

The Bankruptcy of Apriorism as Seen From The History of Knowledge

by Tang Hsiao-wen

WHERE does man's knowledge come from? It is inborn, or is it acquired after birth? For thousands of years, this has been the fundamental issue in the struggle between the materialist theory of reflection and idealist apriorism. By asserting that man's knowledge was inborn and "inherited from heaven," Liu Shao-chi and other political swindlers ran completely counter to the Marxist-Leninist theory of knowledge and to the history of human knowledge.

The Marxist-Leninist theory of knowledge holds that **"the standpoint of life, of practice, should be first and fundamental in the theory of knowledge."** (Lenin: *Materialism and Empirio-Criticism*.) Human knowledge originates from and develops on the basis of social practice, i.e., the struggle for production, class struggle and scientific experiment. Only in the course of practice can man get into contact with countless phenomena of the objective external world through his sense organs, form perceptual knowledge and, after thinking it over in the brain, achieve an active leap from perceptual to rational knowledge. Only through practice can truth be tested and developed and the fundamental aim of knowing the world — which is to change the world — be reached. Practice and only practice is the source of knowledge. No hero on earth can know and change the world when he departs from practice.

Chairman Mao teaches us: **"Marxists hold that in human society activity in production develops step by step from a lower to a higher level and that consequently man's knowledge, whether of nature or of society, also develops step by step from a lower to a higher level, that is, from the shallower to the deeper, from the one-sided to the many-sided."** (*On Practice*.) This is an incisive summing-up of the history of the development of human knowledge, a sharp weapon for us in criticizing the idealist apriorism of Liu Shao-chi and other political swindlers.

The history of man's knowledge of nature is basically the history of his struggle to transform nature, the history of the development of social production. Natural science, which is the crystallization of knowledge about the struggle for production, has been gradually accumulated and developed from a lower to a higher level as man's productive activities ceaselessly advance in breadth and depth and in the course of class struggle and the development of scientific experiment.

Natural science had not yet been formed in primitive society, when the level of production was very low and mankind had only begun to gain some initial knowledge of nature through practice in pro-

duction. In slave society, due to the development of animal husbandry and agriculture and especially the rise of the towns, the progress made by handicrafts and architecture and the needs of navigation and war, there appeared in ancient China, Egypt, Greece and Rome astronomy and, closely related to it, mathematics and mechanics, which were the earliest branches of natural science. With the development of production in feudal society, science and technology made further advances in their struggle against religion and theology. In China, for instance, many inventors and scientists appeared who had contributed to human civilization with such great inventions as the compass, paper-making, printing and gunpowder, and who had brought ancient science and technology such as astronomy, mathematics, agronomy and medicine a step forward.

From the second half of the 15th century, the capitalist mode of production gradually took shape within the feudal system in western Europe. The tremendous growth of industry, new geographical discoveries and expansion of navigation and trade necessitated specific and deeper study of different branches of nature and at the same time provided the objective possibility for doing so — there were enormous material for observation and new means for experimenting and new instruments. Only at this time did a really systematic experimental natural science come into being: physics, chemistry, biology, physiology, medicine and so forth were founded and developed as independent departments. This shows, just as Engels pointed out, that **"from the very beginning the origin and development of the sciences has been determined by production."** (*Dialectics of Nature*.)

Thereafter, the epochal advances in natural science, such as the three great 19th century discoveries of the law of the conservation and transformation of energy, cytology and the theory of evolution, as well as achievements in modern natural science, have all been determined by the needs of social practice and the development of production and technology of the time.

Let us cite for example man's knowledge of energy. This has gone through a process of development from a lower to a higher level, from the shallower to the deeper and from being one-sided to many-sided. At the beginning, mankind led a primitive life for a long time without any knowledge of fire. About half a million years ago, they started to learn the use of fire. Later, through accumulated experience in practice over tens of thousands of years, they learnt to make fire by friction, which was the conversion of

mechanical motion into heat in practice. Still later, after repeated practice through long years, man came to the conclusion that "friction is a source of heat." In the 18th century, the steam engine was invented, which for the first time in practice converted heat into really usable mechanical motion.

The steam engine is a product of the development of production, "the first really international invention." (*Dialectics of Nature*.) In western Europe, especially England, the expansion of the international market and the swift growth of industry urgently demanded the solution of the power problem. This impelled man to study and try to make steam engines. The development of the iron industry made possible the manufacture and improvement of the steam engine, and this was the result of the productive labour of countless workers.

