behavior and they are always trying and searching how to get rid of this inhuman behavior. It is a fact that only by some mechanical act like inserting electrodes into the temporal lobes or preaching religious and moral sermons or some routine human rights classes would not be sufficient enough to remove these 'aggressive nature' of us. Again it is also not true, as the revolutionaries or the mechanical materialists think, that after removal of this capitalistic society or social structure of private property automatically this alienation would be vanished

and humanism would be establishment. Although abolition of private property relationship of the society and establishment of socialism are the two primary and fundamental requisite for the advancement towards scientific humanism. In socialism there is opportunity to eradicate the source of the old conflict-laden state structure, that is creating hindrance for advancement to a better society. But to achieve this we require new socialist man and we have to fight it out constantly these state-controlled bureaucratic institutions that are the bastions of all kind of inhuman learning and training.

Only necessary change of the social structure is not sufficient, the primary condition of creating new man is to remove his alienation and undoing and providing him emancipation from all these vices. Identity with the self and integrity with the species activities would not be possible for us without the fierce contradiction with the complex internal and external existing conditions. To create and develop moral values, humanism, ethics in a person is a process of continuous interaction, a two-way traffic. The process of internalisation is to receive and assimilate the resources from the society and after proper internalisation we can return that ethics, humanism and morality to our society, that is externalisation. Again we internalise this higher form of externalised product and in this way a continuous process of internalisation and externalisation is active within us. And in this way we renew our status and also our social system and productive relations.

In this respect we should keep in mind that the process of 'self-mediation' as described by Marx. Without 'self-mediation', self-transcendence is impossible. To determine the relation between individual and society Marx comments, it is necessary to develop one's personality to remove his burden of alienation. It is not necessary to banish the individual personality of a man in socialism. On the contrary there person's individuality would be highly characteristic flashing and renewed greatness with infinite potentialities of human endowment in the new society. There would be the possibility for full actualisation of an individual in the socialism. It is not mere agglomeration of the individuals in the process of eradication of aggressive and violent behavior or alienation. The individual would be fully integrated with the collective. When strong collective man would emerge from the individual then the load of alienation would be automatically subside, humanism would be established. According to Marx, "Alienation is transcended only if the individuals reproduce themselves, but as social individuals." In capitalistic society man is fragmented, lonely and alienated, again in a collective bureaucratic society man is not only totally alienated from the society but he is deprived of full actualisation. Only in true socialist society we can expect that an individual would get the opportunity for his full actualisation and socialisation and on a genuine road to reach scientific humanism.

Summary

In this article we have discussed the matter very briefly. So many things we have not touched as it is not possible in this space. It is true that we have seen such beastly instincts as violence, aggressiveness, attacking attitude etc. among individuals in various special circumstances. Attacking attitude is not by the way natural of any individual but self-defence is natural. Sometimes individuals become violent in self-defence. Individual party, community or nation may engaged itself in mass violence for some ulterior motive. It is possible that some persons inspired by some ideology or to spread his party ideology may indulge in aggressive behaviors. Sometimes aggressive behavior might be considered as a stab by a scalpel of a

surgeon to cure a malignant growth. For greater causes or welfare for majority people there is provision to volunteer as a soldier in crusade. As this suggestion was given by lord Krishna to his disciple Arjuna. War among nations and to attack people of other nations is being encouraged in our society and it is considered as a citizen's duty.

Sometimes in crusade or in liberation war, oppressed nations or the nations engaged in freedom struggle or in the class-war where oppressed classes want emancipation, engaged themselves in fierce struggle to compensate the debt of the oppressor by blood-shedding. In this occasion in any pretext to kill the citizen of enemy's nation is considered as a glorious act. This sort of violence and aggressive behavior is sanctioned in all societies and the aggressor does not feel any repentance for his such type of act. Sometime failure of a person instigates him to act aggressively not only towards persons or circumstances involved for his failure but also indiscriminately towards anybody.

We have seen a mental state of 'paranoia', 'mass hysteria' etc. among the people in communal riots, party conflicts and in war against nations with each other. Then even the most innocent, docile persons may become aggressive and exhibit violent behavior. They may engaged themselves innocent, senseless killings and blood-shedding just to glorify either their community or party or nation. Though the persons having a special brain type of quick excitability are the better candidates for this type of aggressive attitude. In Pavlovian terminology they are 'choleric' or 'volatile' brain type. This brain is highly excitable and its inhibitory process do not work properly. The shikari dog, fighting bull or violent rats are of this type. Though their pure strain have been created by selective breeding. It is not possible for human being.

With the help of suggestion in a special method, a group of people can be transformed into 'choleric' type. Although it would be difficult to measure how much it is innate properties and how much it is acquired. Delgado may get result from these indeterminate group by inserting electrodes into their brain. But it is probable that the results would be provisional or temporary. It is not possible to neutralise their excitatory tendency without the change of society or proper social training. Delgado may treat them as patients and in his therapeutic procedure he may try but it is not possible to combat violence and aggressiveness as a whole of the society.

Regarding the growth and development of aggressive behavior and its spread effect I think it is essential to include the matter for discussion in the context of Marx's theory of alienation. I have said earlier that when the old society fossilised as a stumbling block for the advancement of new society then a group of people remain alienated from the old society and began to protest against the old system of the society. The protest may be as mild ripple sometimes, sometimes it may become acute, sometimes it runs in silence, sometimes it becomes very much loud, sometimes it becomes reformative and sometimes highly destructive. When all the methods of exhibiting protests regarding non-confidence of the of the social values and moralities have been exhausted and the old society has shown its failure to compromise the problematic old infrastructure then sometimes violence and aggressive behavior is seen as a sign of protest. Although all the alienated people do not conglomerate as an attacking force. Generally the attitude of these alienated people have been seen to be expressed in two ways.

In one form of non-violent behavior we have seen among the hippies. In another form it is seen as destructive violent behavior. This behavior is generally expressed as a devastating vindictive attacking force.

Conclusion

I should conclude this topic with few words regarding significance of the term 'beastly instinct'. Generally we use the term 'beastly' very loosely. To denote any type of derogatory remark like violent competition, attacking behavior etc. we use the term 'beastly act'. We should know that all the animals do not exhibit such type of competitive attitude. Nature is not always violent or fearful. In capitalistic society some social scientist coined the term 'social Darwinism' by which they want to mean that man had developed this civilisation with the help of violence and aggressive behavior of the nature and human ancestors. So as man had evolved from the animals so beastly instinct is seems to be an inherent properties of man. They have wanted to circulate this term as the competitive attitude of the capitalistic society that we have inherited upon us. Inspired by their ideology, we assume that some scientists have inspired and they are trying to find out centre for aggressive behavior at the brain.

The facts on which the concept of 'social Darwinism' is based is faulty and one-sided. Spencer, Malthus and T. H. Huxley in his early writings were very much vocal about this ideology and had tried to propagate it. Later Huxley understood his mistake and in 1893 while delivering 'Romanian Lecture' at Oxford he said that in biological evolution for survival, co-operation among and within the species are much more effective than competition. Kropotkin (1902) echoed the same thing, in his book 'Mutual Aid, A factor in Evolution'. American psychologist Lester Ward supported this statement in his book 'The Ascent of Man'. But now capitalism is transforming itself into monopoly capitalism. By oppressing the weak and down-trodden mercilessly it is developing to some gigantic institution. Cruel inhuman competition and violent attack is essential condition for free profit making and rapid spread of capitalism. So moral sermons and earnest appeal of the honest scientists to check this relentless exploitation turn a deaf ear to an useless venture.

Ashley Montague has given examples in his famous book 'On Being Human' (1960) regarding various such animals who are surviving only by cooperative behavior. Professor W. C. Alley (*Animal Aggression*, 1931), analysing the behavior of Goldfish discuss that when they live in groups with cooperative behavior they remain much more healthy and capable of species preserving. In many Protozoas it is seen that solidarity among the other members and when they are not hostile to each other then it is in the best condition for their species preservation. Alley has written against the theory of Herbert Spencer, "After many points and counterpoints I have also arrived in the conclusion just opposite to Spencer. The force of cooperation is much more powerful than the force of competition. ... If it is not true then it would not be possible to evolve the complex animal with the spinal cord from unicellular organism." Ashley Montague has given example of many primitive societies where nobody seen any violence or aggressive behavior among the members.¹⁴

There is terminological ambiguities and some psychologists¹⁵ use the term 'aggressiveness', 'conflict', 'combativeness' in different connotation. But we do not differentiate the term qualitatively. We think they differ only in intensity and amount.

One thing here is important to keep in mind. Aggression, power, force, weapon for mass destruction - all these things are specially related to the magnitude of the incidence of violence. If somebody challenges the authority of the powerful almighty then obviously he would be ferocious. Either in the case of individual or race or nation.

In both the cases we have seen the same thing. The docile and escapist attitude is natural for those who are physically weak. Although if there is no other way open then the weak person may transformed into attacking and aggressive. But usually the war-monger and the gunmen offer much more violent challenge to the community and the society. When the person is very much glorified with his muscle-power, when the nation becomes war-monger, when the total environment is violent and aggressive then everybody has the attitude to solve any problem by using only muscle-power. It is not excess that in West Bengal pipeguns and handgranades are easily available, so anybody can show his power with this weapons.

But in spite of that I do not think weaponry force is the principle driving force. Man produces weapon and man uses weapon. Rationality, judgement, consideration, humanity, solidarity with other individuals - all these virtues make a person integrated to the society and that guide him towards a better pathway. In this reference many peace-loving people think that this huge development of science and technology is creating these sophisticated weapons and it is a menace to human civilization. They do not remember that fire is essential for any peaceful works but it can also create devastation in any situation. Atomic power is capable to create or destroy anything at the same time. But ultimately everything depends how our civilization utilises this power, for welfare of the community or some evil purposes.

I am closing this chapter after one or two comments regarding the present crisis of this state.

Today's West Bengal is facing a tremendous mass upsurge, restlessness, rage reaction specially among the youths and students, indiscriminate violence etc. in our society and many of us are embedded and bewildered in this situation. But we are very much hesitant to take any planned action to prevent this type of useless social unrest. We all want to shade our responsibility by fixing responsibility either on the part of the ruler or its opposite party. The surveyors are very much reluctant to find out the source of the crisis by any scientific methodology. Here it is not enough to know that the crisis of the problem is ingrained in socio-economic structure and function. At least no body do think that some mutation or any qualitative change has occurred in the genes of the people of this state due to some radio-active rays or due to some unknown reason that some dormant volcanic aggressive centre like Atona have erupted in the brains of our people. But everybody knows that for a long long years some disaster was concentrating in our society and now it has become explicit as an introduction of war of Kurkshetra.

Not a single problem of this state has been solved that has crop up for the last twenty five years. So all these problems have now accumulated to give rise to some cancerous growth in the body of our state. The morbid conflicting condition of this weak state is creating all kinds of abnormalities of the minds of our people. So we cannot save ourself by mere operating the diseased part of the body. To eradicate this ill-mindset we have to take some bold plan and programme so that we can necessarily overcome this difficult situation. But first of all we have to find out the source of this destructive, aggressive, violent behavior.

October, 1971

Footnotes

1. "I don't think, we're condemned by our natural fate to violence and self-destruction. My thesis is that just as we've evolved in our understanding of material forces, so we can - through a combination of new

- technology and intelligence - evolve in our understanding of the mind."
2. "For it should be apparent that the genes cannot control directly a psychological trait, e.g. maze learning ability, they can only exert an influence through the mediation of physical structure." [Calvin : *Experimental Psychology* : 1963 : p. 325]
 3. "There is considerable evidence that the tendency to respond with aggression can be modified by training ... Allee and his collaborators trained meak & submissive mice to turn exceedingly pugnacious and dominant." (Muller Neal B. *Experimental Psychology*, p. 462)
 4. "It is not innate human nature which is bad, but rather the organisation of people in a bad social structure which produces bad people." (Wells H.K. : *The Failure of Psychoanalysis* : 1963 pp. 211-12)
 5. "The issue (heridity-environment) is one of the legacies inherit by psychology for nearly a hundred years. Nativism versus empiricism, McDougall's instinct Psychology. Watson's adoption of a strict Lockean viewpoint, the anti-instinct polemics of the 1920's, the 'nature-nurture' controversy of the 1930's ... are but a few manifestations of this age old debate." (Hall : *Experimental Psychology*: p. 327)
 6. "The truth, instead of lying somewhere between these two extremes, seems to lie rather in gradual assimilation of each system by the other. One may be pretty sure that the social emphasis will be in time, make fuller and fuller of the biological individuality, which is socialised in the different way in the case of each individual; and will conceive of interpersonal relations as expressions of biological as well as social uniqueness in individual life histories." (Murphy : *Historical Introduction to Modern Psychology* : 1949, p. 443.
 7. "Mankind should have as its over-all aim a double objective : first to construct a society which will allow for the maximum participation in the human participation of the individual, all individuals, in the human potentiality; and second, to construct a society which will most rapidly and effectively advance the social potentiality of mankind on all fronts." (Wells : *The Failure of Psychoanalysis* : p. 223)
 8. "Marx has taken into account the effects of alienation of labour - both as "estrangement of the thing" and "Self encouragement" - with respect of the relation of man to mankind in general (i.e. the alienation of "humanness" in the course of its debasement through capitalistic processes). [Meszaros : *Marx's Theory of Alienation* (1970) p. 15]
 9. "An immediate consequence of the fact that man is estranged from the product or his labour, from his life activity, from his species being in the estrangement of man from man, if a man is confronted by himself, he is confronted by the other man. What applies to man's relation to his work, to the product of his labour and to himself also holds of man's relation to the other man, and to the other man's labour and objects of labour. In fact, the proposition that man's species nature is estranged from him means that one man is estranged from the other, as each of them is from man's essential nature" (Ibid p. 15)
 10. "He is by nature neither good, nor evil; neither benevolent, nor malevolent; neither altruistic nor egoistic, neither sublime, not a beast; etc. but simply a natural being whose attribute is: "Self-mediating". This means that he can make himself become what is at any given time - in accordance with the prevailing circumstances - whether egoistic or otherwise." Meszaros: *Marx's Theory of Alienation* : p. 164)
 11. "Man is directly a natural being he is an active natural being ... he is a suffering, conditioned and limited creature, like animals & plants. That is to say, the objects of his impulses exist outside him as objects independent of him." (Marx : *Capital* Vol. III, pp. 799-800)
 12. "But man is not merely a natural being, he is a human natural being. That is to say, he is a being for himself. Therefore he is a species being, and has to confirm and manifest himself as such both in his being and in his knowing. And as everything natural has to have its beginning, man too has his act of coming to be - history - which however is for him a known history, and hence is an act of coming to be, - it is a 'conscious self transcending act' of coming to be. (*Capital* Vol.I, p. 76)
 13. "It is not at all implanted in human nature, but it is a 'human achievement'. Human nature is not something fixed by nature, but, on the contrary, a 'nature' which is made by man in his acts of self transcendence." (Meszaros: *Marx's Theory of alienation* : p. 170)
 14. "The condition of conflict which arise in man do not normally originate from within him, from his organic states, but from those social conditions which have a disordering effect upon him and which fail to satisfy his needs." (Montague : *On being Human* : Rupa 1960, p. 95)
 15. "All drives may be said to be aggressive. Aggressiveness should not be equated with hostility. It is possible, to be aggressive without being either hostile, combative, competitive or conflict producing. Aggression may be co-operative. It may be defined as the outward direction of energy." (I. Hendricks : *Psychoanalytic Quarterly* Vol. II, 1941 pp. 33-59)

The Geological Background to Darwin's Theory of Evolution

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Introduction

On February 12, 2009 the world celebrated the two hundredth birth anniversary of Charles Darwin. Another milestone was also crossed in the same year namely, the completion of one hundred and fifty years since the publication of his masterpiece "On the Origin of Species by Means of Natural Selection". Among those who paid tribute on this occasion, many rightly pointed out that Darwin was a geologist first and a biologist later.

This essay is an attempt to evaluate the impact of Darwin's training as a geologist on his later enunciation of the theory of evolution. A brief biographical sketch has been added to a discussion of the status of geology in Darwin's time, Darwin's close contact with renowned geologists like Adam Sedgwick and Charles Lyell, his voyage aboard the Beagle and finally the circumstances leading to the publication of "The Origin".

Early Interest In Geology

Charles Darwin was the fifth child of Robert Warring Darwin, a wealthy doctor in Shrewsbury, England. In his childhood, Charles was influenced by his father's interest in natural history. Their house had a large collection of stuffed animals, a greenhouse and a well-stocked library¹. Young Charles was fond of collecting shells, rocks, insects and birds' eggs. He also learnt to catalogue his specimens. His elder brother Erasmus (Ras) was his constant companion for scientific adventures. When the two boys built a chemistry laboratory in the house, Charles acquired the nickname "Gas" to rhyme with "Ras"!

True to tradition, Robert Darwin wanted his younger son to be a doctor. So, after his graduation from Shrewsbury School, Charles was sent to the University of Edinburgh to pursue a course in medicine. However, the young Darwin had no taste for this subject. In fact, he was horrified by the prevailing practice of surgery without anesthesia. Therefore, he made friends with a group of students who were interested in natural history and started attending classes in subjects like biology and geology. Robert Jameson was the instructor of geology. After listening to him, Darwin's first impression about geology was not at all favorable. He later wrote about Jameson's lectures: "the sole effect that they produced in me was the determination never as long as I lived to read a book on Geology or in any way study the science"². It is, therefore, important to find out why a recent reviewer commented about the same Charles Darwin that he "would have stood shoulder to shoulder with Lyell as one of the giants of geology had his species project never seen the light of the day"³.

After two years of drifting at Edinburgh, Charles returned home without any degree. Worried

about his son's future, Robert Darwin decided to send him to the University of Cambridge - this time with the idea of making a clergyman out of him. But this plan also failed. At Cambridge, Charles came under the influence of two renowned professors - Adam Sedgwick of geology and John Henslow of botany. Henslow became Darwin's mentor for his extra-curricular interests in natural history.

During his fourth year at Cambridge, Darwin obtained a degree in theology. He was now qualified to join the clergy. But two unexpected events changed the course of his life. One was a field trip with Sedgwick and the other his voyage on board the English survey ship HMS Beagle. As we will see later, by the time Darwin completed the Beagle voyage, his reputation as a geologist had been firmly established.

Field Trip With Sedgwick

After his final examination at Cambridge, Darwin had to spend two terms in residence to complete the formalities for the degree. Henslow advised him to utilize this time to improve his geology. This could be achieved by attending lectures delivered by Sedgwick who was very popular among students. Sedgwick himself had a degree in mathematics from Cambridge and, as was common those days, he was ordained as a Reverend of the Church. He subsequently studied geology and was appointed as a professor at the university. Initially he was a believer in the Biblical description of catastrophes like Noah's Flood. But later, influenced by Lyell, he modified his views.

In the summer of 1831, Sedgwick was making preparations for a geological expedition to Wales. This study of old rocks ultimately led to the definition of the Cambrian System⁴. Henslow requested Sedgwick to take Darwin along with him on this trip. Thus Darwin had the opportunity to learn about geological mapping under the guidance of an expert. Sedgwick was impressed by Darwin's enthusiasm and this association was immensely beneficial for Darwin's later scientific work. After three weeks of rigorous training, Darwin was confident of identifying strata with the help of rock type and fossil content. It should be mentioned in passing that Sedgwick was fond of Darwin as a student but he strongly opposed the theory of evolution when Darwin finally published it in 1859.

The Voyage Of The Beagle

Soon after he returned from Wales, Darwin received a note from Henslow informing that Robert Fitzroy, captain of HMS Beagle, was looking for a companion-cum naturalist for a long voyage around the world. Henslow had recommended Darwin's name to Fitzroy. Robert Darwin, however, had strong reservations about this new adventure by his son. After some initial difficulties, Charles managed to convince his father.

The Beagle set sail in December 1831. In Darwin's own words, this voyage "has been by far the most important event in my life and has determined my whole career"². Along with various equipment required for sample collection, Darwin had with him the first volume of a newly published book called "Principles of Geology" by Charles Lyell. Henslow had advised him to read the book but on no account accept the author's views². Two more volumes appeared during the voyage and Darwin acquired both of them. In order to understand why Darwin was so impressed by Lyell's book and how he used it for his work, we must recall the developments in geology in his time.

Geology In Darwin's Time

Geology has been called a "Historical Science"⁵. This is because geologic features are usually explained in terms of their origin. While studying the processes involved, one inevitably ends up wondering about the past history of the earth itself. Most geologists of nineteenth century England were busy figuring out the origin of rocks and arranging rock strata according to their age. Moreover, they were firm believers in the Biblical narration of Creation. Depending on how they balanced observations of natural processes against a divine scheme of things, they belonged to rival schools of thought.

At first, it was a tussle between Neptunists and Plutonists. Neptunism was named after Neptune the god of the sea. The German mineralogist Abraham Werner initiated this concept. He had a large following in England. This group believed that at one time the earth was covered by seawater. All rocks were deposited from this vast ocean. Submergence of continents during Noah's Flood added the youngest layers. The Plutonists opposed this hypothesis. They argued that a volcanic rock like basalt must have cooled from molten material occurring deep inside the earth - in the realm of Pluto, the god of Hades. Their leader was James Hutton who proposed that later erosion, sediment deposition and the effect of heat and pressure converted plutonic rocks to other types. This was the original version of the Rock Cycle, as we know today. Therefore, Hutton is known as the founder of geology⁶.

This controversy later merged into a debate between Catastrophists and Gradualists. Georges Cuvier, a French biologist, extended Werner's idea to propose that from time to time, God had ordained catastrophic events on the earth. These wiped out old landscapes and created new features. Noah's Flood was the latest in this series of catastrophes. This would explain why stratified rocks showed signs of deformation and why some of them contained remains of ancient plants and animals. William Buckland, a geologist at the University of Oxford, found this inference reasonable. But Hutton and his followers vehemently opposed it. They believed that processes within the Rock Cycle have been continuing from past to present at a slow but uniform rate. The statement "the present is the key to the past" summarized this doctrine of Gradualism or Uniformitarianism. After Hutton's death in 1797, his colleague John Playfair propagated this concept in popular language. A little later, the lawyer Charles Lyell became a forceful exponent of Uniformitarianism.

Another aspect of the background of those who studied geology during this period is worth mentioning here. Just like the current trend in Earth Science, during Darwin's time also people from different walks of life were interested in the history of the earth. For Darwin himself, his journey through geology, paleontology, biology and botany was made easier because born in a wealthy family, he did not have to worry about his daily bread.

Impact of Lyell's Book

Charles Lyell also came from a wealthy family. He had a law degree from Oxford. While at the university, he got interested in the debate between supporters of Cuvier and Hutton. After a brief stint at the bar, he became a full-time geologist and an ardent supporter of Hutton. His "Principles of Geology" had the subtitle "An Attempt to Explain the Former Changes of the Earth's Surface by Reference to Causes now in Operation". It was obvious that Lyell was putting forth the newly emerging viewpoint of Uniformitarianism.

During the voyage of the Beagle, Darwin found evidence in support of Lyell's idea that

marine sedimentary beds occurring above the shoreline indicate fluctuations of sea level in the past. For example, at the very first stop of the Beagle at St. Iago in the Cape Verde Islands off the coast of West Africa, Darwin observed a white band of shells and corals baked by overlying lava. It was about thirty feet above sea level but the exact height varied around the island¹. Darwin concluded that after the bed was deposited on sea floor, it was covered by eruptions from submarine volcanoes and then uplifted. Consequently, it underwent subsidence to variable extents at different locations.

Darwin drew another lesson from Lyell's book. This was that geological processes operate over very long periods. The time involved was obviously much longer than that provided by the Biblical account of Creation. Darwin also felt that this time span was sufficient for new species to replace old and extinct ones. When he finally developed his theory of evolution, Darwin was so excited by this application of Lyell's ideas that he wrote: "I always feel as if my books came half out of Lyell's brain"¹.

Some time later, Darwin attempted to quantify the time span. He used the description of a geological site in the Weald region of England given in Lyell's book for this purpose. On the basis of the rates of rock denudation available to him, Darwin arrived at a figure of a little more than 300 million years for the sea to erode formations 1100 feet thick and extending over 22 miles⁷. This was, of course, not an estimate of the age of the earth. In later discussions Darwin did not insist on the exact value. But according to him, it was sufficiently long for organic change.

Observations In South America

In 1935, four years after the start of the voyage, the Beagle was near Concepcion on the coast of Chile. On the 20th of February there was a strong earthquake in that region. While studying its effect on local geology, Darwin once again found evidence for uplift of the landmass by several feet. Applying Lyell's principles, Darwin expected that there was subsidence of the shallow sea floor at the margin of the rising land. This idea finally led him to his well-known Subsidence Theory for the origin of coral reefs and atolls. It is remarkable that when this thought struck Darwin near the Chilean coast, he had not seen a true coral reef. He tested his hypothesis more than a year later at an atoll among the Cocos Islands in the Indian Ocean⁴.

Darwin's Subsidence Theory required sinking of the foundation of a volcanic island, rise of the sea level and upward growth of corals - all at comparable rates. If subsidence and rise of sea level continued for a long time, the island will be completely submerged. In its place there will be a shallow lagoon surrounded by a ring of coral reefs. This landform is called an atoll⁸.

Darwin's explanation of the origin of fringing reefs, barrier reefs and atolls was his most important contribution to geology and this has stood the test of time. For example, his map of the distribution of coral reefs and atolls matches with the conclusions drawn from modern Plate Tectonics. He had also guessed that the maximum thickness of the layer of corals and carbonate sediments above the volcanic foundation would be around 5000 feet (1525 m)⁹. This prediction was prophetic because much later in 1952, when the US Atomic Energy Commission drilled bore holes on the Eniwotek atoll in the Pacific Ocean, a foundation of basalt was found at depths between 1267 m and 1405 m. This is a good example of Darwin's extraordinary ability for integrating diverse sets of data.

After his investigations at the Chilean coast, Darwin briefly moved inland for an expedition across the Andes. The purpose was to verify whether this mountain range had been created by an uplift of land. He found evidence confirming this idea in the form of petrified forests and marine fossils. After this detour, he resumed his journey on board the Beagle. The ship arrived at the Galapagos Islands west of Ecuador in mid-September, 1835. These volcanic islands were populated by a variety of species including mockingbird, finch and tortoise. With his talent for detailed observation, Darwin quickly realized that although the fauna of different islands were closely related, their features were controlled by local conditions. For example, birds of one island had long beaks for digging out food from crevices. On another island, the same species had heavy beaks useful for crushing seeds¹. This gave Darwin the insight that species with a common ancestor could develop different body structures during the course of evolution.

At the end of a five-year voyage, the Beagle returned to England on October 2, 1836. At that time Darwin had with him "1,383 pages of geology notes, 368 pages of zoology notes, a catalogue of 1,529 species in spirits and 3,907 labeled skins, bones and miscellaneous specimens as well as a live baby tortoise from the Galapagos Islands"¹. This enormous collection kept him busy with publications on geology first and then on zoology, biology and botany for the rest of his life (see list in Appendix).

Six Years In London

Immediately after the voyage, Darwin spent the period 1836 to 1842 in London, interacting with scientists of various disciplines. He was actively involved with the Geological Society - initially as a Fellow and later as one of the secretaries. His work on the geology of South America was already known to the members of the Society through the reports given by Henslow, Sedgwick and Lyell. During this period, unknown to most geologists, Darwin began to record his ideas about evolution by natural selection in a diary called "Notebook B". The details of the theory of evolution are beyond the scope of this essay. We would, therefore, recall the pathways for Darwin's shift from geology to biology.

In Darwin's time the study of fossils or paleontology was a major branch of geology. In London Darwin took the help of taxonomic experts like Richard Owen to identify and classify his fossil collection. "While Owen the anatomist focused on interior aspects of growth, Darwin the geologist focused on the exterior conditions of life"⁷.

Darwin believed in Lyell's metaphor that a rock formation was a page torn out of the book of earth history. As a geologist he was trying to find the missing pages. He knew that rock strata could contain characteristic index fossils. He also realized that the fossil content would differ from upper to lower layers and also between succeeding and widely separated strata^{7,10}.

In the midst of all these activities, in September 1842, Darwin moved out of London with his family to settle in a manor house in Downe village. This was a watershed in Darwin's career because this time onward he started to wind up his geological research and delved into biology and botany. Many have wondered why at a time when Darwin was a reputed geologist, he chose to change his area of research. The main reason appears to be his failing health and his family problems. These made it difficult for him to go out on field trips. But it is also possible that he was swayed by the earlier writings of the economist Thomas Malthus, his grandfather Erasmus Darwin and his hero Charles Lyell. Malthus was famous for his essay

on the effect of food availability on the world's population. Erasmus Darwin, in his book called "Zoonomia" had speculated on the evolution of organic life. Lyell's "Principles of Geology" contained discussions on the origin and extinction of species caused by gradual changes in the earth's geological environment. Darwin extended Lyell's concepts to what Rudwick¹¹ has termed as "historical biogeography". The same author also thinks that Darwin was aware of Lyell's dominant role within geology. Therefore, he tried to get out of Lyell's shadow by shifting to another field. Darwin more or less achieved this objective in the later part of his career.

When he consolidated his ideas on mutation and natural selection, Darwin differed with Lyell on the question of descent of man. In his lifetime, Lyell did not accept Darwin's view that the theory of evolution from a distant ancestor was applicable to all forms of life on earth including humans. Darwin also studied fossil records in greater details than Lyell. He observed gaps between succeeding forms and noted the sudden appearance of sophisticated forms. However, he did not go beyond citing imperfections in the record to explain these¹⁰. As Herbert⁷ has pointed out, even in recent times, the debate within Neo-Darwinism has raged around the rate of change of species. This is illustrated by the theory of Punctuated Equilibrium (evolution with jerks) developed by Niles Eldredge and Stephen Jay Gould.

The Wallace Episode

As early as in 1844 Darwin had formulated his ideas on evolution of species by natural selection. But he hesitated to make his conclusions public until he was sure of acceptance. He had a bad experience earlier in his career. Applying the theory of fluctuations of sea level, he had wrongly interpreted the parallel roads of Glen Roy canyon in Scotland. He had to admit his mistake when it was established that these terraces had formed due to glacial processes. This time he was waiting for an opportune moment to announce his theory of evolution and continued to gather more information on the variability of organisms in nature. After more than a decade of data collection including his famous study of barnacles, he was finally ready to write down a detailed account of his observations in the form of a book.

At this juncture, in June 1858, Darwin was jolted by a rude shock when he received a hand-written manuscript sent from Indonesia¹². It was written by Alfred Russel Wallace, a collector of specimens who was studying the natural history of the Malay Archipelago. The title was "On the Tendency of Varieties to Depart Indefinitely from the Original Type". His conclusions were identical to those of Darwin. Darwin had earlier exchanged letters with Wallace. He knew that Wallace was investigating the origin of species. On this occasion, Wallace had sought Darwin's help to forward the paper to Lyell and get it published in a suitable journal. Darwin's reaction, on the other hand, is reflected in the letter he immediately wrote to Lyell: "I never saw a more striking coincidence; if Wallace had my MS. sketch written out in 1842, he could not have made a better short abstract! Even his terms now stand as heads of my chapters....So all my originality, whatever it may amount to, will be smashed, though my book, if it will ever have any value, will not be deteriorated; as all the labour consists in application of the theory"¹³.