The technical knowledge required in making steam engines was accumulated by the masses in long-time production struggles. Before the Englishman Watt, the idea of using cylinder and piston had already been mooted in Germany, and in France and England itself more than one person had produced comparatively primitive steam engines and applied them to production. It was in repairing an old steam engine that Watt discovered certain drawbacks of the machine, such as the enormous waste of steam and its limited function of pumping water, and this prompted him to improve it. At first he and his collaborators introduced a separate condenser which greatly raised the engine's efficiency. Later, after experiments for over a dozen years, Watt and his colleagues succeeded in making combined use of the fly-wheel, steam valve and centrifugal governor to improve the properties of the engine and enable it to become a motor for much wider use. This fact shows once again that every important development in the knowledge of man has to go through the repeated process of practice, knowledge, again practice, and again knowledge, and that it never comes out of the void.

The appearance of the steam engine gave man the opportunity to learn the mutual relation between heat and mechanical energy. By the 1840s, when the big machinery industry had begun to develop, people began to sum up experience gained in production and analyse and study the steam engine. Scientific experimentation led to the theoretical conclusion that mechanical energy and heat energy can transform themselves into each other. Proceeding from this, they discovered the universal natural law of the conservation and transformation of energy, marking the beginning of a new epoch in the history of man's knowledge of energy. As the scope of productive practice widened and giant strides were made in natural science, man began to tap ever fresher sources of energy, including electric, chemical and atomic energy. Man's knowledge of energy has thus become deeper and deeper. All this shows the gigantic amount of common efforts made by workers and labouring intellectuals and the long years spent before mankind attains the present level of knowledge and utilization of energy.

Liu Shao-chi and other political swindlers, however, alleged that a person need not have taken part in any social practice or relied on the masses of the people but had only to depend on "the brains he was born with" in order to know everything. This is most preposterous!

The history of human knowledge of the biological world gives another rebuff to such nonsense disseminated by Liu Shao-chi and other political swindlers. For a long time, religion, idealism and the metaphysical world outlook dominated in biology and asserted that all species of animals and plants on earth were created by God with his own purpose, and they could never change.

In 1859, Darwin published his *Origin of Species*, which systematically proved with a wealth of facts that biological species had never remained the same since the beginning of time and were not immutable and that the modern biological world was the result of prolonged historical evolution. Thus God was driven out of the biological world and biology became a science.

However, the theory of evolution was no accidental discovery, it was the inevitable product of the continued development of capitalist industrial and agricultural production and science. In the mid-19th century, the British Government had widely organized "expeditions" to prospect for natural resources in the colonies in order to carry out colonialist plunder. Objectively, this enabled them to collect much biological data. At the same time, to meet the needs of the development of large capitalist farms, the selection of fine strains was practised which also provided rich materials for the study of the evolution of species. The various branches related to biology, such as taxonomy, anatomy, embryology and paleontology had also by that time collected much material. All this prepared the way for the birth of the theory of evolution.

That Darwin was able to formulate the theory of evolution was certainly not because he had an "inspiration" but because he had for scores of years carried out a great deal of study and field observations and personally taken part in scientific experiment. Between 1831-36, he travelled around the world and carried out field studies and research on zoology, botany and geology in many parts of South America, Australia and Asia, and the theory of evolution gradually took shape in his mind. Then he devoted another 20 years to studying, collecting and analysing data on the evolution of living organisms. He also personally engaged in experiments for the selection of new strains before he was finally able to complete his scientific work *The Origin of Species*. Wallace, another British biologist, arrived at basically the same theory at almost the same time. This testifies to the fact that the necessary material foundation was already in existence for the founding of the theory of evolution.

It must also be pointed out here that many ventures into this realm had already been made before Darwin. Lamarck of France and others had put forward ideas

similar to the theory of evolution and waged struggles against such fallacies as reactionary teleology. The fruits of research of Darwin's predecessors had provided him with the necessary ideological material for founding the theory of evolution.

All sciences are relatively independent and have their inherent contradictions, their own logic of development and their series of abstractions. But the emergence and development of any science, no matter how abstract it is or how great its relative independence, depend in the last analysis on the development of social practice, and whether the conclusions arrived at are correct or not can be tested only through practice. Take mathematics for an example. The most abstract of sciences, it studies space forms and quantity relations in the real world. To facilitate such study, mathematics must temporarily exclude their concrete contents and make inference and algorism by using such highly abstract concepts as points without dimensions, lines without thickness and breadth, planes without thickness, constants a and b , variables x and y , and so on and so forth. In doing so, it superficially conceals the fact that these abstract concepts originate from the real world and social practice. Idealists often single out the abstract nature and relative independence of mathematics, distort and exaggerate them, and rave that the concepts and principles of mathematics are bestowed by nature and are a priori sensuous intuitions. Duhring and his ilk said: In pure mathematics, the mind deals with "its own free creations and imaginations"; mathematics has a "validity which is independent of particular experience and of the real content of the world." In his work *Anti-Duhring*, Engels trenchantly criticized such fallacies.

True, pure mathematics does have a validity which is independent of the particular experience of each individual. However; this only serves to show that what mathematics reflects are objective facts independent of man's experience, and does not show that mathematics are conceived entirely in the mind without making use of the experience offered us by the external world. The history of the emergence and development of mathematics testifies to the fact that **"like all other sciences, mathematics arose out of the needs of men; from the measurement of land and the content of vessels, from the computation of time and from mechanics."** (*Anti-Duhring*.) Mankind obtained the concepts of number and figure from the real world through social practice. At the very beginning, people did not have the idea of number. Later, they made simple calculations by counting with fingers, tying knots and making notches, but they still could not completely depart from the concrete objects. It was only after counting in these ways for generations and repeating and making comparisons between them for millions of times that the idea of number divorced from the concrete objects was formed through practice. This is also true of the concept of figure. In the course of making various kinds of objects, people gradually formed abstract concepts of figures in their minds after countless observations and comparisons with regard to the shapes of different

objects. Moreover, while studying the objects, man's ability to consider only their number and shape to the exclusion of all other properties was also the result of a long historical development based on experience. It was by no means "endowed by nature" or inherent in people's minds. Are mathematical axioms a priori? No. The whole is greater than the part; if two quantities are equal to a third, they are equal to each other — these and other mathematical axioms are basic premises on which inference is made. Mathematics itself cannot prove these axioms, but practice is able to prove that they reflect the most fundamental relations between space forms and quantity in the world of reality; and it is precisely because people have discovered these most fundamental relations on hundreds of millions of occasions in their productive activities that they become axiomatic. In addition, mathematics as a whole is not inferred solely from axioms. As Engels pointed out: **"In order to get any further, we are obliged to bring in real relations, relations and space forms which are taken from real bodies."** (*Anti-Duhring*.) It is social practice and the development of industry and techniques from a lower to a higher level that propel the development of mathematics — from mathematics dealing with constants to mathematics dealing with variables and from elementary to higher mathematics. Closing their eyes to historical facts, idealists treat the abstract nature and relative independence of mathematics as absolutes and describe them as a priori things divorced from the objective world of reality and social practice and developing in isolation. This is pure nonsense.

The development of man's knowledge relies on the progress of his social practice and is, therefore, inevitably restricted by historical social conditions. This is all the more true of people's knowledge of the history of society. During the long historical period before Marxism came into being, people had only a one-sided understanding of the history of society and did not realize the objective laws of social development and the role of the masses in making history. The reason for this is twofold: on the one hand, the exploiting classes, out of the needs of their class interests, distorted the true history of society and, on the other hand, the labouring people could not know the essence of the history of society due to deception by the exploiting classes and to the small scale of production at the time. It was only in capitalist society in which big industries and their product — the proletariat of modern times — came into being that the knowledge of the history of society could be turned into science in its true sense. The proletariat, however, did not at the very outset recognize the essence of capitalist society. Seeing only the separate phenomena in capitalist society and their external relations, workers engaged in spontaneous struggles by smashing machines and burning down factories. During this period, only such trends of thought as utopian socialism could emerge. After accumulating rich experiences through prolonged economic and political struggles and after these experiences had been scientifically summed up by Marx and Engels to create the scientific theory of socialism, the proletariat,

guided by revolutionary theory, began to gain a profound understanding of the essence of capitalist society and its own great historic mission. A scientific analysis of capitalist society helps us understand the past history of society, foresee the future and reveal the general laws governing social development. The reason why Marxism came into being only in the capitalist era, and not at an earlier time, was that the practical conditions for the birth of Marxism were available only in the capitalist era and not before it. Chairman Mao has taught us: **"In our acceptance of his theory [i.e., Marxism] no such formalistic or mystical notion as that of 'prophecy' ever enters our minds."** (*Oppose Book Worship.*)