Lyell consulted the botanist Joseph Dalton Hooker and together they advised Darwin to quickly prepare a short extract of his own theory. To protect Darwin's claim to priority, this extract and a letter written earlier by Darwin to the Harvard botanist Asa Gray were presented to the Linnaean Society followed by Wallace's paper. These were later published in the same

order in the Society's Proceedings in August, 1858^{12,14}.

Darwin did not wait any longer to formally publish his theory. What he called an "abstract" was printed as a 540-page book in November 1859 with the title "On the Origin of Species by Means of Natural Selection or The Preservation of Favoured Races in the Struggle for Life". The 15-year delay in the publication of his theory would surely have been longer had Wallace not given the wake-up call.

Darwin was conscious of the heretical nature of his theory. He was constantly worrying about antagonizing the Church. However, his expertise in paleontology and stratigraphy helped him to break away from orthodox viewpoints. This was true for his early work in geology and, of course, for his revolutionary theory of evolution. Herbert⁷ has offered the interesting suggestion that emulating what Newton did in physics; Darwin tried to leave behind a unifying theory in biology. It is, therefore appropriate that after his death on April 19, 1882, Darwin was buried near Newton's grave in Westminster Abbey.

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APPENDIX

Books by Charles Darwin and his Colleagues

(Source: [http:// www. aboutdarwin.com/literature/CD_Books.html](http://www.aboutdarwin.com/literature/CD_Books.html))

CD = Charles Darwin. Unless otherwise stated, the books are by CD only

1839: Journal Of Researches into the Natural History of the Countries Visited During the Voyage of HMS Beagle, Three Separate Volumes by Captain Philip King, Captain Robert Fitzroy and CD, Henry Colburn, London.

- 1839: Journal of Researches into the Natural History of the Countries Visited During the Voyage of HMS Beagle, The Volume by CD. Henry Colburn, London.
- 1839: Zoology of Beagle Voyage, Part 2, "Mammalia" by George Waterhouse, Smith, Elder, London.
- 1840: Zoology of Beagle Voyage, Part 1, "Fossil Mammalia" by Richard Owen, Smith, Elder, London.
- 1841: Zoology of Beagle Voyage, Part 3, "Birds" by John Gould, Smith, Elder, London.
- 1842: Zoology of Beagle Voyage, Part 4, "Fish" by Leonard Jeyns, Smith, Elder, London.
- 1842: Geological Observation of South America - "The Structure and Distribution of Coral Reefs", Smith, Elder, London.
- 1843: Zoology of Beagle Voyage, Part 5, "Reptiles" by Thomas Bell, Smith, Elder, London.
- 1844: Geological Observation on South America - "Volcanic Islands", Smith, Elder, London.
- 1846: Geological Observation on South America - "South America", Smith, Elder, London.
- 1851 & 1854: Two Monographs (Each of Two Volumes) on the subclass of Barnacles Cirripedia."Living Cirripedia" and "Fossil Cirripedia", Ray Society, London.
- 1851: Monograph of the Fossil Lepadidae, Paleontological Society of England.
- 1854: Monograph of the Fossil Balanidae, Paleontological Society of England.
- 1859: The Origin of Species by Means of Natural Selection: or, The Preservation of Favoured Races in the Struggle for Life, John Murray, London.
- 1862: On the Various Contrivances by which British and Foreign Orchids are Fertilized by Insects", John Murray, London.
- 1864: The Movement and Habits of Climbing Plants, Linnaean Society Monograph.
- 1868: The Variations of Animals and Plants Under Domestication, John Murray, London.
- 1871: The Descent of Man and Selection in Relation to Sex, John Murray, London.
- 1872: The Expression of Emotions in Man and Animals, John Murray, London.
- 1875: Insectivorous Plants, John Murray, London.
- 1876: The Various Contrivances by which Orchids are Fertilized by Insects & The Effects of Cross and Self Fertilization in the Vegetable Kingdom, John Murray, London.
- 1877: The Different Forms of Flowers and Plants of the Same Species, John Murray, London.
- 1878: Erasmus Darwin (the biography of his grandfather), John Murray, London.
- 1879: The Movement and Habits of Climbing Plants, John Murray, London.
- 1881: The Formation of Vegetable Mould Through the Action of Worms, with Observations on Their Habits, John Murray, London.

P A S

Depression As Viewed Within the Context of Need- Based Psychology

Ron Dultz

Abstract : *This article examines depression from an existential perspective, and is enriched by the author's own experiences as a victim of depression. A theory of Need-Based Psychology (which is an extension and modification of Maslow's theories) is introduced to explain that psychological needs functional parts of the human psyche, and that need fulfillment is necessary to recover from depression and maintain mental health. An innovative form of psychotherapy, is proposed for providing solutions to depression.*

Having endured several serious, prolonged bouts of depression, lasting six to twelve months each, I have firsthand knowledge of its symptoms. Furthermore, for nearly two years, I have attended two to three meetings per week of a self-help organization called Emotions Anonymous, in which an eclectic variety of participants, including newcomers (some referred by psychotherapists and mental hospitals, some who find out about the meetings on their own

via the internet or other sources), frequently discuss their personal struggles with depression. I have also examined depression from a theoretical perspective, within the context of my own theory of Need-Based Psychology, which is presented in its entirety in my recently published book (Dultz 2007). *Who Are We?* has been reviewed in the *Annals of the American Psychotherapy Association* (2008) and *Analyses of Social Issues and Public Policy* (2008).

Diverse Views of Depression

One's view of depression (its symptoms, causes and susceptibility to treatment) will depend in large part upon one's philosophy of who we humans are as mental and emotional beings, and upon one's philosophy of the nature of mental health. These ideas are supported by the following comments of Abraham Maslow, who was President of the American Psychological Association in 1968: "When the philosophy of man (his nature, his goals, his potentialities, his fulfillment) changes, then everything changes, not only the philosophy of philosophy of politics, of economics, of ethics and values, of interpersonal relations and of history itself, but also the philosophy of education, of psychotherapy and of personal growth" (Maslow 1968).

It is clear the psychotherapists who identify the structure, functions and characteristics of the human psyche using differing theories, hypotheses and models will view depression (its symptoms, causes and susceptibility to treatment) differently. And differing concepts of the nature of mental health, and of the relationship of depression to mental health, will result in differing approaches to treating or responding to depression.

Identifying Depression

According to clinical psychologist, Sue Breton, "In order for a disorder to be classified as depression, there has to be evidence of lowered mood. This lowered mood may vary slightly throughout the day but the sufferer cannot usually be cheered up, and this is the major distinction between simply being unhappy and being clinically depressed" (Breton 1996).

Major and Mild Depression

There is a distinction in some of the literature on depression between major depression and mild depression. According to *The Oxford Companion to the Mind* (Gregory 2004). "Major depression was cited by the World Health Organization as the fourth main cause of burden of disease in the world in 1990, and it is projected that by 2020 it will then occupy first place in developing countries, and third place in developed ones. Depression is second only to hypertension as the most common chronic condition encountered in Western general medical practice."

In *The Dictionary of Psychology* (Corsini 1999), depression is defined as "an emotional state of persistent dejection, ranging from *relatively mild* discouragement and gloominess to feelings of *extreme despondency and despair*."

I would argue that the distinction between major depression and relatively mild depression can be misleading if one believes that mild depression is an acceptable condition, or unworthy of arousing much concern. I find that depression is a precipitous ailment, which can quickly escalate in seriousness and complexity, and requires treatment in its earliest stages lest it gain too great a hold of the person in whom it resides.

Sue Breton states, "Depression has a vicious downward spiral that sucks one in if one is not careful. The more depressed one feels, the less inclined one is to do anything positive and the deeper one sinks." (Breton 1996).

Origin of Depression

Within the science of psychology, there are numerous schools of thought regarding the root cause of depression, such as: biological, genetic, biochemical, neurological, cognitive, environmental and existential.

I view depression as a mood disorder resulting primarily from failure to satisfy one's innate psychic (mental and emotional) needs. One of the key principles of my theory of Need-Based Psychology is that most mental and emotional disorders, including depression, are caused from failure to satisfy one's innate psychic needs. This correlates well with Maslow's findings that: "Neurosis seemed at its core, and in its beginning, to be a deficiency disease; that it was born out of being deprived of certain satisfactions which I call needs in the same sense that water and amino acids and calcium are needs, namely that their absence produces illness. Most neuroses involved, along with other complex determinants, ungratified wishes for safety, for belongingness and identification, for close love relationships and for respect and prestige. My data were gathered through twelve years of psychotherapeutic work and research and twenty years of personality study. One obvious control research (done at the same time and in the same operation) was on the effect of replacement therapy which showed, with many complexities, that when these deficiencies were eliminated, sickness tended to disappear" (Maslow 1968).

In identifying unsatisfied needs as the most common cause of depression, I am aligning myself with the existentialists, who trace conflict (including mental and emotional conflict) to each individual's "confrontation with the givens of existence" (Yalom 1998). I maintain that one of the "givens of existence" is the wide assortment of recurring psychological needs which all humans inherit.

Some Symptoms of Major Depression

The type of depression I have personally experienced, and which so many of the participants I have met in Emotions Anonymous have experienced, is an incapacitating, debilitating personal discontentment. When a person is afflicted with an intense form of depression, he or she feels miserable. The person's ability to function and sense of well being are seriously impaired. Some of the symptoms of intense depression, as I have witnessed them occurring in myself and others, are: discouragement, resignation, hopelessness, lack of energy and lack of enthusiasm, fear of participating with and interacting with others, preference for isolation and for withdrawal from many normal human pursuits and activities, lack of incentive and lack of initiative, apathy, listlessness, despondency, loss of ability to focus on and commit to sustained pursuits, lack of self-confidence, unhealthy perspective, disorientation, suspending one's goals and dreams, poor motivation, confusion about one's identity, suicidal impulses, accepting defeat.

Many of the symptoms just listed are also listed in *Depression : Your Questions Answered* (Breton 1996).

Achieving a Better Understanding of Depression

From the just presented list of symptoms, it is easy to see that a person undergoing serious or intense depression is at least partially giving up on life, and is heading in the direction of *shutting down*. In the worst periods of my own bouts of depression (from which, thankfully,

I have now fully recovered), I felt immobilized. The recurring question that haunts a person afflicted with serious or intense depression, (whether that question is consciously or unconsciously experienced), is: "Why should I fully participate in the living of my life if the benefits are not satisfactory?"

People who discuss their depression in Emotions Anonymous commonly talk of a feeling of safety and security in their wish to isolate and withdraw from many of their previously normal activities and pursuits (*Emotions Anonymous 1995*). This is likely a form of self-protection, a defensive maneuver.

A rational explanation of the cause of clinical depression is that one's psyche has been violated (by acute need-deprivation, by overwhelming anxiety or stress, by a disruption, such as loss of a loved one or source of employment, or by some other mental or emotional upheaval); and like a wounded animal, that violation has caused it to react by isolating, withdrawing from many normal pursuits and activities; and in serious cases, heading in the direction of shutting down.

In their main EA approved and EA compiled self-help book, which is accessed at virtually all Emotions Anonymous meeting and read by most EA members (*Emotions Anonymous 1995*), there are many personal stories of members' struggles with a variety of psychological ailments, depression being a predominant theme. A close examination of these stories confirms the idea that depression causes people to isolate, withdraw from many normal human pursuits and activities, and head in the direction of shutting down. This disaffection with living seems reasonable if living one's life is not producing favorable results.

It is easier to understand depression if one acknowledges the existence of a definitive psychological being which has native vulnerabilities, susceptibilities and limitations, and a plethora of psychological (mental and emotional) needs engaged in a daily fight for survival and for an enhanced quality of life that satisfies the complex (and often sophisticated) requirements of those needs. The idea of the existence of an innate psychological human being is postulated by Abraham Maslow in these extraordinary remarks: "First of all, and most important of all, is that man has an essential nature of his own, some skeleton of psychological structure that may be treated and discussed analogously with his physical structure" (Maslow 1954). Maslow is stating that humans have a native, psychological identity that is different from the identity of their physical body.

When the native, psychological identity of which Maslow speaks, and which I concur exists, is under assault from forces within or outside the individual, depression can result. As mentioned previously, one of the key principles of Need-Based Psychology is that the primary cause of mental and emotional disorders, including depression, is frustration or lack of fulfillment of innate psychological needs. Frustration or lack of fulfillment of innate psychological needs can be caused by inadequacies in one's external environment, inadequacies in one's ability to access health-giving, psychological nutrients within one's external environment, or inadequacies in one's thinking, emotional responses or personal development and orientation.

Why Depression?

For humans, living their lives is a difficult, often frustrating journey. Let no one doubt that it is not easy to be fully human, or entirely oneself, or satisfied and fulfilled on an ongoing basis. When discouragement and disappointment they must sometimes wade through to try to obtain

and hold life's top prizes, such as love, freedom, success and understanding, it amazes me that more people do not give into resignation, cynicism and defeat, which are preludes to depression. Depression is the inevitable result of failure to be oneself, or failure to accomplish one's goals, or failure to remain true to one's beliefs and values, or failure to find freedom and well being in this complex and hectic world in which we live. Depression is a widespread affliction of modern times because we are more aware than ever of what it is possible to become, to achieve and to have; yet only a modest percentage of us will find success in *all* the important types of accomplishment and satisfaction which can be experienced by humans. To sum up ... Why Depression? ... I would have to append Maslow's assertion that "neurosis is a deficiency disease" by adding that depression also is a deficiency disease. Depression is a negative state of mind and reduced quality of life caused by having less than we need and want of life's advantages and opportunities.

It is easier to understand depression if we closely examine the content and functioning of the multitude of psychological needs which all humans inherit ... because we can then see the connection between depression and unfulfilled needs. My work in the area of Need-Based Psychology (which is an extension and modification of Maslow's theories) provides a basis for understanding psychological needs, and thus for better understanding depression. An introductory summary of the topic follows.

Need-Based Psychology

All living things are need-based, meaning that they have needs which must be met on an ongoing basis to insure their survival and well being. This is easy to witness regarding the needs of the body, such as its nutritional needs. Need-Based Psychology asserts that the human psyche has needs which are just as pronounced, specific, numerous and recurrent as are the nutritional needs of the body. If the human psyche is a need-based entity, meaning it has needs which must be satisfied on a recurrent basis to insure its survival and well being, it raises many issues about the nature of mental health; and indirectly, about the causes of depression. If mental health is tied to need-fulfillment, then mental health is interactive. The needs of the psyche require appropriate interaction with appropriate elements in the environment to become satisfied and fulfilled, or mental discomfort and mental/emotional ailments (such as depression) will occur within the individual. This means that mental health is not an inherited, fixed or static condition. It means that mental health is fluid, changing from day to day, hour to hour and even minute to minute as one's essential psychological needs are in the process of being satisfied, fulfilled, frustrated or depleted.

So that I can provide an example, let's assume that one essential psychological need is the need for mental stimulation. The existence of this need is obvious to any keen observer of human nature, but evidence for its existence can be discussed another time. For now, it is sufficient to state that satisfaction of the ongoing need of the human psyche for mental stimulation will not occur automatically. Sources in the environment must be located to satisfy that need, or there will be consequences to the mental and emotional well being of the individual.

One way to understand the process of attempting to satisfy a legitimate psychological need is to consider that the human psyche needs to be fed just as the body needs to be fed. To obtain food for our body, we cannot just snap our fingers and expect the food to appear; and without some knowledge of the nutritional content of food, we cannot know which food

will best meet the needs of our body. The same facts hold true for satisfying the mental and emotional needs of the human psyche. We cannot expect them to be satisfied by simply wishing that they be satisfied. We must often go on a search for the things which can satisfy them, and then take proper steps of interaction with those things.

Using our example of the need for mental stimulation, suppose an individual goes to a large bookstore because he is bored, and feels the need for some fresh, new ideas to stimulate his thinking. He feels the need for a mental challenge, or for some mental inspiration. He may or may not be successful at fulfilling this need on a particular day, depending upon which steps he takes in the bookstore, and upon his own understanding of the need. To satisfy the need, he may not just look to the books, but also to other elements in the large bookstore, such as the people.

In studying the recurrent need humans have for mental stimulation, it is possible to infer certain facts about the structure and functions of the human psyche. Just as we can determine certain key facts about a human arm by how it handles a ball, such as strength and reflexes, we can also determine facts about the human psyche by studying the extent and frequency of the need for mental stimulation, and by studying the manner in which humans exercise their need for mental stimulation. If a person exercises their need for mental stimulation with great passion and intensity, and does so frequently, it becomes obvious that the psychic need for mental stimulation is important to the internal harmony of that individual's mind, and of course it can give important clues about the universal nature of the psychic need for mental stimulation.

In recalling Maslow's list of psychological needs and some of his explanations of them, and in thinking about the many other essential mental and emotional needs which I have tried to document in previous writings, it is my belief that every legitimate mental and emotional need can be witnessed occurring in all humans "at the level of living one's life," and reveals significant facts about the actual essence, structure and functions of the human psyche.

Psychological needs can be thought of as functional parts of the human psyche. They are there in every human and must be fed (satisfied) on an ongoing and recurring basis. Satisfying them is vital to achieving or maintaining mental health.

If depression is caused by need-frustration or need-deprivation, (as I believe it is, and as Maslow's findings imply), one can conclude that depression may be a legitimate, rational response to unhealthy circumstances, events or conditions; or that it may be caused by inadequacies in one's ability to access health-giving ingredients in one's environment.

Environment-Enrichment and Need-Replenishment Therapy

From the perspective of Need-Based Psychology, the cure for depression, and for most other mental and emotional disorders, is: enrichment of one's environment with the ingredients which reinforce and produce mental and emotional well being; obtaining better access to those ingredients; and self-improvement in those areas which will permit the individual to utilize the health-giving ingredients in his/her personal and society-wide environments.

For guidance in determining which ingredients in the environment might be health-giving, it is necessary to have a good understanding of the psychological needs of humans that require frequent replenishment. In *Who Are We?* (2007), I have provided a large template of essential psychological needs which require replenishment. Please note that my presentation

of psychological needs is not a mere list of needs; but, in most instances, I have tried to provide thorough explanations of their functions within the living circumstances of humans.

If an individual cannot achieve and maintain an acceptable degree of mental and emotional wellness, or wishes to overcome depression, persistent unhappiness, or another psychological ailment, two types of therapy are well-positioned to provide a solution: Need-Replenishment Therapy and Environment-Enrichment Therapy. (Dultz 2007). Both of these types of therapy can benefit persons who are well or who are ill.

Example of Environment-Enrichment

One's environment can be enriched in many ways. One can bring health-producing ingredients (consisting of people, activities, objects, events or entities) into one's usual environment/s, or seek them out in unfamiliar or rarely frequented environments. For example, some years ago, a neighbor thought we would enjoy. My wife likes to sing, so we tried it out. We wound up attending the event almost every week for several years. It became an important creative outlet for my wife, and a means of socializing for us both. If a therapist had recommended the event to us, the therapist could be said to be practicing environment-enrichment therapy.

Example of Need-Replenishment

Human mental and emotional needs require replenishment as frequently as do our physical needs, such as the needs for water and oxygen. One of our complex psychological needs that requires frequent replenishment is the need for human companionship. A human needs human companionship of "good quality;" and by obtaining that on a frequent basis, an individual is arranging for the ongoing replenishment of that need. For a definition of what constitutes "good quality" human companionship, please see my book, *Who Are We?* (Dultz 2007). A psychotherapist who attempts to determine the psychological needs of a client which are undernourished, and who investigates the means of assisting the client in fulfilling those needs, can be said to be practicing need-replenishment therapy.

Conclusion

I can think of no better solution to depression than applying maximum use of the concepts of Need-Replenishment and Environment-Enrichment, both as a therapeutic approach and as a philosophy for understanding the needs of the human psyche.

Dr. Jack Wetter (2008), Associate Clinical Professor of Psychology at the UCLA School of Medicine, sent a review of *Who are We?* to the author in which he stated: "His suggestion is that as clinicians we should consider practicing 'environment-enrichment therapy' in aiding our patients to achieve their goal of being fulfilled on numerous levels. This point of view, in contrast to categorizing a patient with a DSM-IV diagnosis, I believe is truly the more effective approach to successful therapeutic intervention. His model is one that needs to be considered and incorporated into the various models that we all utilize in our clinical work."

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P A S

Psychology In Learning and Teaching

Eric Lunzer

This article is based on a paper read by the author at a Symposium on "Education and Psychology" held by the Culture Committee of the Communist Party in July 1962.

We hope to publish other papers in subsequent issues.

(I) Education and Psychology

EDUCATION may be described as the process whereby society transmits the information and techniques at its disposal to a rising generation, together with its attitudes and beliefs, and, in advanced societies, something of the methods of acquiring new information and new techniques. From such a standpoint, education is as old as society itself. Moreover, the delegation of these functions to specialists dates back to ancient times – even if the status of the teacher has not always been in keeping with the vital character of his task.

There is therefore nothing surprising about the fact that teachers have evolved a considerable body of techniques and know-how which is specifically concerned with the means whereby information and skills (and even attitudes) can best be conveyed from the teacher to the learner. Much of this *theory of education* is of a practical nature, consisting of empirical precepts which have been tried and tested over the years.

There is in addition a multitude of sometimes conflicting theories of a very general type, grounded on the diverse views which philosophers have put forward on the theory of knowledge and on human nature. Here we refer to the views of such men as Plato, Rousseau, Herbart or Dewey. There is no doubt that in spite of their generality, and despite the fact that such theories are generally reflections of opinion rather than statements of fact, they have had a considerable influence over the actual practice of teaching. For example, "progressive" tendencies in education, and especially in infant education in this country, owe much to the views and work of Froebel and indirectly, of Rousseau.

A body of practical do's and don'ts is essential to the teacher's craft. But it does not amount to a science. It has not the generality of a science, and it lays no claim to its explanatory power. Still less can a set of views on human nature and development aspire to the title of a science if it is grounded solely or mainly on a *priori* speculation. For although such theories are general,

they are not rigidly tied by experiment, nor are they informed by a knowledge of the more recent advances in physiology and in the biological sciences as a whole.

If the theory of education is to include (or be replaced by) a *science of education*, that science can only be psychology, because it is psychology which is concerned with the theoretical and experimental study of human behaviour and its development. Yet it is not of much help for a psychologist to say to teachers : "Look to psychology for a science of education and base your teaching on that". It is undeniable that if the techniques and know-how available to the teacher are to be converted to determinate and explicit conscious behaviour, fully adequate to the varieties of the teaching situation, this can only be brought about as a result of advances in the relevant field of scientific enquiry, i.e. in psychology. But how far is contemporary psychology itself in a position to meet this need? However complacent or optimistic the psychologist, he is bound to admit that the contribution of psychology to education has so far been distressingly small. One might add that a good deal to foster wrong practices in education, practices which are actually harmful to the adequate fulfilment of its aims. Why?

If learning were no more than the direct complement of teaching, as giving is of receiving, there would be no problem for education. It would be sufficient for the teacher to "tell" and the pupil would automatically and conveniently "know". But learning is a complex process, one which even now is far from adequately understood. It is safe to state that the function of teaching is to "provide the optimal conditions within which learning may occur". But what are those conditions? The problem of learning is the central problem for education.

(II) Theories of Learning

Learning is also a central problem, if not the central problem, for psychology itself. Much of experimental psychology is concerned with the "theory of learning". Psychologists are interested to find some answer to the question "How is it that the same stimuli (or environment causes) may elicit one reaction (or set of reactions) from an organism on first presentation, and then give rise to apparently new and more adaptive reactions in the course of their subsequent occurrences?" It is clear that there is some modification in the links between "input" and "output", one that takes place over a period of time, and is directly related to experience. In many ways this is indeed the basic question for psychology, since the essential characteristic of animal, and especially human, behaviour is that it is modifiable and adaptive.

With such starting convergence of interests it might seem even more surprising that experimental psychology has not so far proved of more relevance to the practice of education.

In every science, one of the inevitable consequences of increased precision both in the formulation of problems and in the development of techniques directed towards their solution is that there is a tendency towards specialisation. This in turn can lead to the fragmentation and compartmentalisation of knowledge and interests. In those sciences which already possess a solid framework of basic relations upon which to build, the effects of such compartmentalisation are less pernicious than perhaps they might be, for the connexion between one specialised field of enquiry and another is largely situated within that common ground of knowledge. In psychology, despite the wealth of experimental data that has accumulated over the years, it cannot be said that these have coalesced to form a theoretical framework of this sort. If studies in "theory of learning" have not contributed more to the very

real problems of human learning which are of interest to the teacher, it is partly because these studies have been carried out in relative isolation, not only from related sciences, but also from other relevant branches of psychology itself.

To pose the question "How do organisms modify their behaviour in the light of experience?" is to limit the problem unduly, if not to prejudice its answer. For such a formulation implies the assumption that there is some one general principle or set of principles governing the process whereby *any* organism modifies its behaviour. This assumption is by no means unreasonable, although it may well be that the unity underlying all adaptation through experience which we call learning, irrespective of level (lower animals, mammals, young children, human adults, etc.), is to be sought rather in a common physiological organisation of nervous processes than in the field of psychology and psychology is not an easy one to draw, but whereas the physiologist may be content if he is able to give an adequate account of a functional organisation *within* the connexions of the brain together with the structural basis of that organisation, the psychologist is compelled to centre his attention on the relation between organism and environment, between the successive terms of that organisation, as signifiers, and the totality of the environment, *insofar as it impinges on the organism*, as signified.

In other words, the psychologist cannot escape from the problem of *meaning* – even if, unlike certain philosophers, he seeks the criteria of meaning by means of the observation and experimental manipulation of behaviour rather than by a logical analysis of the relations between the words we use to describe intentions, meanings, contexts, etc.. By centring his attention on the search for such factors as may be equally relevant and applicable to *all* learning, the psychologist is led to sidestep that which is specifically psychological in the problems of learning. Those processes the explanation of which is patently not exhausted by such universal principles will then be dismissed because they do not appear to belong to "learning": they may therefore be relegated to some other, less central, field of enquiry.

Here we have the first restriction on "theory of learning". If learning is that which is common to simpler modifications of behaviour, like finding the shortest route to the goal-box in a maze, and the acquisition of knowledge and skills in human beings, it is easier and more convenient to study it in simpler organisms where those factors which appear to be relevant are apparently more subject to experimental control. It is little exaggeration that the scientific study of learning, in the U.S.A. especially, has until fairly recently been largely the study of learning in the rat. Even when the enquiry is extended to learning in higher mammals and human beings, the method of analysis will be largely determined by that initial standpoint, and the type of learning situation selected for study will tend to be such that the mere association of elements in a chain seems to account for most of what occurs : hence the multiplicity of experiments on serial learning tasks such as the memorisation of nonsense syllables. *The content of learning is excluded as a topic of enquiry.*

It is of course well-known that E. C. Tolman, who was one of leading workers in this field, has put forward the opinion – in a single article – that there may be several different kinds of learning. But that article has remained a statement of a general theoretical possibility. It did not lead to any far-reaching revision in the methods and subject of research. Whereas the majority of learning theorists (Thorndyke, Guthrie, Hull, Skinner, etc.) took the greatest care to avoid all reference to meaning as far as possible, Tolman and his school insist on its importance. But outside of that one article, the meaning in question is a generalised meaning

– common to all learning and the aim of this work lends to be largely negative : to demonstrate that the interpretation of some learning (and probably of all learning) requires a reference to meaning, and that such a statement can be made without having recourse to the use of learns which cannot be defined operationally in terms of observable behaviour.

Tolman shared with other learning theorists that deliberate behaviourist outlook which until recently governed psychological enquiry as a whole and studies in learning more especially. From this standpoint, the "explanation" of behaviour must be sought in principles governing the formation of bonds between *stimuli* and *responser*. The former are deemed to be physical events in the environment and the latter are overt reactions on the part of the organism. From this it follows that the awareness of the stimuli themselves is either not a part of psychology at all (belonging properly to the pseudo-psychology of "mental science"), or else it may be taken for granted by the psychologist whose main interest is learning, being relegated to another branch, the psychology of perception. *To the behaviourist student of learning, the essential problem is how the organism acquires new bonds to existing stimuli.* Herein lies a second restriction in "theory of learning".

The scope of the enquiry will necessarily be greatly reduced by this limitation. For it is abundantly clear that any complex process of human learning involves above all a continuous series of re-adjustments to the relevant perceptual situations, depending on the growing differentiation of the behaviours to which they can give rise. To take a simple example, the back page of a newspaper means one thing to a child of two and quite another to a punter. In other words, learning to read or to follow a newspaper involves *both the differentiation of responses, and, through such differentiation, the differentiation of stimuli*, the formation of new "stimulus complexes", etc.. At no point in the enquiry can the stimuli taken for granted, being equated with "the physical properties of the situation".

No one would deny that the behaviourist standpoint sprang from the forthright rejection of an earlier introspectionist psychology, and hence that it bespeaks a deliberately materialist point of view. But its limitation lies in the divorce of psychology from the study of processes in the human brain. For behaviourism is essentially an attempt to discover a general way of describing regularities in behaviour with reference to physical variables only. While it excludes all reference to "mental events" it is also indifferent to processes in the brain which might correspond to such events. Instead of an explanation of behaviour in terms of underlying processes, we are offered a bowdlerised description of the facts: bowdlerised because the language used is militantly nonmentalistic, but descriptive because the bowdlerisation, which is after all no more than a linguistic subterfuge (often unsuccessful), is easily mistaken for a scientific explanation.

From all this it follows that the findings of experiments carried out within these schools of learning are relevant only or mainly to situations in which the content is relatively simple (from the point of view of the learner), and also clearly delimited – as in the memorisation of word lists. For it is only such "mechanical" processes which bear any reasonable analogy to the sort of animal learning studied in these laboratories. And even we have little by way of real understanding of the relevant processes. For behaviourist learning theories are not particularly interested in real processes (whether mental or physiological), being content to substitute for these a series of highly speculative relations between "intervening variables", pseudo-entities the exact ontological status of which is never clear, so that they are often regarded

even by their inventors as mere linguistic conveniences. Thus the gains of learning theory are very largely restricted to certain generalisations bearing on the effects of reward and punishment on the speed of certain types of learning, delay in reward, interference effects between serial "bits" of learning, etc.. It is small wonder that such a "science" should appear of small value to the teacher.¹

III) Language, Thinking and Problem Solving

If the problems of education have derived but little benefit from the experimental study of learning, it might be hoped that the study of problem solving and thinking would prove more useful. Again, since the learning situations studied in the course of experiments devoted to "learning" are in general too simple and mechanical, one might well suppose that the study of language behaviour would do much to rectify the balance.