The entire history of human knowledge tells us that all knowledge and scientific inventions are summaries and generalizations of the experience gained by the masses in their long years of practice and are products of historical development. Scientific discoveries and creations are bound to result if possibilities for them arise as history develops to a certain stage when the growth of production and the progress of class struggle call for them and when certain objective conditions exist. These, after being summed up and generalized by exponents of advanced ideas, are bound to result in a new leap in knowledge. Citing the example of the discovery of the materialist conception of history, Engels incisively elucidated this truth when he said: **"While Marx discovered the materialist conception of history, Thierry, Mignet, Guizot and all the English historians up to 1850 are evidence that it was being striven for, and the discovery of the same conception by Morgan proves that the time was ripe for it and that it simply had to be discovered."** (*Engels to W. Borgius, January 25, 1894.*)

There are different characteristics in different eras when the reactionary ruling classes use idealist apriorism to fool the people. And following the continuous advance of social history, their tactics become more and more cunning and despicable. In ancient times, owing to the low level of the social productive forces and natural science, the slave-owners and feudal landlords used to spread idealist apriorism in the form of mysticism and fideism. While in modern times, with the growth of the social productive forces and the advancement of natural science, and especially with the emergence and development of Marxism — the scientific world outlook of the proletariat — the reactionary ruling classes realize that they cannot palm off idealist apriorism by solely relying on undisguised mysticism and fideism. So they make use of some new discoveries and achievements in natural science, unscrupulously distort them and hawk the reactionary theory of idealist apriorism under the cloak of "science." Hiring a batch of "vassals with academic degrees" to carry out so-called "I.Q. tests" and investigate the family history of so-called "outstanding" figures, the bourgeoisie has worked overtime to "prove" that man's wisdom and talent are innate and hereditary. Following the victory of Marxism-Leninism both in theory and in practice, the

bourgeoisie tries to undermine the revolutionary struggle of the proletariat against the bourgeoisie by making use of revisionists who have sneaked into the revolutionary ranks of the proletariat and secretly peddle idealist apriorism. All this, of course, is of no avail.

Why are the reactionary classes at all times and in all countries so zealous in advertising idealist apriorism? The emergence of exploitation and oppression of man by man in history is, in the first place, the outcome of a certain historical stage, i.e., of class society. In order to make people believe the lies that "exploitation is justified" and "oppression is justified," the exploiting classes describe the exploiters as "men who are born wise" and the labouring people as "born fools." They also allege that class differentiation is decided by God's will, and they go so far as to describe reactionary preachings such as "those who work with their minds govern while those who toil with their hands are governed" as universally accepted eternal laws. Just as Marx and Engels pointed out when they criticized Thomas Carlyle, an English idealist, that he, to all intents and purposes, aimed to prove that **"historically created class differences are made natural differences which people must recognize and revere as a part of the eternal law of nature by bowing before the wise and noble ones in nature: the cult of genius."** **"And the final answer is that the noble, wise, and learned ones should rule."** (Book review published in *New Rhine Gazette. Political Economic Review*, No. 4.) In advertising idealist apriorism, Liu Shao-chi and other swindlers are, in essence, of the same mould as the reactionary classes in history. The difference between the two, if any, is that while one aims at preserving and strengthening the rule of reactionary classes, the other aims at rehabilitating the overthrown landlord and capitalist classes and turning the dictatorship of the proletariat into the dictatorship of the bourgeoisie and socialism into capitalism.

The Marxist-Leninist theory of knowledge synthesizes the positive results gained in the history of human knowledge, and is a scientific generalization and summing-up of it. The proletarian revolutionary teachers have profoundly studied and criticized all the attainments in the history of human knowledge, tested them one by one in the revolutionary practice of the proletariat and drawn scientific conclusions therefrom. Therefore, to have a good grasp of Marxism, we should not confine ourselves to bearing in mind the conclusions drawn by the revolutionary teachers from historical and revolutionary reality, but should study in a deep-going way how these conclusions have been obtained. Lenin taught us that continuation of the work of Marx, **"must consist in the dialectical elaboration of the history of human thought, science and technique."** (*Conspectus of Hegel's "Science of Logic."*) Studying some history of knowledge will help us gain a deeper understanding of the Marxist theory of knowledge, draw a clearer line of demarcation between the materialist theory of reflection and idealist apriorism and raise our ability to distinguish between genuine and sham Marxism.