However, here too, the compartmentalisation already alluded to has in general contributed to a weakening of the theoretical and practical impact of much that has been achieved. Since language pervades much of human learning and most of human thinking, we may begin by a consideration of language. At least three factors are involved in the use of language in thinking and speech. First, there is the semantic property of language which links individual symbols with referents in perception and experience. Second, there is the syntactical elaboration of linguistic usage which provides rules for the differentiation of symbols in accordance with their context (tense, mood, number, gender, etc.) and for their combination according to the accepted patterns of speech. Third, there is the abstractive property of language is not confined to the function of evoking situations in their absence but extends to the manipulation of higher order relations which are at once more general and more abstract than the connexions of immediate experience. The adequate study of language demands that all three aspects be considered together. Thus the elaboration of higher order relations is partly dependent on the acquisition of the necessary symbols, the referents of linguistic symbols (words) are not confined to perceptual data, but extend to such relations, and finally, the syntactic features of language are themselves elaborated in close connexion with its semantic and abstractive functions. It follows that *language is a complex skill, the elaboration of which needs to be studied in the course of its concrete development in children.*

The meaningful use of language cannot be reduced to a mere chain of verbal responses. As is abundantly clear from the study of language and thinking in aphasia (where the language function is affected by damage to the brain), the content or "meaning" of language is at least partly separate from its verbal expression. Conversely, when language is studied from the standpoint of behaviourism, the mechanism of language learning is generally taken to be identical with the stimulus-response connexions that are alleged to govern other forms of learning. The specific significatory power of language is of course recognised, but only in the sense that the range of stimuli is thought of as being duplicated by a corresponding set of linguistic terms. These linguistic symbols may then be evoked by stimulus-response connexions

1. In spite of certain positive contributions of learning theory, the point of these remarks is that such findings are in a sense incidental, inasmuch as the theories which led to their discovery and determine their interpretation are inadequate. It is nevertheless obvious that the present criticism is no substitute for an adequate account of these views. For a critical, but favourable discussion the reader is referred to E.R. Hilgard, *Theories of Learning*. For a discussion of their bearing on education, see L.P. Thorpe and A.M. Schuller, *Contemporary Theories of Learning*.

even in the absence of the material stimuli themselves. But the focus is still too narrowly centred on the semantic property of words. For language is more than a duplicate set of stimuli; it is a vehicle of communication and of thinking, and as such, it is essentially abstractive and generalising.

Much of the work on language is therefore vitiated at least in part by its divorce from the study of development. A similar criticism can be made of the study of intelligence referred to in section V. It also holds of much of the work on thinking and problem solving. Which are often studied as something separate both from language and from learning. Thus if rats learning to run mazes are a far cry from the higher reasoning of human beings which psychology desires to interpret, the latter is frequently regarded as having the character of "insightful" behaviour, in the course of which the individual "restructures" the elements of the problem with which he is faced in such a way as to discover its correct solution. But such an interpretation amounts to little more than a description of what takes place in the experience of the adult, when faced with problems which are difficult but (usually) not impossible (The well-known wire puzzles have sometimes been used in this sort of investigation). The interpretation is too general, in that it aims to cover all problems; and too superficial in that there is insufficient analysis of its relation to behaviour outside the "problem situation". We are bound to ask what are the underlying processes governing such restructurisations, how far does the experience of problems itself contribute to the learning of relations, what determines the passage of thought from one line of solution to another, how far does previous learning influence the possibility of restructurisation, what are the relations between the types of solution of which an individual is capable and the developmental level to which he has attained. In other words, thinking and problem solution cannot be separated from language, learning and development. Once again, a developmental approach to these problems, combining observation and experiment, emerges as essential to further advance in their understanding.²

IV) Development

It is apparent from the foregoing that a great deal of experimental work in psychology is partly vitiated by its failure to adopt a developmental standpoint. However, although there is no dearth of studies which concentrate on the character of development, these do not by themselves meet the need. And the reason is not far to seek. For when problems of learning, of perception, of language and of thinking are considered independently of development, as basic questions of general import, the study of development itself inevitably tends to degenerate to the mere empirical listing of behaviour of which children are capable at successive ages. It is no accident that maturation is seen as all-important, and that the successive appearance of increasingly elaborate forms of behaviour is attributed to spontaneous growth rather than to specific learning. It cannot be denied that maturation plays a considerable role; but the problem once more is to analyse individually the elaboration of those processes with which we are concerned, and to study the course whereby behaviour is modified at successive stages.

Above all, it is not sufficient to accept a random essay of developmental tasks, and from these to work out norms for their acquisition by the "average" child. For to do so is to evade the problem of analysis: what is it that determines the solution, and how can it be facilitated.

2. For a general introduction, see D.M. Johnson, *The Psychology of Thought and Judgment*.

The study of development provides a close parallel to the intelligence testing movement. It is therefore worthwhile turning to this before concluding this analysis of what appear to be salient weaknesses in psychological research, at least until a very recent period.

V) Educational Psychology and Mental Abilities

The more rigidly experimental study of learning has until recently been very largely the preserve of comparative ("animal") psychologists. It has offered but little to the educational psychologist which might prove generally applicable to the classroom situation. The latter, seeking for a way to fill the void between these somewhat abstruse generalisations about learning and the very real difficulties in learning encountered by the teacher, is compelled to bring back the learner himself into the field of enquiry. But just as the learning is studied by the experimentalist purports to tell up how the learner learns. We are left in doubt as to why it so often happens that he fails to learn! The only answer that can now be given is that some learners are better than others. The doctrine of innate differences in "intelligence" and other "aptitudes" – with its crucial failure to analyse the processes which might be described as "intelligent", etc. – is a natural complement to the mechanical associationism of behaviourist learning theory.

It would be ridiculous to deny that there are considerable differences between individuals in the adaptivity of their reactions to situations in general, and to classroom learning situations in particular. But once again, the business of psychology is surely to analyse the processes involved in meeting situations of varying complexity and adapting to them, and only in the light of such analysis can any fruitful conclusions be reached as to the reasons why some individuals prove more adaptable (teachable) than others. And by the same token, it should be increasingly possible to raise the learning power of all (which is not at all the same thing as to eliminate individual differences).

The fundamental criticism of theories of intelligence is that they are essentially statements of despair. Why does Johnny do well at school while Jimmy does not? Because Johnny is more intelligent, has more "g", etc.. But intelligence is not a "thing" of which one can have more or less: it is the description of a whole series of processes which may take place smoothly or with difficulty, and the study of these cannot be sidestepped with out detriment to the advance of education as a whole.

The study of factors of ability (and personality) constitutes an added refinement to the theory and practice of psychometry, and is open to similar criticisms. It is possible that the study of correlations between the several types of task at which different individuals prove most successful will ultimately show some correspondence with the thinking (or affective) processes involved in these tasks. But it remains that the mere statement that Johnny has low "numerical" ability is no explanation of why Johnny is poor at arithmetic. It is a re-statement of the sad fact in pseudo-technical jargon. The once popular notion that human ability relied on a variety of "faculties" of the mind (memory, reasoning, etc.) is unanimously rejected today, and the mode of explanation implicit in that doctrine is now recognised to be none other than the hypothesis of a lot of little men in the machine. But the much more scientific "factors" are still the old "faculties" in a new guise, and the principal difference is merely that the faculty psychologists maintained that the faculties were trainable, while the factor psychologists argue that they are not. The optimism which was so much a keynote of

the nineteenth century appears to be played out; but at any rate in this field little else has changed.

The psychology of mental abilities cannot offer a great deal of help to the teacher in his search for better ways of teaching. It offers much to the administrator in his desire to select the most rewarding pupils for real education, leaving others to make do with more "practical" substitutes. Recent research on the effects of streaming, on the variability of intelligence, on the teachability of defectives, etc., and recent successes shown by "failures" in comprehensive and secondary schools have contributed to a serious weakening of the standing of such theories of ability. They demonstrate that the practices of streaming and selection greatly exaggerate and perpetuate the very differences with which they aim to cope.

However, the deficiencies of intelligence testing are well known to readers of this journal. What is perhaps less widely appreciated is that the entire basis of such theories is fundamentally unscientific, because they are content to ascribe real but unanalysed difference in behaviour to hypothetical and unanalysable differences in fictitious entities. The aim of science is surely to explain the superficial reality in terms of real underlying processes at lower levels of organisation, and higher levels of generality. This is precisely what such theories reject as impossible, or unworthwhile. It is true that the end is far from in sight. But the attempt to seek shortcuts in terms of mere empiricism is as dangerous to scientific advance as it is harmful to progress in education itself.

VI) Towards a New Educational Psychology

For all the above strictures on much of recent and current work in psychology, the present article is written from a conviction that in the long run advance in educational practice is dependent on advance in psychological research. Both the preceding remarks and the following are of course concerned only with those aspects of general and educational psychology which have the most direct bearing on cognition and learning in classroom practice. The study of affective factors on human learning and relationships falls outside the scope of this discussion, even though its importance is doubtless equal.

What then are the chief characteristics of the sort of research which should contribute directly both to an increase in our understanding of the fundamental mechanisms involved in learning and cognition and to the refinement of teaching methods?

First of all, the study of learning needs to be carried out in full recognition of the possibilities of development in the learning itself. The very process of learning is different at different stages of development, depending on the progressive elaboration of successive reasoning processes involving new relational structures. Second, the study of learning needs to be carried out with strict regard to the content of such learning, i.e. what is being learnt. For it is only by means of the close analysis of the successive steps by which children acquire the various skills and techniques demanded by the needs of society and the curriculum of the school that we may expect to gain a richer insight into the processes involved in their mastery. Third, it is essential to be continually aware that the mental understandings involved in such learning will correspond at every stage to actual processes in the nervous organisation of the brain, so that the formulation of more general theories of learning cannot be divorced from the study of the physiology of the brain. Fourth, learning of more complex fields may lend itself to an approach in terms of the progressive organisation of various

component skills, where the successive achievements rely on the automisation of more elementary processes. However, it should be added that such automatisisation itself requires a detailed analysis in each specific context, both with respect to those antecedents which facilitate it and with respect to its effects on subsequent learning. Finally, the role of language and problem solving in learning needs to be analysed experimentally in the context of concrete learning problems, and at every phase of development.

In spite of the negative character of most of this paper, it must not be assumed that such work is entirely lacking in the West; still less in the Soviet Union. As far as the latter is concerned, the work of Luria, Elkonin, Zaporozhets, Leontiev, and many others corresponds fairly closely to the above criteria. Nor is this surprising in view of the Soviet emphasis on the close connection between physiology and psychology, as pioneered in the work of Pavlov, together with the generally accepted Marxist thesis on the need for the closest unity between theory and practice.³

But it is not only in the Soviet Union that such work is flourishing, even if the scale of this work is probably greater and its history is longer. To take the field of mathematics teaching, there has of recent years been a much heightened interest in the teaching of this subject in every country in the West, and the work of Dienes, mainly in this country, may be cited as an example of the sort of fundamental approach to educational problems which holds considerable promise.⁴ Again, a number of studies in the elaboration of reading seem to show due respect to the sort of considerations we have been urging, one of the most recent of these being that of Stott in his "Zest" approach to reading. One might add that, in spite of the avowedly behaviourist orientation of Skinner in the U.S.A., the development of teaching machines and programmes cannot but lead to advances in educational understanding, because the designing of such programmes necessitates the detailed analysis of skills alluded to above, while the success or failure of the programme acts as a correcting factor. Or again, in the field of language learning and linguistics, important work is now in progress, mainly in the U.S.A, with far greater emphasis on the syntactical aspects of language, and less on the semantic. Finally, in spite of the fact that the work of Piaget and Inhelder in Geneva is not directly concerned with education, it remains that their thoroughgoing analysis of certain fundamental aspects in the growth of human understanding provides an essential foundation to the analysis of learning skills. Some of the current work by Peel, Lovell (and the present writer) in this country, and by Zheminska in Warsaw may be regarded as attempts to elaborate the implications of Piaget's work for education.⁵

The thinking teacher is often too well aware of the limitations and shortcomings of psychological theory. But it would be a pity were he to leave the field in disgust, placing his reliance exclusively on his own concrete experience. In education as in every other field, the best hope of progress lies in scientific advance. Both the psychologist and the teacher have much to gain from the closest collaboration between the two. **P A S**

3. See *Psychology in the Soviet Union*, ed. Brian Simon; *Recent Soviet Psychology*, ed. No. O'Connor. See also *Educational Psychology in the U.S.S.R.*, ed. Brian and Joan Simon (to be published by Routledge & Kegan Paul towards end of 1962).

4. Dienes, Z.P., *Building Mathematics*.

5. See E.A. Peel, *The Pupil's Thinking*; K. Lovell, *The Development of Mathematical and Scientific Concepts in Children*; E.A. Lunzer, *Recent Studies in Britain Based on Jean Piaget* (N.F.E.R).

The Marxist Method in Lokayata

Subhendu Sarkar

The publication of Debiprasad Chattopadhyaya (1918-1993)'s *Lokayata: A Study in Ancient Indian Materialism* (1959) marked a new beginning in the study of Indian philosophy. Dispelling the dominant belief that spiritualism is an inherent feature of Indian philosophical traditions, he systematically showed, for the first time, that the materialist line of thought existed as opposed to the Brahmanic idealist tradition. Not only that, Chattopadhyaya traced the root of Indian materialism back to Lokayata (Carvaka) prevalent among the matriarchal tribal communities, long before the advent of the Aryans in the second millennium BCE. Even more significant is his contention that this proto-materialist outlook preceded the creation of god, soul, after-life and other such fantastic concepts. Of course, later, by the fourth century BCE, the rulers succeeded in disrupting the solidarity of the tribal communities and established the supremacy of patriarchy. However, the elements of the proto-materialist tradition survived and are still traceable among the country's tribal and low-caste population. Marxism provided Chattopadhyaya with a key to make a dialectical study of the material life of society and social ideas in the historical context. As a model, he had, of course, George Thomson's epoch-making study on ancient Greek society.

No wonder that a seminal book like *Lokayata* would evoke favourable responses from varied quarters. PAS, in its last issue (December 2009), has reprinted - as to mark fifty years of *Lokayata* - three responses from *Marxism Today*: a review article by Dipak Nandy (January 1962) followed by a note by N.P. Anikeev (December 1962) and George Thomson's reply to Anikeev (February 1963). These three articles, taken together, offer an interesting study of Chattopadhyaya's work vis-a-vis the Marxist method of investigation, particularly in the context of ancient societies.

Let us begin with Dipak Nandy. Though it is impossible "to summarise a book of six-hundred-odd pages marked by a boldness of interpretation, solid learning, and breadth of outlook", Nandy does full justice to Chattopadhyaya. Discussing the principal issues covered in the book - ranging from the Lokayata philosophy and Tantrism to the early Sankhya system of thought - under several sub-headings, Nandy not only makes the reader aware of the content but also supplies comments. Particularly relevant is his remark towards the end: "It is not out of place to say here, though, that the distinguishing feature of this book is the systematic and convincing way in which history of philosophy is reconstructed and linked to social structure and social change." This is, of course, the Marxist method of studying history. He further states:

Marxism, wrote Engels, "is above all a guide to study, not a lever for construction. All history must be studied afresh . . .". If the Marxist method needed any vindication, this book amply provides it, for out of a chaotic mass of material, each part meaningless in isolation, it has produced a systematic, coherent and fruitful synthesis. . . . It is to be hoped that Indian Marxists will follow up Chattopadhyaya's path-breaking work with the hard thinking and research that it calls for. In any case, the problems he has raised will not, one suspects, be

answered until scholars have at least come to grips with the Marxist method.

In fact, Chattopadhyaya, in the Introduction to his book, had clearly stated the nature of his approach: However, it is necessary to be clear about the materialistic point of view itself. As is well known, the most advanced form of the materialistic point of view was worked out by Marx and Engels and is broadly referred to as Marxism. I have accordingly attempted to approach the Lokayata from the Marxist point of view. But that means a much greater undertaking than a mere reconstruction of its lost structure. Marxism looks for the material roots of each phenomenon and views them in their historical connections and movement. It ascertains the laws of such movement and demonstrates their development from root to flower, and in so doing lifts every phenomenon out of a merely emotional, irrational, mystic fog and brings it to the bright light of understanding. (pp.xv-xvi)

Besides, the ultimate purpose of Chattopadhyaya's research of recognizing the primitive proto-materialism was, as he himself mentioned in the concluding paragraph of the Introduction, to show that its "value is comparable to the recognition of primitive communism in Marxism" and "that the spiritualistic outlook is not innate in man".

However, in spite of agreeing, on the whole, with Chattopadhyaya's method and objective, N.P.Anikeev raised a few objections. He was of the opinion that tracing the philosophical systems back to their social roots is not enough. Instead, what is necessary is a comprehensive analysis that would take into account "the conceptual function fulfilled by them; the objective contradictions of the process of cognition of reality with their help; relations of reality which are refracted by theoretical thought through the prism of its own laws and which are assimilated by its concepts, categories and constructions specific to it". In other words, Anikeev demanded a detailed evaluation of the complex dialectical relationship between a philosophical system (as part of the superstructure) and objective reality (the economic base). But the question is: has not Chattopadhyaya already achieved it? His account of the concept of deha (body) in Tantra, many ritual practices associated with it that gave impetus (in psycho-physical terms) to the growth of agricultural production and the later chemical experiments of the Tantrikas (which eventually saw the birth of scientific outlook) to achieve physical immortality are cases in point. In case of Sankhya philosophy, however, Chattopadhyaya restricted himself to the reconstruction of the original materialist system which had been assimilated by the idealists.

George Thomson in his rejoinder to Anikeev thought Chattopadhyaya's method commendable. Thomson emphasized on the study of ancient society to understand the historical conditions that gave birth to class society. The social ideas prevalent in the primitive society which reflected the low economic level, of course, began to disintegrate in response to the emergence of incipient class contradictions. But these ideas which were expressed in mythical form constitute the crude proto-materialism of primitive society, reflecting the unity, at a low economic level, of theory and practice and the absence of class antagonisms. And in Greece, India and China alike, these ideas were taken over, re-interpreted and transformed into the first theories of philosophical materialism.

Thomson defended the method of Chattopadhyaya by saying that the main task of the historian of philosophy is historical determination, not philosophical analysis, of the relatively independent social ideas. He voted against treating philosophy as 'a closed system of pure thought', which, he thought, what Anikeev was ultimately advocating.

Anikeev's second point of contention was in relation to Chattopadhyaya's interpretation of the concepts of purusa and prakriti in Sankhya philosophy. He found it difficult to believe that "prakriti and purusa - the fundamental categories of so developed and comparatively undiluted a philosophical system as Sankhya - are no more than simple analogies of the active role of women and the passive role of men in the agricultural economy of ancient society." It must be remembered here that Chattopadhyaya was, after all, reconstructing the materialist tradition and, therefore, his principal task was to find out the social reality that gave birth to the philosophical concepts. The original Sankhya developed the terms (which were already used in Tantrism) prakriti as the non-spiritual or material potential of the concrete material world and purusa as the necessary secondary male principle. The concept of purusa, however, underwent change and gained supremacy in the Vedas. Chattopadhyaya argues:

The pastoral economy of the early Vedic people brought into vogue an outlook of male-domination and, since purusa literally meant the male, it is here that we expect to find the principle of the purusa raised to an exalted philosophical status. Secondly, the vast literatures from the Sanhitas down to the Upanisads give us a connected picture of the development of the idealistic principle of pure consciousness itself. It is therefore in later phases of this tradition that we find the originally male-dominated outlook fused with the idealistic outlook, i.e., the principle of purusa made to stand for the ultimate reality conceived as pure consciousness. (p. 401)

A complete discussion of the social role of Sankhya, after it had become a thoroughly idealist philosophy, was perhaps beyond the scope of Chattopadhyaya's research.

Besides, Anikeev's remark that Chattopadhyaya has underestimated the false consciousness (ideology) of the primitive peoples in connection with the objective relations of natural and social reality is equally unacceptable. The account of magic rituals and the very concept of 'proto-materialism' are evident to suggest that Chattopadhyaya has treated the pre-class society as undeveloped in comparison to the class society.

Anikeev's last objection is similarly lopsided:

D.P.Chattopadhyaya often interprets this antithesis [materialism vs. idealism] somewhat one-sidedly. Thus sometimes he gives the impression that, in linking materialism with the matriarchal relations among the indigenous Dravidian agricultural population in India, and idealism with the patriarchal relations of the Veda Aryans, he distinguishes these trends in a vacuum, and transfers the struggle between them from the inner-philosophical sphere to the external sphere of mutual relations between two different ethnic components of the Indian people.

The findings of Chattopadhyaya were confined to a particular context. He was not writing a treatise on philosophy in general; rather he was making a historical inquiry into ancient Indian society. And his principal objective was to provide corroborative evidence for the "common forms or general ideas", as stated in the Communist Manifesto, that prevailed in all past ages. Chattopadhyaya's work together with the studies on ancient Greece and China not only captures the whole domain of ancient philosophy, as Thomson suggested, by historical materialism but also proves that notwithstanding specific peculiarities the story of the growth and development of human society is similar to all peoples and they may, therefore, move towards a common destiny. **P A S**

Introducing *Panchatantra*

D. D. Kosambi

[We reproduce below D.D. Kosambi's Introduction to the *Panchatantra* of Vishnu Sarma, newly edited by his friend, Narayan Ram Acharya "Kavyatirtha" with a new commentary of his own and published by the Nirnaya Sagar Press, Bombay (now Mumbai) in 1950. No bibliography of Kosambi so far published records this short but significant introduction. It is reprinted for the first time from a copy in the Bhandarkar Oriental Research Institute Library, Pune. This ninth edition of *Panchatantra* is extremely rare. Another copy we could trace is in the Library of Congress, Washington DC. Within a very brief span Kosambi provides the manuscript tradition of this work, gives his opinion of Johannes Hertel's studies on different recensions and Franklin Edgerton's critical text of the archetype, ending with the following observation, "The two scholars differ in their solutions of the problem, and it is still doubtful that either has said the last word."

Kosambi here pays handsome tributes to a traditional Sanskritist without reserve. Acharya too valued his friendship with Kosambi, recorded in other works edited by him (for example, *Subhasitaratnabhandagara*). The Introduction concludes with a typically Kosambi-like note : "[T]he work was a product of the Indian renaissance, and cannot be without its own great value when a new renaissance can be ours for the taking. We have only to consider the historical differences between the age of Visnusarman and our own, and to make the necessary changes in basic theory called for by different means of production, different relations between new productive classes."]

Ramkrishna Bhattacharya

Introduction

The *Panchatantra* occupies a unique position in world literature. The study of comparative literature may itself be said to have begun from the publication in Germany, a century ago, of Theodor Benfey's book *Das Panchatantra*. This traced the influence of the Sanskrit original through the lost Pahlavi translation of A.D. 570, which left a Syriac and an Arabic version, which in their turn evoked renderings in most of the European languages. Thus the spread of the Indian collection is much earlier than the comparable Aesop's fables. The Greek collection lacks the concentration upon *rajaniti*, systematic arrangement into groups, nesting of story within story, as well as the general frame-story. In addition to this complete ordering, the *Panchatantra* has another story as a preface, explaining that the work itself was undertaken by a Brahmin Visnusarman, when asked by the king to indoctrinate three uneducated princes. His method was to illustrate principles of policy and details of technique through these five sections of fables narrated and for the most part acted by animals, though completely human in motivation. The 'Arabian Nights Entertainments' does have frame-story, but the unity imposed thereby is thin. The purpose of the *Alf laila* is merely to amuse with a collection of stories which are often spicy, even salacious, and where the events themselves form the essential attraction; if the listener derives any guide

for action—from the unexpurgated edition—it can only be in *srngara*, not *niti*. The popularity of our Panchatantric stories is attested by their innumerable translations and their occurrence to this day in popular folk-tales. Their age and universality is proved by the existence of older Indian collections like the Jatakas, where we find a substantial number of parallel fables, but with a totally different guiding principle: supposedly, to illustrate the ways in which the Buddha fulfilled various perfections in his previous births. The idea of transmigration along with that of animals thinking and behaving like human beings goes back to totemism, which again shows the basic antiquity of such tales.

The form as well as the substance of the *Panchatantra* proved stable. Among principal representatives may be mentioned the old Kashmirian *Tantrakhayika* and two Jain versions of which the second is due to the monk Purnabhadra in the year 1199. The *Hitopadesa* of Narayana is an expanded derivative composed in Bengal not later than the 14th century. The *Brhatkathamajari* and the *Kathasaritsagara* report contracted fractions and the influence of individual fables may also be traced in the popular *Vetala-pancavimsati* and *Simhasana-dvatrimsatika*, both of which follow the Panchatantra in keeping a frame-story for the background. The Southern *Panchatantra* exists in five separate recensions, according to the accepted classification. We also possess a Nepalese version derived from the Sanskrit. Now all these show the existence of a prototype, but not what that prototype was. The critical problem, however, is not so difficult as in other popular Sanskrit works, and was attacked with considerable success by the indefatigable Johannes Hertel in a long series of studies (cf. volumes 11-14 of the Harvard Oriental Series). Use of Hertel's division into recensions, with the foreign testimonia, made it possible for Franklin Edgerton to publish a critical text of the archetype in the American Oriental Society's series (1924, vols. 1-2). The two scholars differ in their solutions of the problem, and it is still doubtful that either has said the last word.

The present edition reverts to the original purpose of the *Panchatantra*, namely, to edify. Pt. N. R. Acharya, famed for his thoroughness and meticulous attention to detail, has not encumbered the simplicity of the text with laboured critical notes and apparatus, but has contented himself with presenting a scrupulously corrected Sanskrit text, based upon the local version. To this has been added a clear, simple, but most helpful new Sanskrit commentary of his own which easily doubles the value of the book for the beginner; for, as an elementary text, the *Panchatantra* has no rival. With the development of a new nationalism, the basic position of Sanskrit has begun to be emphasized, which may counteract to some extent the desuetude into which older Sanskrit studies have fallen; in that case, the present work will be of considerable use in popularizing the language and simplifying the problem of instruction. Certainly, the still unmatched printing of the Nirnaysagar Press will make it difficult to find a more attractive elementary reader. In addition, those who are more advanced in age and knowledge might find it well worth their while to read the work again in this edition, to recapture something of the enthusiasm of their own youth, and to feel something of the spirit of the country's youth.

The policy of rulers has developed in more complicated ways so that we may no longer find a Vassakara helping king Ajatasatru defeat the Licchavis, or a Zopyrus reduce Babylon by dissensions for Darius I, with the technique of the *kakolukiyam* tantra. Yet the similarities with the method whereby India was kept divided lead to facile parallels being drawn if only one could ignore modern economic development and the class war. Be that as it may, the work

was a product of the Indian renaissance, and cannot be without its own great value when a new renaissance can be ours for the taking. We have only to consider the historical differences between the age of Visnusarman and our own, and to make the necessary changes in basic theory called for by different means of production, different relations between new productive classes. **P A S**

Letters on Lokayata

We publish below for the first time the letter that Prof. J.B.S. Haldane wrote to Debiprasad Chattopadhyaya in connection with the latter's book, *Lokayata*. The letter contains, besides Haldane's appreciation of the work, some acute observations on several aspects of Tantra and Samkhya that would be of interest to the students of materialism in India.

Haldane's letter is followed by another one by I.B.Serebryakov, First Secretary to the Embassy of the then USSR. It was written in response to a letter from Debiprasad Chattopadhyaya (unfortunately lost).

Ramkrishna Bhattacharya

JOURNAL OF GENETICS

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December 1,1961
No. : H/94

Dear Sri Chattopadhyaya,

I have read "Lokayata" with great interest. So has Prof. M.Prenant to whom I lent it in Europe. Let me make a few criticisms of detail.

p. 281. The triangle is a symbol for the female genitalia outside India, a fairly obvious one if one considers the hair pattern (cf. Fig. 19). Thus in ancient Greece, the letter Da or Delta was written Δ . "To Delta" i.e. the Delta, could mean the northern section of Egypt or the female organs.

p. 296. I do not know much about the sexual theories or practices of Tantrism, but I doubt if, "by modern standards they are morbidly and disgustingly obscene". No doubt they were by the standards of English ladies about 1900. But that does not show that they would appear morbid or disgusting to a biologist. I have had to overcome various strong prejudices as a biologist, for example against cutting up dead bodies, analysing urine, and so on. I think I am the better for doing so. Similarly with the five Ma-s. The list does not strike me as appalling, but funny. I happen to be a vegetarian, but I have no intention of renouncing alcohol or physiological love, though aware that few people over 80 practice the latter.

p.302. The large majority of the female statues of the upper palaeolithic have been found in the Soviet Union. No less than 49 were found at various sites in the upper Don valley, but

some also in Siberia. A translation of Mongait's book or "Archaeology in the Soviet Union" is available in the "Pelican" series. A failure to refer to Soviet work gives a false impression of the wide geographical spread of this peculiar art form.

p. 310. In Gaelic usque baugh means "water of life". In English this word has become "whisky". Catholic spouses do not drink wine in church after the marriage. Protestants sometimes do so.

p. 314. Quite a well known English song contains the lines
"Roll me over in the clover,
Lay me down and do it again."

There is no need for an Englishman to go to Java or Ukraine to practice this form of magic.

p. 321. The root is of course common to several other languages, for example in ancient Greek tanuo means I stretch or extend. But it never means to reproduce, and I doubt if this was its primary meaning in Sanskrit.

My main criticism is this. I think it can be maintained that the passages quoted on pp.662 and 663 are proto-idealism just as much as proto-materialism. It is no more true that he who meditates on food obtains the worlds of food and drink than that he who meditates on god becomes god. It seems to me that the roots of materialism and idealism are both to be found in ancient practices. Most human activities included practical and a magical actions, and our ancestors could not distinguish one from the other.

I found your chapter 6 particularly interesting. I think you have made out a very strong case for the originally materialistic nature of Sankhya. As I hold that we need to think about matter in as many ways as possible in order to get hints, I find the Sankhya philosophy quite important as an aid to thought.

I think you are still a little under the influence both of degenerate hindu thought, and christian thought. Your comments on tantrism show it. I would much sooner, for example, that children saw representations of human sexual intercourse, as in some hindu temples, than of torture, as in many christian churches. The latter is "apalling your word", the former is not, though I do not know whether it is desirable. The main objection to-sexual enjoyment is not that it distracts one from higher matters, but that it is associated with the economic and social subjection of women. Once this is overcome, I can see no valid arguments against people doing whatever pleases both of them. Unfortunately India has a long way to go in this direction. But until I know a lot more about tantrism I am not prepared to condemn it, except its idiotic theories.

However that may be, I have enjoyed your book greatly. Perhaps we may meet some day and discuss these matters.

Yours sincerely (*sic*)

Sd/-

(J.B.S. Haldane)

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EMBASSY OF THE UNION OF
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From the desk of the Mind-Painter

Dear Friend,

6th March '60

This was a great pleasure to me to receive your kind letter dated 4th April '60. (*sic*)

Referring to the main subject of your letter I would like to state that 'Bibliography of India' was not only my own work, but the work of a big team of our indologists. This work was initiated by a group of my pupils when I taught Indian literature and History of Ancient India at the Tashkent University. Afterwards this work got attention of our foremost (*sic*) indologists who also not only made very valuable contributions but put the Bibliography in its present order.

I am very sorry that I can't arrange translation of the said bibliography but you can contact in this respect either 'Oriental Publishing House' (2, Armyansky Pereulok, Moscow, USSR) or Professor Nirendranath Ray, who resides now in Calcutta. Prof. N. Ray knows Russian language pretty well and can help you in respect of translation of the said Bibliography into English. Prof. N. Ray spent two or three years in Moscow in the Institute for Oriental Studies.

I forward your letter to the Director of the Oriental Publishing House, Mr. O.K. Dreyer and to the Director of the Institute for Oriental studies, Mr. B.G. Gafurov and will ask them to contact you. We hope that this contact can lead to close co-operation between Indian and Soviet Scholars.

This is really pleasant fact that your magazine 'Indian Studies' filled the gap from very long time felt by all indologist. We are sure that your attempt will get the highest appreciation by the indologists of all countries.

I would like also to make a personal request to you. Being mostly interested in the ancient and mediaeval Indian literature, I devoted some time for special studies in such popular books as 'Vetalapanchavimsatika' (*sic*) 'Bharatakadvatrinsika' 'Dhurtakhyanam' and some others. I made also some translations from Sanskrit and Hindi into Russian. Now I am very highly interested in Bhartrihari's Satakas. I read that there is a great folk tradition about Bhartrihari in Bengal. Could you suggest me works in which I can find good authoritative data on this subject? This is my first request. Second is - can you suggest me the best works of contemporary scholars on Bhartrihari? Third - and the last one - what is your opinion about philosophical side of the Satakas. Many scholars suppose that he was an exponent of Vedanta, many others that he propounded the Buddhist creed. But it seems to me that he was neither vedantist nor Buddhist, especially because the last verse in Vairagyasataka is fundamentally materialistic. I would like to know your opinion on this as well as any of your suggestion about my work on Bhartrihari's poetry. During my illness I refreshed my acquaintance with his poetry and got so inspired that I decided to translate Satakas and to write at least an article on Bhartrihari's life and works. Naturally, if I get time I'll write a monograph.

By the way, I have read attentively your book on Indian materialism. I was really glad that at last such fundamental treatise of high interest on Indian materialism was published.

With best regards,

Mr. Debiprasad Chattopadhyaya,
Editor 'Indian Studies'
Calcutta

Friendly yours,

Sd/-

(I.D. SEREBRYAKOV)

First Secretary to the Embassy. **P A S**

The secluded kitchen

Mrs. Majumder has visited me several times and everytime she has a different kind of physical problem. Sometimes she complains of a burning sensation at the neck which gradually spreads upto the head. She has a buzzing sensation in her ears at that time. Once she had complained that her right side, her leg, hip, back and hand, had totally become numb. From time to time, a current like sensation used to start from her toes and shoot upto her heart and then move around the whole body. There are many such complains which I cannot recall now. Everytime after she finishes narrating her complains, I prescribe a couple of medicines.

Kalyani Majumdar wants to know anxiously, "Now all the problems will be cured, isn't it doctor!"

The scene is same everytime. Anxiously she goes on describing her disease repeatedly in a monotonous manner. In the meantime, the well-built Mr. Majumdar, sits beside his sick, frail wife, and is found staring at the portraits hung on the wall, fiddling with the books on the table, or sometimes scratching his ears. After a long time he starts yawning.

No sooner do I finish writing the prescription, than I see this languid man coming round. He puts forward a big currency note towards me. His attitude reflects the pride of his affluence, "O.K. goodbye doctor, see you."

The first time they came, they had brought a bag full of x-rays, scan reports, blood-test reports and several other investigation reports, which heaped when kept on my table. In some cases, the same test has been repeated several times but no abnormality has been detected in any time. Mrs. Majumdar firmly believes that she has got such a disease which cannot be detected by the tests. Everytime she came, she had a new problem and the previous problem was no more. Each time I prescribed her the same medicine by changing the name only, and it proved effective. The previous problem used to be cured and a new problem used to crop up.

Actually this is called somatisation disorder. Mental anxiety, restlessness, despondency, desolation etc., instead of showing psychological disorder, get suppressed and give the manifesto of a physical problem. This is known as a masked mental disease.

Variety is the spice of life, and this variety is lost in these cases, as the sufferers of this disease do not find an outlet to express themselves in life. This demand for variation keeps on expressing itself as various ailments. This disorder is seen maximum in middle-aged perimenopausal housewives. It is very difficult to cure such a disease.

The reason behind this is that the social and family circumstances are the main cause behind this problem, and at this age, it is almost impossible to change the existing set-up. If it is possible to change the set-up, the result is bound to be a success. So the only alternative way of treatment is to check up the patient from time to time, prescribe some medicines and give assurance.

The Majumdar couple has a son and a daughter, and this is their family. Mr. Majumdar is a busy businessman. He goes out in the morning and comes home at night. Almost he does not have any off-day. He feels if the week had eight days, it would have been better. Their daughter is married and stays in Delhi. She too has become so busy in her new family, that she does not get any time to visit her parents before two to three years. Her son is also busy in his father's business and almost has no time to spend any longer hours with his mother.

There is a gloomy, secluded kitchen at one corner by this house. Mrs. majumdar resides there. She serves the food twice a day to her family, her only role to play in the family, and this is the only time she gets an opportunity to communicate with others. After this again she is engulfed by the monotonous life. Hence serving lunch and dinner to her husband and son seems to her only fruitful contribution in the family. Mr. Majumdar's flourishing business is so charged that he does not have any time to spend for her. Even after several suggestions, I failed to convince them to have even the slightest change in their routine life.

I suggested Mr. Majumdar, "Spare sometime for your wife and take her out on outing from time to time. It can also prove effective if she can be involved in some outside job. She has lost her identity. At least if you can give her some small responsibility in your business ..."

Mr. Majumdar laughed, "She is busy with the worship of goddess Lakshmi and her kitchen! She will go out on business! How could you say that doctor. Actually see, I don't think I need to explain you the line of our business. There is great competition and tension in our line. If get some time out of my business, it will suffer great loss. We are like jockeys, sitting on the back of a running horse, you look back and you fall. It demands infinite time. And she knows it very well that all this is for her only. It is better you prescribe medicines doctor."

Following my advice he once managed a two-days break from his tight schedule and went to the coastal fishing town, Digha. Mrs. Majumdar used to sit on the beach alone. Sea-breeze brushed her frail sick body. Mr. Majumdar tried to utilise the time by jogging a bit. He used to walk far away along the beach planning his business proceedings after returning home. Kalyani Majumdar enjoyed the cool breeze. Surprisingly after many years she remembered her childhood days. Coming back to the hotel room, she easily had a sound sleep, which was very unusual for her.

"You know doctor, all my problems had almost vanished during my two-days stay in Digha. Is it for the water? Again I feel that dragging pain in my abdomen and there is a feeling of heaviness in the left side. Yesterday I couldn't sleep for that pain. I think it is the water here that is polluted. Can't we examine the water?"

I smiled.

Mr. Majumdar got irritated and said, "Doctor, please tell her to have some mental strength. If she is mentally strong, then everything will be cured."

I felt, that was the time for me to be a bit strict. I said - "What power is she given on which she will base her mental strength? The total power of the family, property, and business is in your hands."

"Why, I have never interfered in her personal freedom! What has she not got in her life! She has got everything what any housewife can expect. She has an established son, and her daughter is also married in a respectable well-off family. We too are quite affluent. Whenever she has asked anything for her, I don't remember if I have even refused. Women often have

doubts about their husbands fidelity. In that case also, ask her, if she is not satisfied!"

At last in a chiding tone I explained what true freedom is.

After this, there was no news from them for a long time. I thought, I might have been over reactive, and might not have behaved like a doctor. But to my surprise she came after two years. Again the complain of the same old problems of her itching, burning sensation, pain and so on went on echoing in my chamber. But I was stunned to hear the reason for not coming all those days.

The fulcrum of the family had shifted to the field of the flourishing business and the kitchen was left in total seclusion from the din of the busy world. One day the situation changed. Mr. Majumdar had a stroke and he got bedridden. Proper care was necessary for him to come back to normal life. Round-the-clock a vigilant care was necessary. The well-built, brave, strident man became totally dependent on others like a child, and the frail, sick Mrs. Majumdar got the steering wheel of the family for her to run.

She found no time for herself. She became very busy. Day and night she took care of her husband like Sabitri, determined to bring back the life of her Satyaban. She started getting more importance in the family. Whatever she said was obeyed by her son. She ruled her house with full vigour. Gradually Mr. Majumdar recovered. He could sit-up, could walk a little bit with assistance. He felt insecure without his wife around. He always wanted his wife to be near him. Mrs. Majumdar used to show a false anger, "How many things I'll manage alone?" When enquired of her illness, she said, "I have no time to think of such petty things. I am all right now."

"It means you were all right all these days?"

"Yes, surprisingly I was O.K. I took no medicines all these days since his sickness."

I was stunned and I asked her, "you were without any medicines? How's it possible?"

"Yes, that's true. I was quite O.K. without medicines."

There was no problem with my sleeping or with my appetite. Besides there was no time for me to think about it. I managed everything all alone. There was no helping hand. - Now again I feel a burning sensation near my neck. I have to pat water on my neck and back before going to bed. Even then I cannot sleep. Whole night I keep on turning from one side to the other. A pain from the left side of my hip goes down my leg. Is it nerve pain? Doctor, do I need to test my thyroid once?"

Mr. Majumdar, who was once again returned to his successful business life, laughed and said, "Then, what it means doctor! For her to be fit I have to be sick and bedridden?"

I said, "Yes, the stark reality is this. Your relationship has come to such a point that if one of you are sick, the other will be O.K.. If your wife was busy in her outside world, then you might not have been O.K.. You want your wife to be weak, feeble and a dependent on you. So this disease may not be cured. Mrs. Kalyani Majumdar got back the control of her family at the cost of your illness. Those few days of her importance in the family will remain as a memorable phase in her life. Now again the secluded corner of the house is there for her, and the only alternative for her is doctor and medicines throughout her life."

Lokayata : Probe Into An Obscure Chapter of Indian Philosophy

Bhowani Sen

LOKAYATA : A STUDY IN ANCIENT INDIAN MATERIALISM, by Debi Prasad Chattopadhyaya, People's Publishing House (P) Ltd. New Delhi, Price : Rs. 27.50

The author as well as the publishers of LOKAYATA have earned the gratitude of all those who are interested in the history of Indian philosophy by probing into an obscure chapter of the same.

One may not agree with him in some of the conclusions or even about some of his data, but anyone who reads the book cannot but be impressed by the talents of the author or by the originality of his work. He has fulfilled a stupendous task in true scientific spirit. This product of his painstaking research constitutes a great asset to the students of the history of Indian philosophy.

Ancient Materialists

The subject of his enquiry is that system of ideology, thoughts and world outlook which has been known in the works of Indian philosophy as *Lokayata*. Every student of this subject is acquainted with the doctrines of the ancient Indian materialists generally known as the Carvakas.

In the works of ancient Indian idealist philosophers, these materialists have been depicted as men devoid of high thinking and engrossed in gross sensualism. But in the modern epoch attempts have already been made to salvage the ideological essence of their thoughts and ideas from a mass of distorted presentations. Debiprosad Chattopadhyaya has picked up the thread from where it was left by others and carried the enquiry forward with astounding vigour.

In this book, what the author has presented is not so much the ancient materialist philosophy as such but the social significance of the *Lokayata* system of ideologies, the material roots of the same and its relation with the parallel outlook on life as embodied in the Vedas and the Upanishads. In doing so, the author has been able to lay his finger on the whole historical chain of thought currents from the pre-historic epoch of the Indus Valley civilisation up to the present day folk cults and religious beliefs of the common people.

The Same Struggle

The study has successfully demolished the theory that India's cultural heritage is the monopoly of Aryan Brahmins and the Indian tradition consists solely in the religious-ideological system they represented during the ancient Hindu monarchies. The author of LOKAYATA has also been able to establish the truth that the *history of ancient Indian Philosophy was the history of struggle between two world outlooks - materialism and idealism.*

Lokayata means, as Chattopadhyaya has made out, that outlook on life and the world which was prevalent among the common people and it was basically one of this-worldliness

and not other-worldliness. Modern materialism based on science could not have arisen in those prehistoric times, and naturally, the doctrinaire aspect of their ideologies could not but be very crude; it is gratifying to note that the author has done justice to history by calling it "proto-materialism" instead of indulging in vain glorification of it.

Nevertheless, it is interesting to note that the entire cultural outlook of India's common people was once based upon the faith in the reality of matter and the existence of the material world, and life was then interpreted not in terms of a mysterious force but as the product of material reality itself. Their philosophical representatives preached that direct observation and experience alone constitute the primary source of knowledge. The idealist critics accused the ancient materialists of denying the validity of inference, but Chattopadhyaya has successfully exposed this criticism as unfounded.

The Sankhya Doctrine

One of the most important conclusions of the author is that the Sankhya school of philosophy was originally a Lokayata doctrine which was subsequently modified by the idealists and presented as an idealist doctrine. He has produced many unchallengeable evidences to show that long before the presentation of views embodied in *Sankhya Karika*, the Sankhya doctrine was already in existence.

This original Sankhya regarded *Prakriti* as the primary reality out of which the changing world with its manifold manifestations is constantly coming into being and passing away, i.e. resolving itself into *Prakriti*. This *Prakriti* had no metaphysical mystery around it; it was Nature itself in its totality and this Nature is nothing but the real cosmos which is observed and observable. But the Sankhya system was dualistic and not monistic. Besides *Prakriti*, it affirmed the existence of *Purusha* and this *Purusha* is acted upon by *Prakriti* to give birth to the plurality of objects. The *Purusha* is not "one" but there are many *Purushas* corresponding to the plurality of the manifest realities.

Chattopadhyaya then refutes the idealist interpretation that *Purusha* is the soul and *Prakriti* is the body. He does it on the strength of abundant data which make it clear that the concept of transcendental soul was absent in the original Sankhya doctrine, as in the whole of *Lokayata* beliefs. *Purusha* is passive, *Prakriti* alone is active. In the chain of Sankhya logic (meaning thereby original Sankhya), nowhere is it clear why this *Purusha* is assumed.

A Mystery Solved

Chattopadhyaya has solved the mystery by applying the general laws of historical materialism. As ideology is, in the last analysis, the complex reflection of the real world in human mind, the *Prakriti* and *Purushas* must have been projected from social realities into the realm of speculative thought. It is, therefore, conjectured that Sankhya doctrine arose out of the popular thoughts and beliefs prevalent in the epoch of Primitive Communism from amongst matriarchal tribes in which the female principle was dominant. But then, what was the place of the male in such a society? The primitive man had observed that in the act of procreation, the male could not be dispensed with, but it was the female that was the active head of the clan and the male was only a passive outsider. It is this reality of the matriarchal clan that might have been reflected in the Sankhya doctrine which postulates the active *Prakriti* and the passive *Purushas*.

Working Hypothesis

This can be considered as a creative application on the part of the author of the science of historical materialism, irrespective of whether it stands the test of further historical research. In any case it cannot be denied that it is a reliable working hypothesis for scientific investigation.

The author has also established the link between *Lokayata* and *Tantra*. In his opinion, from the same reality of matriarchal tribal relations, the system of religious thoughts and practices called Tantrism sprang up and this Tantrism is as old as Sankhya and like Sankhya it has undergone many changes.

Original *Tantra* was the ideological reflex of the female principle and centred upon superstitions and magic connected with agricultural production. The worship of goddess Shakti, the significance of the use of leaves and corns in her worship and certain Tantric practices bear very close resemblance to agricultural realities.

The author, therefore, has spent a large part of the book in order to establish the connection between *Tantra* and *Sankhya* both arising out of the same social reality – matriarchal tribal agrarian society. He shows that both these systems of thought and culture are but branches of the same *Lokayata* outlook. It is, however, not clear whether in the opinion of the author, *Tantra* and *Sankhya* both constituted the faith of the same persons or they were two distinct branches of the *Lokayata* school of thought, having certain broad common characteristics.

Perhaps, available data do not justify any definite conclusion but the author has succeeded in establishing the causal link between matriarchal tribal agrarian society, Lokayata world-outlook, Sankhya and Tantra.

Having established this link, the author has boldly jumped into the most obscure chapter of ancient Indian history, into the epoch of Indus Valley culture. The author has shown that in the picture printed on a seal of Harappa, the woman's figure upside down with a tuft of plants protruding out of the female's uterus, has surprising correspondence to the Tantric faith that vegetables and plants grow out of the great Mother's womb. Nobody can expect the author to produce decisive evidence to show that the Indus Valley society of Mohenjodaro and Harappa continued its existence till the emergence of *Tantra* and *Sankhya* but the author has the right to assume that the entire people did not perish along with the destruction of their towns and, therefore, they can be expected to live as the tribal masses of the early Vedic age.

Social Struggle

The author's hypothesis that the pre-Vedic non-Aryan Indus Valley society continued to exist even after the destruction of the main centres of its culture and civilisation and that the *Lokayata* system of thought-principles sprang up from the same people does not seem to be *prima facie* baseless. Perhaps they were the people who were called *Asuras* by the Aryan tribes and the philosophers of these *Asuras* were the *Lokayatikas*. They were none other than matriarchal agrarian tribes while the Aryans were originally patriarchal and pastoral.

The conflict between the Lokayata and the Vedas is the ideological reflex of the social struggle between the primitive agrarian society of the pre-Aryan tribes and the expanding pastoral nomads, called the Aryans.

Aryan Society

But there is a doubt, not cleared by the author, as to the homogeneity of the pre-Aryan society. While *Tantra* and the worship of *Sakti* can be traced to the matriarchal character of the society, *Ganapati*, the male hero, indicates the existence of patriarchal social relations. Perhaps, in course of time, even before the old non-Aryan tribes ceased to be creative, the mother-right had collapsed and patriarchal relations begun to emerge. In any case, the author has not given any satisfactory explanation as to the origin of *Ganapati*, the male hero, in a matriarchal tribal society, though he has successfully traced the whole history of the rise of *Ganapati* as a male god from the status of a terrible demon in the eyes of the Aryans.

It goes to the credit of the author that with amazing clarity he has been able to show that the Aryans and their culture were originally inferior to the great non-Aryan tribes and that spiritualism, the chief characteristics of the Upanishadic mode of thought, does not possess the monopoly of India's tradition. Even the *Vedas* were originally neither metaphysical nor spiritual in content.

The philosophy of idealism came into being at a later stage with the emergence of the State, family and private property. The highest achievement of this philosophy is in the Upanishads but even the Upanishads could not demolish the Lokayata view of life. The conflict between the two world outlooks continued to exist till the emergence of Buddhism. With its rise, the creative era of the Lokayata system came to an end.

Background to Buddhism

The author's account of the social background behind the rise of Buddhism as a world outlook is the most brilliant chapter in the book. He has successfully brought into sharp relief the relation between the rise of States on the ruins of the tribal society. He has shown how the surviving representatives of old crude materialism were unable to explain the new realities and ceased to be creative. They had seen the collapse of the old ethical values of the tribal society and the emergence of conflicts in the life of an individual hitherto unknown but failed to grasp the positive essence of the same and became fatalists. Nor could Upanishadic idealism solve the problem of the emerging new era because self-denial and escape from the affairs of the world could not grip the mass-mind, and there-fore, the *Upanishads* remained confined to the enlightened elite of the new society.

Buddha, with his doctrine of *Karma* and social orderliness based on a synthesis between the tribal ethical values of the old clans and the new realities of a territorial society, gripped the masses and became an invincible force. But it is difficult to agree with the author when he maintains that "at a period of history when there was no objective possibility of understanding the causes of human sufferings nor any scope to suggest the real remedy, the Buddha turned to the only possible solution, namely substituting the mental intoxicants." Or, in other words, he was asking people to take refuge in "illusion" instead of "trying to understand reality."

This is a negative approach which fails to explain the social progress of the epoch under the flag of Buddhism. Mere "illusion" cannot act as an incentive to a popular upsurge through material and cultural development. In so far as there was lack of science, illusion it was. But it must have possessed a positive content. Perhaps their positive aspect consisted in the doctrine of Karuna and the principle of order which had given stability to benevolent despotism.

Creative Contribution

It goes, however, to the credit of the author that he himself has elaborated these aspects though some comments seem to be unreasonable and perhaps superfluous too. These comments do not in any way affect his main thesis.

One may agree with him or not, on this or that generalisation here and there, but it must be admitted that *Lokayata* is a work of scientific research and its creative contribution to the treasure store of Historical Materialism can hardly be exaggerated. It is desirable that the book gets the widest possible publicity.

(Reprinted from *New Age* (weekly), organ of the Communist Party of India, then edited by P.C. Joshi, 29 November 1959, pp. 7 and 11) **P A S**

Journal Review

Anweshā

A Journal of Education Vol. 5, January 2010, Rs. 30.00

Recently we have come across this unique journal published by Ramkrishna Mission Brahamananda College of Education, Rahara. It is not unfair to accept that we are not familiar with this type of journal on Education in our society and it is needless to say that this journal should be very much helpful to the students of Education as well as teacher-trainers.

This volume contains articles comprising a wide variety of subjects but all are related to the problems of Education. The articles are on children's mental health, promoting reading habit, educational leadership, school bullying, creative 'self-esteem', Eco-club, rehabilitation of drug-addicts, value-based education, universal literacy and much more. It is astonishing to see such a wide variety of articles have been gathered here in such a small volume of journal. It manifest the potentialities of the editorial board. They have left no stone unturned to document such various problems linked to modern Education. Specially it is noteworthy that all the articles have been written by the experts of their own field and they are well informed persons. We expect that this endeavour of *Anweshā* would be successful, at least it can be good enough to ignite the flame of quest for navigation on further knowledge on the minds of students, teachers and teacher-trainers. We are eagerly waiting to see the future volumes.

Dr. Sutapa Thakur **P A S**

Obituary for Lev Vygotsky

Alexander Luria

The scientific world of the Soviet Union has lost one of her brilliant men. Professor L.S. Vygotsky, leading Russian psychologist died of consumption on June 11, 1934, at the age of thirty-eight.

He worked in the field of general, educational, and abnormal psychology, was an innovator and reformer, and created a new school with many followers all over the country. From his early years, in his native town, Gomel, and afterwards in Moscow, Vygotsky realized that psychology, as then generally practised in the universities, did not really offer a satisfactory scientific expla-

nation of human personality and of those complex activities of the brain which are specifically human. Even in his early works Vygotsky held that psychology was going through a crisis, being divided, in fact, into two isolated branches, viz., a purely naturalistic psychology, which by means of physiological methods could only explain the most simple phenomena, but could not tackle the more complex traits of the human mind; and the other, the "idealistic" (*geisteswissenschaftliche*) psychology, which studied the more complex phenomena, but did so in such a way as to exclude psychology from the field of the natural sciences.

Instead of following these two methods, Vygotsky tried to explain consciousness from the developmental point of view, i.e., by tracing the higher mental functions to their origin. Modern psychology is particularly indebted to him for his work on the *genesis of the psychological functions of the child*. According to him, the determining factor in the psychological development of the child and in the creation of the complex mechanism of the psyche is the social development of the child. Vygotsky's experiments led him to the conclusion that during the child's educational period and in his contact with the world of adults he not only acquires new habits, but that actually new mechanisms are formed which are social by nature. These mechanisms are the patterns of the child's behavior toward the adult, which, as time goes on, develop into the child's own mode of behavior. In a number of papers, which in his own country are now accepted as classics, he described some of those mechanisms. He showed that the development of the child's mental functions goes with a deep change in the mind and with the growth of new and complex inter-relations between the various mental functions, in other words, with the genesis of new functional systems.

In the light of this theory, Vygotsky analyzed the origin of such complex mental functions as logical memory, active attention, will, speech, thought; being one of the first psychologists in his country to introduce the "developmental" method into the experimental study of these problems.

His attention was drawn to the fact that speech plays the most important part in the development of complex behavior; it is speech that creates new functions inter-connected through their meaning. He then studied the changing meaning of words in the course of the child's development showing that the meaning of a word is not constant through various periods of childhood, and that as speech develops, the correlation of mental processes is developed and new functions are formed to become finally the specific features of the adult mind. Starting with a study of the development of mental functions, Vygotsky arrived at his theory of the significant integration of human consciousness, which he conceives as the product of this development.

Vygotsky, however, did not confine himself to the study of theoretical problems, but devoted much of his work to the practical application of psychology. Unlike the psychologists of both the physiological and the idealistic (*geisteswissenschaftlichen*) schools, Vygotsky tried to find a scientific solution of the practical problems of our daily life. Many of his studies are of great value for the improvement of educational methods. His collaborators showed how children understand the ideas with which they are presented at school, how the child's development affects his training, and how, in turn, he is stimulated by this training. Vygotsky's laboratory work allowed him to predict the development of the child and to define its scope. The work which he carried out in the Institute for the Experimental Study of Mental Defectives in Moscow shows how diagnostic and educational work should be based on the study of the development of mental functions.

The psychiatric and neurological clinics owe to him a number of valuable contributions. He has shown that the study of the part in the understanding of the mechanisms of nervous and

mental diseases. In his work on the psychology of schizophrenia and phasia he gave brilliant examples of how clinical problems can be solved with the aid of psychological methods. His posthumous paper to the Psychoneurological Congress deals with the problem of localization of mental functions in the cortex.

We have lost a scholarly pioneer who has shown new ways to Soviet psychology, education, and psychiatry. His pupils are now working in various laboratories in Moscow, Leningrad, and Kharkov. He has left a considerable number of books, among which *Pedology of the School Age*, *Pedology of the Juvenile*, and *Thought and Speech* are the most important. A philosophical work of his, *Spinoza's Theory of Emotions—Prologomena to the Psychology of Man*, is yet to be published.

We have lost a man who has been closely connected with Soviet public life, and whose manifold activities have, to a considerable extent, marked out the ways by which scientific work will be carried on in schools and in subsidiary institutions.

He was a man whose great intellect and personal charm will be ever remembered by those who had the privilege of coming into contact with him.

Major works of Professor Vygotsky

1. *Educational Psychology* (Russian), Moscow, 1926.
2. *Pedology of the School Age* (Russian), Moscow 1928.
3. *Outlines of the Development of Behavior* (with Luria, Russian), Moscow 1930
4. *Pedology of the Juvenile*. (Russian), Moscow 1934.
5. *Principles of Pedology*. Lectures (Russian) Moscow 1934.
6. *Thought and Speech*. (Russian), Moscow 1934.
7. *The Meaning of the Present Psychological Crisis* (In print).
8. *Spinoza and His Theory of Emotions – Prologomena to the Psychology of Man* (In print).
9. "The Problem of the Cultural Development of the Child," *Journal of Genetic Psychology*, 1929, XXXVI, 413-434.
10. "Thought in Schizophrenia," *Archives of Neurology and Psychiatry*, 31, 1934, 1063-1077.

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Kanu Sanyal (1930-2010) passed but his contribution remains

One of the greatest communists of India Kanu Sanyal, the legendary founder of the 'Naxalite' movement of the 60s in West Bengal, that heralded a violent struggle, died, apparently by committing suicide on Tuesday on March 23, 2010. 78 year old Sanyal, a bachelor, was found hanging in his room at his residence. This is definitely an unprecedented incidence as we have seen him in many occasions to encourage the toiling masses around him to stand up against all oppressions and torchers.

However the news came to us, those who are concerned with the struggle of the working classes, a shock and we were electrified. We cannot conceive at all how this could be possible. Though he was suffering from various age-related ailments of which glaucoma, kidney and prostate problems were severe. He was not able to do any party or organisational works, in the

agonies of various physical ailments. But he was very much reluctant to receive any favor from others for admission and treatment at Kolkata Medical College Hospital. Though his comrades were ready to render him any kind of help for better treatment. Sometimes in this precarious condition and suffering from 'to be or not be' dilemma, he uttered to his comrades, "What is the necessity to continue this useless existence?"

At the time of his death, he was General Secretary of a new CPI (Marxist-Leninist) group, formed by the merger of several splinter groups of the original party. In modern India two persons are pioneer in the leadership of militant peasantry struggle. Of them one is Jungle Santhal and the other person is Kanu Sanyal. Along with co-Chairman Charu Majumdar, Jungal Santhal and other important peasantry and tea-garden leaders, Sanyal formed the militant agrarian organisation that gave birth to the Naxalbari movement, which later years had transformed into the even bloodier student-youth unrest, though it was then a global phenomena. Even later it was transformed into Maoist struggle and it is now doing havoc in the Central and Eastern India but Sanyal had openly disapproved of the strategy of armed struggle after his release from Jail in 1977.

Born in 1932, at Kurseong, he was educated at Siliguri-Jalpaiguri and came across with the Communist party leaders of North Bengal specially came in contact with Charu Majumdar at Jalpaiguri Jail. This was the turning point in his life. He decided to dedicate himself in the cause of Indian Revolution through armed agrarian revolution in the Chinese pathway and he shifted to the tribal villages of Hatighisa some 25 km. from Siliguri. He spent all his life in a thatched mudhouse of Sibdellajote (which is also his party office). Along with other workers and his comrades he started the militant peasantry struggle in the Siliguri sub-division specially within three blocks namely Naxalbari, Kharibari and Phansidewa. Actually this 'agrarian revolution' was the continuation of a vigorous land reformation movement. Militarism of the peasantry provoked the 'Naxalite upsurge' on 24th May 1967 when a police officer was attacked and killed by the violent, agitated peasantry followed by butchering of twelve persons mostly women and children on the next day by police as retaliation.

Sanyal and his comrades of 'Siliguri Mahakuma Communist Party' were agitating for radical reforms. The sight of the labouring masses, the proletariat tribal peasantry, the tea-garden workers etc. with inhuman, beastly living condition stabbed his conscience. He wrote *Terai Report* and afterwards disgusting about the failure of Terai peasantry struggle, he wrote *More on Naxalbari*. However in lifestyle Sanyal hold a candle to anyone of his contemporary.

Throughout his life Sanyal had to face a shocking demonstration of perversity and scandal from the bourgeoisie-feudal political parties and equally from all the official Communist parties. However he could not recover his lost kingdom of Terai after released from Vishakapatanam Jail in Parbatipuram Conspiracy case in 1977. Because by then the people of Terai either lost their ground of struggle or gradually deeply embedded into mainstream electoral politics. Sanyal was quite in his elements when he discourses on Marxism but once he was seen saying agitatingly, "How can I help as an individual if the people of India do not want political revolution." Perhaps his old, traditional, inflexible ways had the effect of alienation from his surroundings. **P A S**